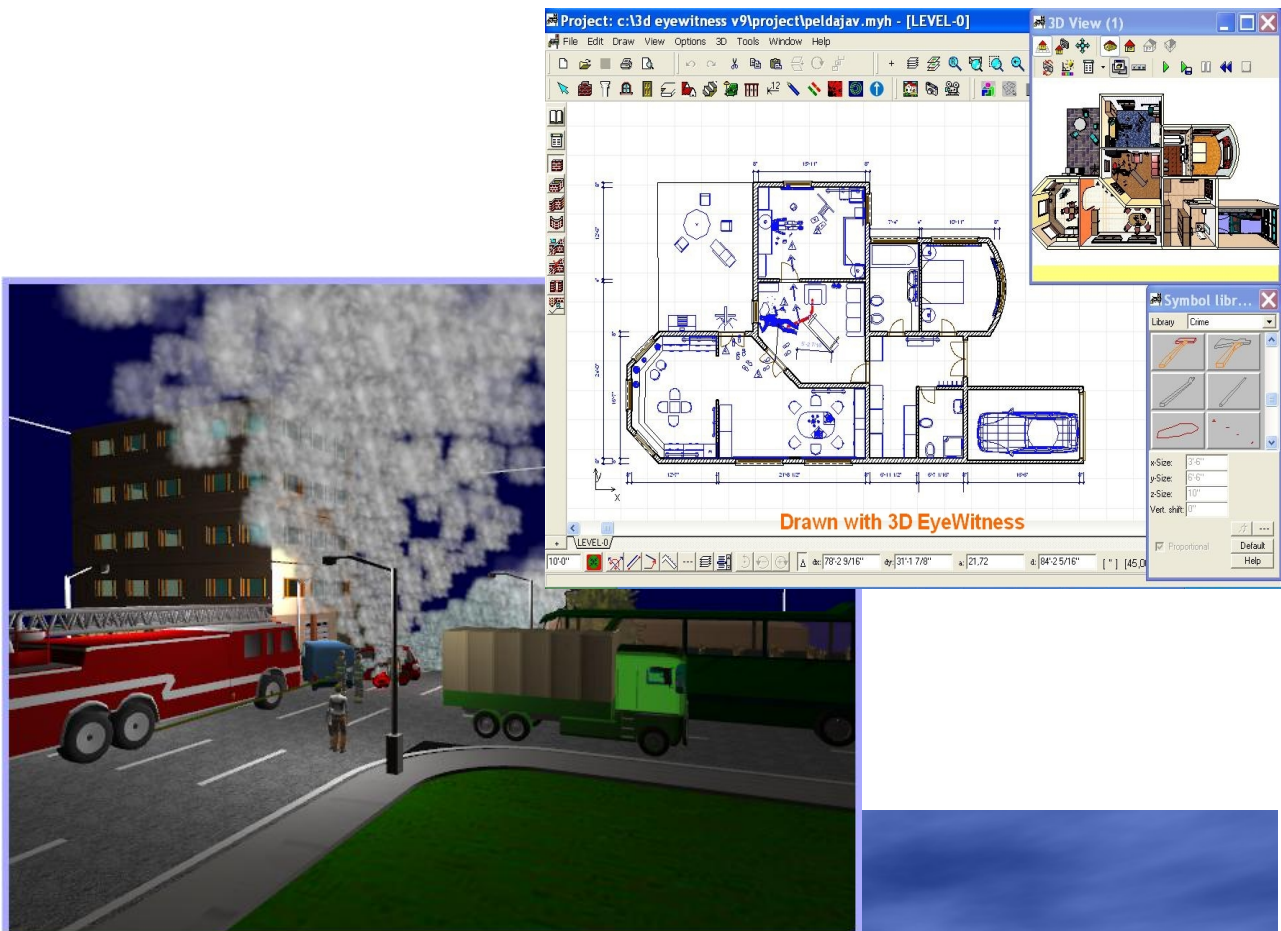


3D EyeWitness

Crime, Fire and Traffic Accident Scene Reconstruction Software



3D EyeWitness

Crime, Fire and Traffic Accident Scene Reconstruction Software

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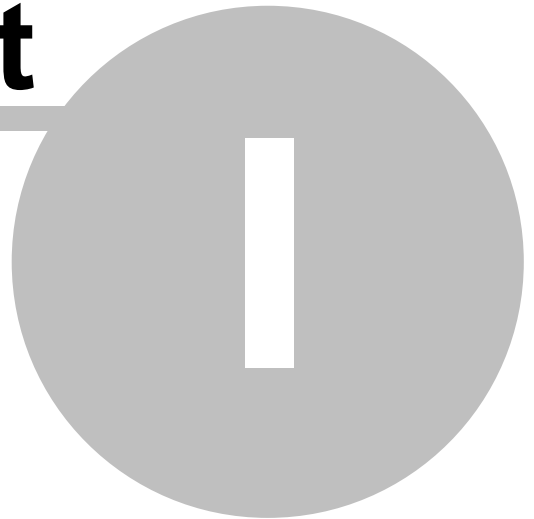
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Part



1 Installing 3D EyeWitness

If using Windows XP/Vista/10/11 you need to have administrator rights over your PC to install the program.

Before installing, check the list of requirements described in the chapter *System requirements*.

- In order to run the program you will need a hardware key, which is to be inserted into either the parallel port (grey hardware key) or USB port (purple).

Do not insert your USB device before installing the software.



Installing the software

1. Insert the CD into your CD-ROM drive.
2. The program will start automatically. If not, select *Start/Run* and type in **D:\setup** (if D is your CD drive) or select it through *Browse*. Press **OK**.
3. Setup screen opens. Press *Continue*.
4. Set the destination folder, then press **OK**. According to the default setting the destination folder is: **Program Files/DesignSoft/3D EyeWitness Vn**, though this can be modified.

Note: Under the specified folder name (e.g. 3D EyeWitness v8), other subdirectories will be created automatically, namely:

LIB folder, which contains the library files of the basic components necessary for the working of the program.

PROJECT folder, which will contain the files of projects created by the user.

5. Installation will start. From the setup window it is possible to follow the installation process, as well as to cancel the installation.
6. When installation is complete, the following icons will appear. To begin a new project, click on this icon  which launches the main 2D designer of the program. The other icons found in the window will start different modules of the program.
7. Clicking on this icon  launches the **MODELLER**, which will help you to create new components in the libraries.
9. **Help files** can also be opened separately by the respective module icons.

1.1 Hardware keys (USB or parallel dongle)

Do not insert your USB device before installing the software.

Installing the USB device

By installing the software, the driver needed for your USB key is installed as well.

After installation you will need to restart your computer.

After installation, when your USB key is first plugged into the USB port, the system will ask you to identify it.

Choose:

- Look for software associated with the USB stick, then
- Install software automatically, then

- OK/Next.

Do not insert your USB device before installing the program!

Installing the parallel port

By installing the software, the driver needed for your parallel port is installed as well.

After installation you will need to restart your computer.

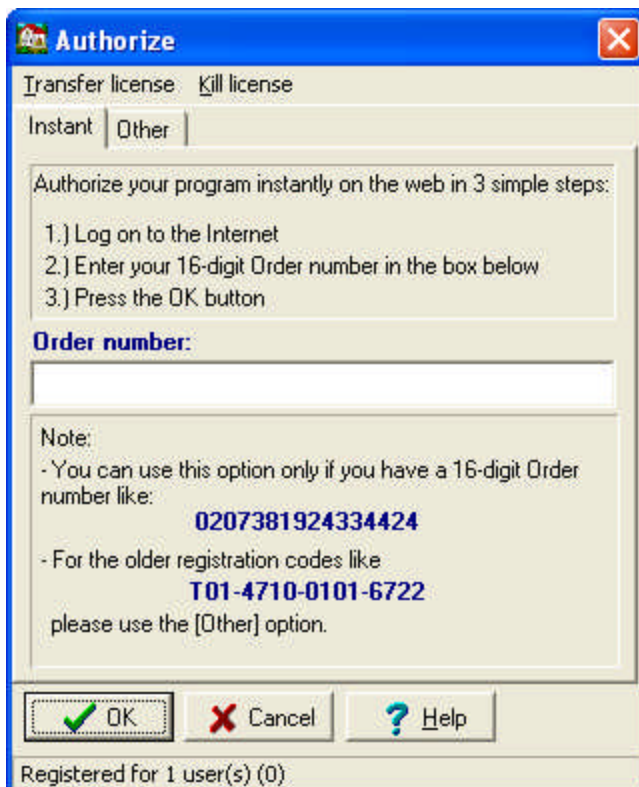
Plug your hardware key into the parallel port. If you have a printer, connect it through this key.

1.2 Software key authorization

In order to run this program, you must receive authorization from DesignSoft.

When you first run the program, a message box appears showing your initial authorization status. If you do not receive authorization, you are normally limited to 31 sessions to try the program.

At the end of the trial period – but preferably as soon as possible – do the following:
Run the **Help / Authorization / Authorize** menu. The **Authorize** message box appears:

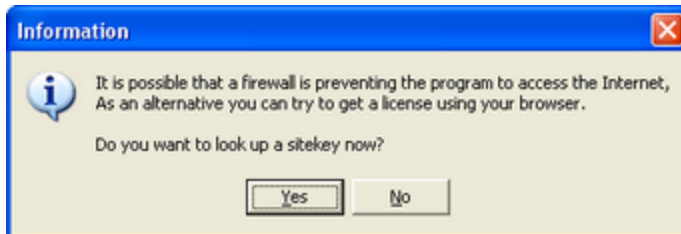


If you have received your program with a 16 digit **Order number** you can authorize your program in 3 simple steps described in the dialog box above.

It may be that your firewall does not allow your program to connect to the Internet. In this case you will get the following messages



If you are connected press OK. The following dialog appears:



Press **Yes**. Your **Site Key** will appear in a browser. Copy and Paste this into the **Authorization** dialog of your program.

If you do not have an **Order number**, or it does not work for any reasons or you do not have Internet connection, then click on the **Other** tab on the top of the dialog box. The **Other** page of the Authorize message box appears:



This dialog shows your personal **Site code**, which identifies your computer.

Record and send your **Site Code** and your **Order number** to DesignSoft by email or using the given web address. Always use Copy and Paste when you need to copy these information from one field into another.

If you have received the program on CD, the Order number is provided with the CD. If you receive the program as download it should be included in the email containing the download link.

Note, that if you click on the email address above, your default email program starts using an initial email template, that already includes both the Order number and the Site key.

If you prefer, you can click on the <http://www.designsoftware.com> .com address and select Registration on top of the screen, where you can enter the necessary information.

Whichever option you choose, make sure you give us your

- **Site Code**
- **Order Number and**
- **your email address**

so that we can send you your authorization code (site key).

If you contact us by email or via the web, you will shortly receive an acknowledgement of your transaction by email. If you haven't received this acknowledgement very soon, perhaps you mistyped your email address, so you should re-send the information. Within a few working days, we will send you your site key by email.

When you receive your **Site key**, run the **Authorize** menu again, enter the **Site key** into the **Site key** field, and press OK.

If you want to move your authorized program to another computer, use the commands "*Transfer using removable media*" or "*Transfer using Internet*" from the **Help / Authorization** menu. The default password of these commands is **ProgramProtection**. For more information see the **Help** of the **Authorization** dialog and check **Transfer License**.

1.3 System requirements

Minimum hardware and software requirements:

- IBM PC 586 or compatible
- 1 GB of RAM
- Microsoft Windows XP/Vista /7/8/10/11

Recommended configuration:

- IBM PC Pentium or compatible
- 3 GB of RAM
- A hard disk drive with at least 2 GB of free space
- Microsoft Windows 11

OpenGL or DirectX 3D accelerator:

- ASUS TNT2 accelerator

- (1024*768 or higher DPI resolution, 16 bit or higher Color resolution)

SKP files import:

- MICROSOFT VISUAL C++ 2005

1.4 OpenGL video card

The software uses the OpenGL video card when running 3D graphics.

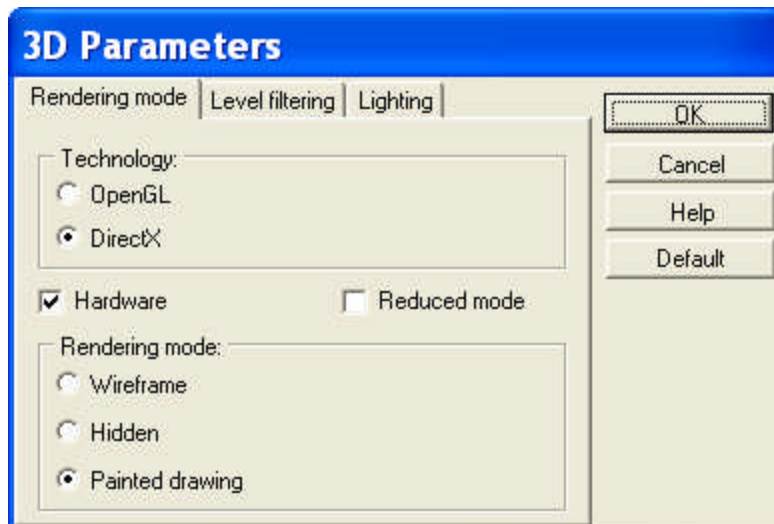
For running the software properly you should have the card's latest driver installed on your computer.

This can be downloaded from the website of the card's manufacturer.

When running 3D graphics it is possible that the software does not support your computer's OpenGL card.

In this case you may inactivate the OpenGL graphics card, in the following way:

- ❖ In **2D** mode: within the **3D** menu click **3D Parameters**, then choose **OpenGL/Software**.



1.5 DirectX graphic system

Installation of the DirectX program:

The version installed on the machine can be queried with the command 'dxdiag', entering it in the 'run program' Windows Start menu, if any such version has already been installed.

The 3D module uses the Directx 9 version, which can be downloaded from here (if it has not been installed on your machine):

<http://www.microsoft.com/downloads/details.aspx?displaylang=en>

The drivers of the various video cards can be downloaded from the website of the company concerned, from pages entitled 'support' or 'downloads'.

The websites of some of the main brands for examples:

ATI: <http://ati.amd.com/support/driver.HTML>

NVidia: <http://www.nvidia.com/page/drivers.html>

ASUS: <http://support.asus.com/download/download.aspx>

Intel: <http://downloadcenter.intel.com/>

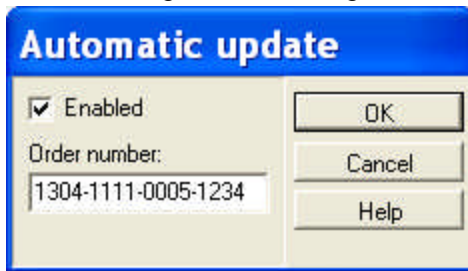
A website of multiple manufacturers http://www.driverslab.com/drivers/Video_Card/13/0.html

1.6 Automated on-line upgrades

Upon start-up the programme checks our website for new upgrades, of which the user can be informed, subject to three conditions:

- The machine should be logged on to the Internet when the programme is started up,
- Automated upgrades should be switched on in Settings,
- The user should have an order number.

The order number should be entered after starting up the program. It is enough to enter it once and it will be retrieved by the system later on from the file stored on the machine. The order number is a code of 16 digits received together with the program, identifying the user for the system.



The program checks which module has been changed and it automatically downloads the changed module from the Internet. The user is notified of the upgrade in a list and then exiting the programme it unzips the program from the ZIP files.

Part



2 The Basics

After installation, when run for the first time, the programme copies the elements of the libraries and sample designs managed by the user into the library specified by the user. The proposed route is the C:/3D EyeWitness vn library, within which the user's library is created in the LIB library and the designs are stored in the PROJECT library. This latter can be chosen when the designs are saved. A registration entry is made concerning the library so created which is used by the program whenever it is started up. Its deleting makes it possible to redefine the place within the library. The place of the registration entry:

HKEY_CURRENT_USER\Software\DesignSoft\3D EyeWitness for Windows\12.00

The structural design of the building can be carried out in the floor layout plan windows for which a separate window is opened for every one of the floors of the building. In parallel with working out the structure the progress of the work can be viewed in 3D view and modifications and moving the elements just drawn can also be started from the 3D window. The other modules open separate designing windows for themselves, e.g. stairs, roof, roof truss, terrain. While designing these elements no structural design work can be carried out on the 2D floor layout plan. When these windows are closed, that is, when the structuring of the element is completed, when structural design of the element has been completed, the element concerned is automatically migrated into the floor layout and the 3D module. The libraries are enhanced with the 3D MODELER function.

This software is a Windows application. Its main module is 3D EyeWitness **2D Designer**, from which several other sub-modules can be launched:

the  **Terrain Designer**,

the  **Road Designer**,

the  **STAIR Designer**

the  **ROOF Designer**

the  **3D Modeler** and

the  **3D viewer** module.

The main 2D designer uses a rich array of libraries, which are grouped according to their function. Various textures and patterns can be superimposed onto surfaces - this list can be found in the file TEXTURE.INI.

The editing of your plans can be done in the 2D or 3D design windows – each floor requires a separate 2D window.


2.1 Controls


The software can be used with mouse or keyboard. Icons help you to select and start various features of the program.



Your screen will be primarily occupied by the design window, where you can design the floor plan of your project.

2.1.1 Mouse

The easiest way to use 3D EyeWitness is with the mouse, but you can also invoke several commands with your keyboard, using shortcuts. When moving the mouse while creating a scene the motion of the cursor will be measured and shown in the adjusted unit and also according to the fitting (Snap) adjustments.

When using **metric** units the cursor's motion will be shown in centimeters, or it can follow the grid points if the **Snap**  (**Catch grid points**) option is switched on.

If you use the arrows on the keyboard, you will move in millimeter. If you press the shift button down at the same time, you can move in meter. By pressing  or **F3** you can modify it, and the cursor's motion will be move in centimeter.

When using **inch** units the cursor's motion will be shown in 1/16 inch, or it can follow the grid points if the **Snap**  (**Catch grid points**) option is switched on. By pressing  or **F3** you can not modify the measuring units, and the cursor's motion will be shown in 1/16 inch.

If you use the arrows on the keyboard, you will move in 1/16". If you press **F3** function key, you will move in 1". If you press the **Shift** button down at the same time, you can move in feet.

Note: The magnification rate of the project determines whether you can see in the **dX** and **dY** fields the motion in meter, centimeter, millimeters or feet, inch. Consequently, if your project takes up a relatively large area and has a low magnification rate, then the smallest move of the mouse might be several centimeters, therefore will not be measurable in millimeters.

The menus and dialog boxes may be navigated using the up and down arrows on the keyboard as well as using the **Tab** key, though the easiest way is to use the mouse.

As for the underlying coordinate fields, it is only possible to move amongst them using **Tab** or **Shift+Tab** moving the mouse entails the loss of the entered coordinate values.

Coordinate fields may also be selected by pressing **X**, **Y**, **A**, and **D** respectively. Moving to the next field can be achieved by **Tab** or **Shift+Tab**. The entered values effect the values of the other related fields, the values being interconnected.

Depending on whether you are in **selection** mode or in **designing** mode, the moving cursor will appear as an **arrow** or as a **pen**.

If **Snap** (the fitting option) is on, and your cursor comes close to a so-called 'hot-spot,' one of several symbols will appear next to the selection arrow or drawing pen to inform you of the precise position of the cursor.

- **+** means that you are close to a grid-point (black +) or grid-line (white +)
- **a white pipe** means that you are moving along the edge of a certain element (e. g. a wall)
- **a black pipe** means that you are above a certain element's corner/angle-point (e. g. of a polygon or at the end of a wall)
- **a small rhombus** means that you are above the area of a polygon (e. g. a symbol, roof, slab, column, etc.)


In relative mode you can redefine the precise position of your cursor as the origin of the coordinate system by pressing **F4**. This change is indicated by the **dX** and **dY** fields changing into zeroes and by the relocation of the small red cross which indicates the origin of the current coordinate system.

The pen also shows whether you are in general drawing/editing mode, performing a certain action or entering values to dX/dY.

2.1.1.1 Moving the mouse

During editing, the motion of the mouse can be seen in the fields **dX**, **dY**, **a** and **d**.

The rate of displacement depends on the magnification rate. Two decimal places are displayed in the fields in metric mode and 1/16" in inch mode. By pressing **F3** or the

icon  the system may be readjusted, and the cursor's motion will be displayed in centimeters, without further decimal places.

After readjustment it is practical re-center the coordinate-system by pressing **F4**, thus ensuring the cursor's motion is measured in one-centimeter increments.

2.1.1.2 Left button

Pushing the left button is generally equivalent with pressing Enter, both entailing the completion of an operation.

When moving the mouse the cursor will appear either as an arrow or a pen, depending whether you are in the selection mode (arrow) or in the designing mode (pen).

If Snap (the fitting option) is on, and your cursor comes close to a so-called 'hot-spot,' one of several symbols will appear next to the selection arrow or drawing pen to inform you of the precise position of the cursor.

- **+** means that you are close to a grid-point (black +) or grid-line (white +)
- **a white pipe** means that you are moving along the edge of a certain element (e. g. a wall)
- **a black pipe** means that you are above a certain element's corner/angle-point (e. g. of a polygon or at the end of a wall)
- **a small rhombus** means that you are above the area of a polygon (e. g. a roof, column)

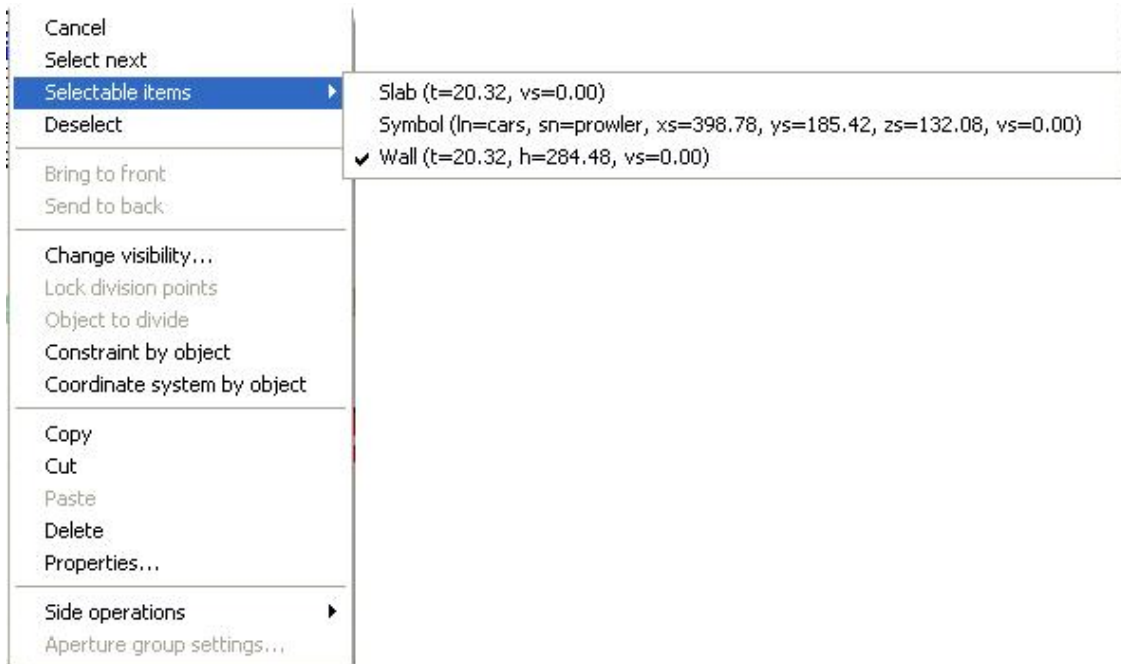
In relative mode you can redefine the precise position of your cursor as the origin of the coordinate system by pressing **F4**. This change is indicated by the **dX** and **dY** fields changing into zeroes and by the relocation of the small red cross which indicates the origin of the current coordinate system.

Note: The drawing pen also shows whether you are in general drawing/editing mode, performing a certain action or entering values to **dX/dY**.

2.1.1.3 Right button

The right button can be used to cancel / escape (**Esc**) a certain action in the editing window or to bring up the Right Button Menu, which contains several functions.

Right Button Menu:



Right Button Menu with list of selectable items

1. **Cancel**: the ongoing action will be canceled. For example, when drawing a wall, the

entire action may be canceled using this function.

2. **Select next**: If there are several elements at the site of the cursor, by clicking **select next** you can toggle among them. This can also be done by pressing **Ctrl+N** or **Space**.
3. **Selectable items**: the list of selectable items will appear, and the desired item may be selected from among them. A small pipe indicates which item is currently selected. Another item may be selected from the list by clicking on it with the left mouse button.
4. **Deselect**: This feature deselects an item. This can also be done by clicking on an empty area of the design window or by pressing **Ctrl+S**.
5. **Copy, Cut, Paste, Delete, and Properties always appear when the right mouse button is clicked**. The first four are clipboard functions, whereas **Properties** will open its own dialog box.
6. **Copy to level**: The selected item will be copied to an other level while keeping its position on the floor plan.
7. **Bring to front / Send to back**: With this function it is possible to determine which one of the filled areas and BMP pictures will appear in the front or in the back.
8. **Change visibility**: This feature enables you to transfer elements between various foils. A given element can be moved to a foil other than its original.
9. **Lock division points**: During editing the feature *Divisions* can be turned on, which enables you to associate matching points to different elements. Using the Lock Division Points feature, you can require that the division points (matching points) be displayed permanently or switch them off.
10. **Object to divide**: **This function is used to select an object to be divided.**
11. **Constraint by object**: You can use this function to choose the orientation of a certain object as a standard which the next element will follow in its orientation.
12. **Coordinate system by object**: You can choose the orientation of a given object as a standard and the coordinate system will follow by taking up the specified orientation.

13. **Side operations:** With this menu you can easily modify different textural parameters of walls etc.
14. **Further additional properties:** For example, when designing curved walls after setting the two starting points, clicking the right mouse button will display two additional features in the

Note: It can be seen from the above that the Right Button Menu consists of several useful functions. *There are certain parameters that can only be set in this menu (e. g. when creating the lateral layers of slabs or slab openings; or in the case of creating the layer structure of wall openings).*

Easy and quick way to handle surface properties using the right mouse button: Click on a given element (when selected) with the right button, choose **Properties**.

2.1.1.4 Pressing two mouse buttons at the same time

In 3D mode pressing both buttons enables you to move your project in any directions.

2.1.1.5 Using the scroll wheel

If you have a scroll wheel on your mouse (and it is in standard Windows mode), it can be used to zoom down and up the elements of your project.

Other options for magnification can be found in *View*.

2.1.1.6 Using the mouse in 3D mode

In the [3D](#) viewer the right button – or the scroll wheel - can be used to zoom in or out of the project, while the left button is used to rotate the plan.

In 3D mode pressing both buttons enables you to move your project in any directions.

2.1.1.7 Cursor appearance

The cursor shows the mouse's position and also yields additional information regarding its present mode and function.

The cursor will appear as an arrow when in [Selection](#) mode, and as a drawing pen when in **designing** mode.

Further symbols may appear near the cursor if the Snap (matching option) is on.

These are:

- **+** means that you are close to a grid-point (black +) or grid-line (white +)
- **a white pipe** means that you are moving along the edge of a certain element (e. g. a wall)
- **a black pipe** means that you are above a certain element's corner/angle-point (e. g. of a polygon or at the end of a wall)
- **a small rhombus** means that you are above the area of a polygon (e. g. a roof, column)
- **red arrow** marks that the user is carrying out an operation for which something needs to be marked.

e.g. when the dimension lines icon is pressed, the little red arrow indicates that walls need to be selected for measuring etc.

2.1.2 Keyboard

Using the keyboard enables you to use the software more easily and efficiently.

Entering data: You will need to enter certain data when introducing new scene elements. The entered data will be applied in the unit of measurement chosen from among the measurement options. Certain data entered in the dialog boxes are independent from units of measure. For example, serial numbers can only be integers and are independent from units of measure. There are also fields where only text should be filled in.

The keys **X**, **Y**, **a**, **d** : You can specify or modify the position (or size) of an element you are editing by pressing **X**, **Y**, **a**, or **d** and entering the desired values in the fields.

The image shows two rows of input fields. The top row has four fields labeled dx, dy, a, and d, followed by a unit selector ["]. The values are 0", 0", 0.00, and 0" respectively. The bottom row has the same four fields, followed by a unit selector [cm]. The values are 0.00, 0.00, 0.00, and 0.00 respectively.

Entering data in dialog boxes: The data pertaining to various elements can be specified by entering them into the pertinent fields of the dialog boxes. The dialog box itself can be closed by pressing **Enter** or clicking **OK**. By pressing **Esc** or **Cancel** you will quit the dialog box, leaving the parameters with their original values.

In dialog boxes which appear in graphical windows (e. g. those for doors, windows, etc.) the new data can only be approved by pressing **Enter**.

Shortcuts: Shortcuts make editing faster and easier. The various shortcuts can be seen next to menu commands, and can be invoked by pressing a specified key, or with a combination of keys to be pressed simultaneously. For example, when drawing a wall, pressing **Space** will modify the thickness of the wall, **F2** or **Ctrl+(E, W, L, D** vagy **-, +)** will invoke different kinds of zooming.

Tab or Shift+Tab: You can move between the fields of the coordinates underneath using **Tab** or **Shift+Tab**. This can be done in the same way in dialog boxes.

Arrow keys: Using the arrow keys, you can move around in centimeters/millimeters or inch/(1/16"). The unit of measurement can be changed by pressing **F3** or with the

icon . By pressing **Shift** and an arrow key you can move in meters or feet.

Space: When drawing a wall, pressing **Space** will modify its thickness relative to the red rubber line.

In the case of columns, slabs, symbols, (polygons) etc., you can move between the *corner* and *center points* of the elements by pressing **Space**. When you copy and/or paste them by the clipboard, the selected point helping you in situating the given component.

By pressing **Space** you can also change between elements superposed on each other in order to select one of them.

+ or - : These keys are used to rotate building elements, as symbols, columns, etc. (when possible).

The letter L: you can define the length of an selected wall.

Shift or Ctrl: Hold down Shift or Ctrl when drawing a wall or other element in order to change your orientation by exactly 90 or 45 degrees.

F1-F6 The function keys are reserved for extra functions, see next chapter.


2.1.2.1 Function keys

You can use function keys or key combinations to change between **units/states**, etc. or to perform certain operations.

The function keys are the following:


F1 Help.

F2 Automatic zoom: an area of approximately one square meter around the drawing pen or selection arrow will be magnified to the size of the whole design window. Press F2 again to return to the original scale.

F3 Setting step distance : In the default setting, the software allows you to move your cursor in millimeters. By pressing F3 you can change into centimeters. Pressing F3 again returns the unite of measurement to millimeters.

F4 Zeroing coordinates and relocating the relative coordinate-system: The coordinates can be seen at the bottom of the design window. *To zero the coordinates, press F4.* The origin of the relative coordinate-system will be relocated to the cursor's current position, indicated by the appearance of a small red cross. A re-matching of elements will be carried out. Most functions (e. g. drawing new walls) will allow for this option, treating the given point as a new origin when removing the cursor. Thus, after selecting the starting point for a new wall, the second point will be represented in the coordinate-system relative to the first one. By pressing F4 you can always specify a new origin for your coordinate-system.

Note: If the snap function is on, pressing **F4** also invokes a re-matching of elements, readjusting the crosshairs to the element which is within the range specified in the **Snap** adjustments.

F5 Changing between the absolute and relative coordinate-system : Press **F5** to switch between coordinate-systems. The origin within the absolute coordinate-system is the upper left corner of the design window. It is not advised to begin your project from the absolute zero point. At the beginning of a new project, the software offers a middle area of 30.000, 30.000 cm (or 1000',1000') as the site to start your scene. You will be able to create your scene in an area extending approximately 300 meters (or 1000') in both directions.

You can easily return to the absolute origin point by using the scroll bars.

F6 Redraw the screen**2.1.2.2 Key combinations****Key combinations****File menu:**

| | | |
|--------------------|---------|----------------|
| Ctrl+F3 | Open | Open a project |
| Ctrl+F2 | Save | Save a project |
| Shift+Ctrl+ | Save as | |

F2

| | | |
|---------------|--------|---|
| Ctrl+I | Import | |
| Ctrl+P | Print | Print the contents of the active window |
| Alt+F4 | Exit | Close the program |

Edit:

| | |
|-----------------------|----------------------|
| Alt+BkSp | Undo |
| Shift+Alt+BkSp | Redo |
| Ctrl+X | Cut |
| Ctrl+C | Copy to clipboard |
| Ctrl+V | Paste from clipboard |
| Ctrl+Del, Del | Delete |
| Ctrl+A | Select all |
| Shift+S | Invert selection |
| Ctrl+S | Deselect |

| | |
|------------------------------|---|
| Shift | Press and hold in select mode: Insert the next element into the selecting list |
| Space | Select next, elements are one above the other |
| Shift+Ctrl+C | Turning Copying on/off for transformations |
| Shift+Ctrl+M | Mirroring selected elements |
| Shift+Ctrl+R | Rotating selected elements |
| Shift+Ctrl+S | Serializing selected elements |
| Ctrl+drawing a window | Select elements if one of its points is inside the window |
| Ctrl+Alt | Exit to the mouse tool tip dialog, activate the Cursor dialog and modify the parameters of the selected element quickly and easily. |

View menu:

| | |
|---------------------------|--------------------------|
| Ctrl+F | Foils... |
| Shift+F | Level foils |
| Ctrl+G | Grid on/off |
| Ctrl+W,E,L,D,Z,+,- | Zoom options |
| Shift+Ctrl+E | Zoom to selected objects |
| F6 | Redraw |

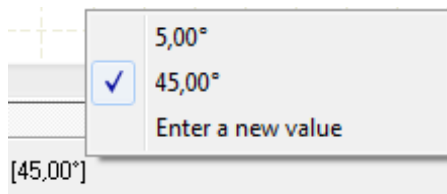
Options menu:

| | |
|---------------|---------------------------|
| Ctrl+O | Orthogonal editing on/off |
|---------------|---------------------------|


Other keys:

The key combinations for all functions that can be accomplished with shortcuts are listed next to the function names in the various menus.

| | |
|-----------------|---|
| +/- | Rotate symbol, pillar, roof, roof-structure, stair, terrain |
| F3 | Move by unit |
| Shift+F3 | Change the <i>Great/small rotation unit</i> |





| | |
|----------------------|---|
| Shift+Ctrl+F3 | Moving the cursor with the keyboard arrows and Change the mm/cm unit |
| 1. Ctrl+Alt | Exit to the mouse tool tip dialog, activate the Cursor dialog and modify the parameters of the selected element quickly and easily. |
| Space | When drawing a wall, pressing Space modifies its thickness relative to the midline. |
| | Pressing Space also toggles between superimposed elements to assist in selecting them. |
| Shift + Space | Transpose the layers on the two sides of a wall using this key combination. |
| Shift | Hold down when drawing a wall or other element in order to change your orientation by 90° |
| Ctrl | Hold down when drawing a wall or other element in order to change your orientation by 45° |
| Shift+Ctrl | Hold down when drawing a wall or other element in order to change your orientation by defined (x°) angle in <i>Ortho</i> dialog |

| | |
|----------------|---|
| E/e | Modify the selected end point of the element (wall, line, etc.) with direction keeping |
| Shift+E | Modify the selected end point of the element (wall, line, etc.) with direction keeping, perpendicular to the element |
| Shift+X | Hold down, Modify the selected end point of the element (wall, line, etc.) with X direction (0°) |
| Shift+Y | Hold down, Modify the selected end point of the element (wall, line, etc.) with Y direction (90°) |
| L/l | Define the length of the selected wall |
| R/r | rotate a selected symbol with an defined angle |
| S/s | Snap On/off |
| P/p | Fix (On/Off) the points of the selected polygon |
| Q/q | Hold in select mode: Switch off the snap to the large objects () |
| W/w | Roll down the left side icons functions, Quick access to the list of user profiles |

2.1.2.3 Rotating elements

Rotatable elements (symbols, roofs, stairs, terrains, columns) can be rotated using the +/- keys.

The default value for a single rotation step is 45 degrees - this can be changed to 5 degrees by pressing **Shift+F3**. By pressing **Shift+F3** again you will return to the original value. The rotation unit values can be modified in the **Options/Rotation** dialog box or by clicking on the field .

The icons   can be used in the same way as the +/- keys

2.1.2.4 Data entry

When introducing new elements you will need to enter data specifying the element's characteristics. The entered values are to be understood in the [unit of measurement](#) specified in the relevant option.

| | | | | |
|---------------------------------------|---------------------------------------|--------------------------------------|--------------------------------------|--------|
| dx: <input type="text" value="0"/> | dy: <input type="text" value="0"/> | a: <input type="text" value="0.00"/> | d: <input type="text" value="0"/> | [''] |
| dx: <input type="text" value="0.00"/> | dy: <input type="text" value="0.00"/> | a: <input type="text" value="0.00"/> | d: <input type="text" value="0.00"/> | [cm] |

You can specify or modify the position (or size) of an element you are editing by pressing **X**, **Y**, **a**, or **d** and entering the desired values in the fields.

After pressing one of these button the software switches into data entry mode and in the fields **dx**, **dy**, **a**, **d** and you can enter values for a shift of **X** and/or **Y**, for an angle of **a**, or a length of **d**.

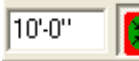
Do not move the mouse during data entry, as this overwrites the entered data.

The entered values can refer to:


- a corresponding movement of the drawing pen,
- a data needed for an element that is being edited, such as the second point of a wall-section,
- a shifting value of one or more selected elements.

The entered values will be applied relative to the reference point shown by the small red crosshairs.

The data in **dx**, **dy** and **a**, **d** are interrelated, thus entering two values and pressing **Tab** or **Shift+Tab** results in the software calculating the other parameters. By

pressing **Tab** you can also enter the field **level height**  or  , where you can overwrite the previously specified level height value.

2.1.2.5 Data entry in dialog boxes

The parameters of different elements can be specified in the menu **Options/Default Values**, or by using the icon , or by opening the dialog box of the given element by double-clicking on it (or by selecting **Properties...** in the **Right Click Menu**).

The dialog box may contain several dialogues. You can switch between these by clicking on the name of the tabs at the top of the dialog box.

Entering data to a certain field can be done by first clicking on it. When standing over a certain field the mouse arrow will appear as a cursor (a vertical line), showing that you can enter data here.

In the field you can delete or highlight (by double-clicking) the previous data and then go on to enter the new ones. The new data will become valid by selecting an other field, by pressing the left button of your mouse or by pressing enter.

Pressing **Enter** will close the dialog box, except in so-called graphic dialogues such as those for openings and symbols, where entering data can only be validated by pressing **Enter**.

Hitting **Enter** will close the dialog box, except in so-called graphic dialogues, where entering data can only be validated by hitting **Enter**. Such are the dialogues of openings and symbols.



In certain fields (next to the entered numbers) a downward looking arrow shows there is a list of previously entered values. Clicking on the arrow will roll down the list, and the desired value can be selected by Left-Click.

Dialog boxes contain fields which are not for entering quantitative values. In these cases you can choose the desired option from a list.

The **Right Click Menu** can be used here also as well.

The dialog box can be closed down by hitting **OK** or **Enter**.

Hitting **Esc** or **Cancel** will close down the dialog box without saving the newly entered values, retaining the previous ones.

You can skip between the fields of the dialog box by pressing **Tab** or **Shift+Tab**.

2.1.2.6 Rapid data entry and visualizing the coordinates of the cursor

| Cursor info | |
|--------------|---------|
| ▪ Attributes | |
| x | 800,00 |
| y | -300,00 |
| a | 339,44 |
| d | 854,40 |

1. Click on **View/Mouse** coordinates to visualize the coordinates of the cursor. Click on an element and its properties will appear in a semi-transparent dialog.
- 2.

| Wall Settings | |
|----------------|--------|
| ▪ Attributes | |
| Thickness | 38,00 |
| Height | 280,00 |
| Vertical shift | 0,00 |

| Cursor info | |
|--------------|------|
| ▪ Attributes | |
| x | 0,00 |
| y | 0,00 |
| a | 0,00 |
| d | 0,00 |

- 3.
4. Press **Ctrl and Alt** to activate this dialog and modify the parameters of the selected element quickly and easily.

- New items have been added to right-click menus. Select an element and click right to see them. These items make editing even faster. Most of them have to do with drawing and redrawing walls. Some of the more important new features are:

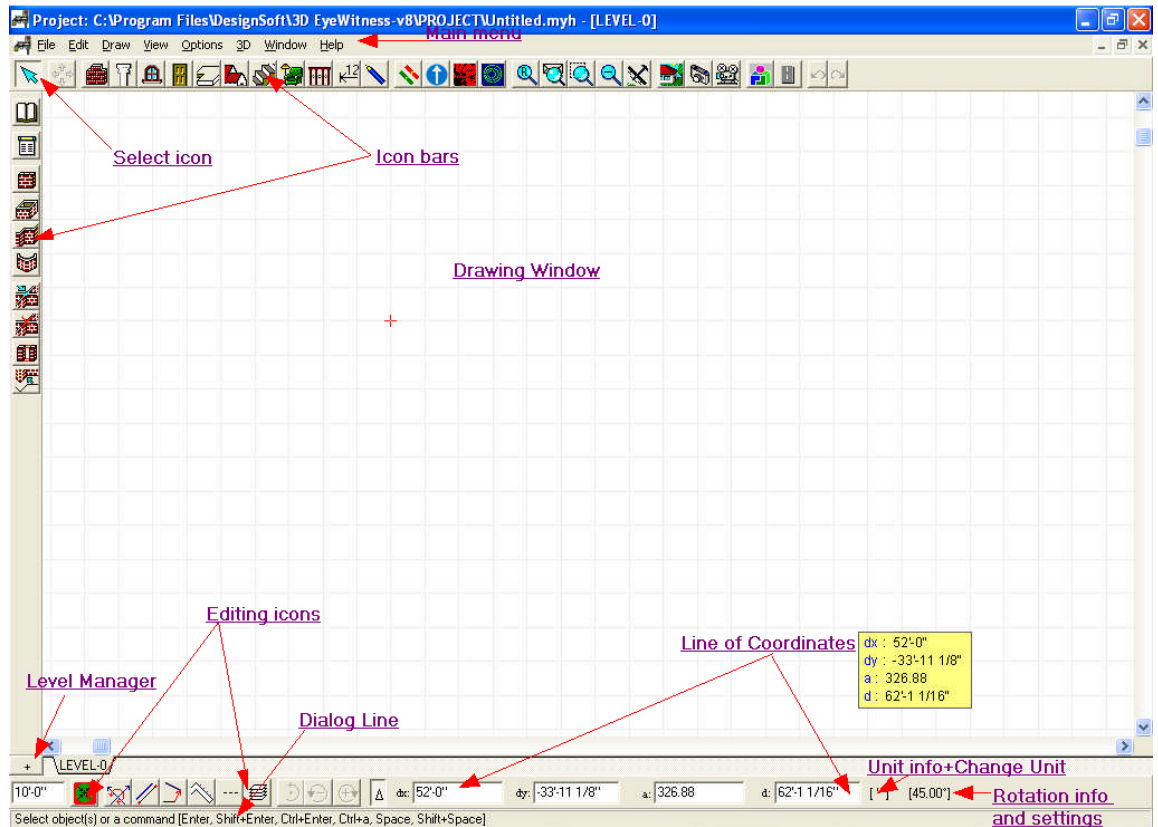
Cloning: It is possible to “clone” elements, that is create a new one with the properties of the previously selected element. The steps are the following:

1. select the element, which you want to “clone” (copy)
2. right-click and select Cloning in the menu
3. create the new element with the identical properties.

2.2 Division of the screen

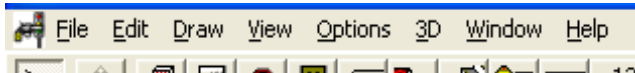
The software's opening screen consists of the following parts:

1. **Menu bar**
2. **Drawing window**
3. **Icon bars**
4. **Level manager**
5. **Line of coordinates**
6. **Dialog line**
7. **Editing icons**



2.2.1 Menu bar

The menu bar (main menu) contains eight options:



File Edit Draw View Options 3D Window Help

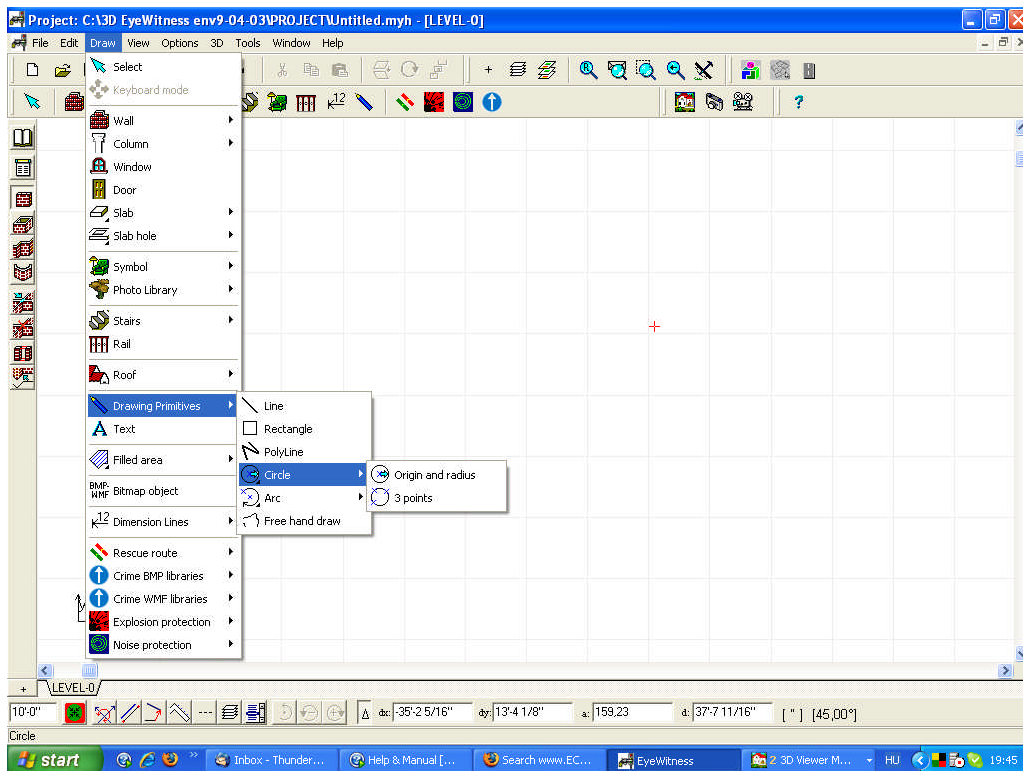
Clicking on any of these reveals the drop-down menu associated with it. For example, clicking on **Draw** will make the list of building elements appear, which can then be inserted into a design.

Menus can be opened in multiple ways:

- By clicking on the menu's name with the left mouse button.


Menu commands followed by an arrow indicate submenus. You can navigate the menus and submenus by:

- Left-Clicking on the desired menu's (or submenu's) name

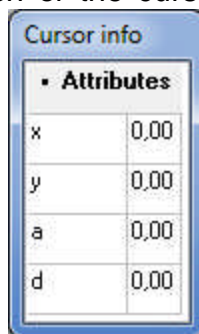



2.2.2 Drawing window


This window is where you document and edit the ground plan of the scene. The total size of the drawing window is approximately 10000 x 10000 meters or 33000' x 33000'. You can navigate in the window using the up/down arrows or by zooming.

The window size can be adjusted in the **View** menu, by the zooming options or directly using the zooming icons. The current size and location of the window can be seen or adjusted by the  **air view** icon, by the option **Air view** in the **View** menu, or by pressing **Ctrl Z**.

The coordinate position of the cursor may be seen in the coordinate line at the



bottom of the window or  in the optional cursor coordinate-box next to the cursor. The cursor coordinate-box can be switched on/off in the **View** menu using the option **Mouse tool tip**.

Using the function key **F5** or  icon you can change between the **Relative** and **Absolute** coordinate-systems.

Editing should always be done with the real dimensions of your project. When printing your project you can adjust to a suitable scale.

2.2.3 Icon bars

There are two levels of icons: those in the icon bar across the top of the screen below the menus and those running down the left side of the screen. You can use these icons to easily select different options and building elements.

The top-level icons include the following:

File:



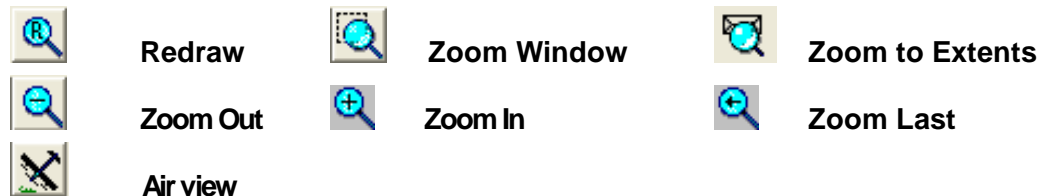
Draw: Building elements



Enhancements



2D views



3D view



3D modeling




When you click on one of these icons, a second tier of icons appears to the left of the window, relating specifically to the task at hand. You can use these icons to choose specific building elements. If you click on the Wall icon, for example, icons representing the possible wall types appear to the left: single wall, complex wall, curved wall etc.

Note: As you drag the mouse over the icon bar, clicking the right button enables you to adjust the visibility and movability of the given elements by the options *Locked* and

Visible. If the option (found within the Options menu) **Lock actual foil** is on, than these changes apply only to the given foil's elements. If the option is switched on, then the changes apply to the elements of all foils.

2.2.4 Level manager, window and level tab



At the bottom of the screen, below the left side icon bar you will find a button marked with a plus sign  - clicking on this opens the **Level Manager**. The **Level Manager** enables you to create and edit designs of more than one story (level). In the **Level Manager** you can perform specific operations on the building's levels: such as create new levels or delete an existing level.

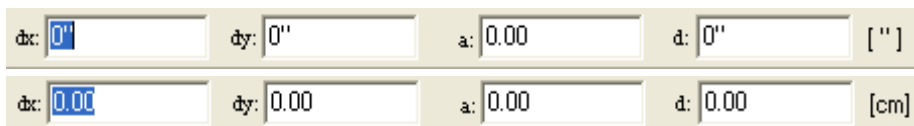
Here you can also adjust the characteristics of existing levels, such as level height, interior height, etc.

Next to the **Level Manager** button at the bottom of the drawing window you will find dedicated tabs for identifying and selecting between different levels, line draws or drawing sheets. Using these tabs you can easily switch views between two levels, for example.

Furthermore, a new window, and thus a new tab is also opened when you create 3D visualizations of your scene in a separate window, such as when creating a 3D hidden line image etc. of your project. Choosing between these options can also be done using the tabs. A short text identifying the windows can be read on the tabs.

Note: Besides using the tabs, you can also choose between drawing windows by opening the *Window* menu and choosing from the list, or by pressing **Page Down** or **Page Up**.

2.2.5 Coordinates line




A coordinate line can be found below the drawing window. Here the cursor's positions in terms of its **X** and **Y** coordinates is visible, or in case of building elements, the **X** and **Y** coordinates of its current position, **a** showing its orientation (angle), and **d**, showing its length. **X** indicates horizontal coordinate values, while **Y** indicates vertical values. The values of dX and dY increase when the mouse is moved to the right or upwards respectively. The orientation of the coordinate system is also shown by the small-scale coordinate system in the lower-left corner of the drawing window. The values displayed in the **d** field show the length of the current building element or the scale of displacement from the reference point.

The **a** field shows the element's angle of orientation or the extent of displacement from the reference point in degrees.



These values can also be associated with the cursor, by switching on the coordinate-box in the **View** menu, using the option **Mouse tool tip**.



Absolute / Relative: This button is for changing between absolute or relative coordinate values. This determines whether the values of the X,Y coordinates are calculated by taking the window's lower left corner as the origin or by using relative reference points. When in **Relative mode**, the current origin is shown by a small red cross. You can change between the two modes by the respective  icon, or by using the function key **F5**.


In **Relative mode**, you can select a new origin by using the function key **F4** or by left clicking with the mouse.

+ The reference point, or origin of the coordinate system, is automatically relocated when inserting certain elements with the mouse. The origin's location **+** on the screen is determined by the cursor's position. By pressing Enter, **F4** or clicking the left mouse button, the reference point is relocated to the cursor's position.

F4 serves a matching function as well. Pressing it will make the cursor jump to the closest grid-point or object point. In order to do this, you will need to position the cursor so that a small cross (in the case of snapping to grid points) or a pipe (snapping to object points) appears next to it.

It is possible to navigate in the drawing window by manually entering the desired values of displacement. This can be done by pressing the letter **X**, **Y**, **a** or **d** on the keyboard and entering the desired values to the respective fields.

The entered values can refer to a shifting of the cursor or of a building element that is being edited (such as the second point of a wall). The data in **dx**, **dY** and **a**, **d** are interrelated, thus entering two values and pressing **Tab** or **Shift+Tab** results in the program calculate the other parameters. By pressing **Tab** you can also enter the field **level height** where you can overwrite the previously specified value.

Note: When you design walls (or lines, sections, etc.) in orthogonal mode the entered X or Y values will determine the total length of the wall. The entered values will be applied relative to the reference point (the origin of the coordinate-system) shown by the small red crosshairs .

2.2.6 Dialog line

Select object(s) or a command [Enter, Shift+Enter, Ctrl+Enter, Ctrl+a, Space, Shift+Space]

On the left side at the bottom of the screen is the dialog line, which provides information and help while using the program.

2.3 Choosing what to draw



The easiest way to use the program with icons. Clicking one of the toolbar icons (of building elements) opens up a secondary set of buttons on the left hand side of the drawing area which relate specifically to the task at hand. Tasks can be selected here or from the menus. Each element has its own options icon, which opens up a dialog where you can change its parameters.

This dialog can also accessed in the **Options menu/Default values**.

2.4 Edit toolbar







Using these icons make accurate editing even faster. Pressing one of the buttons opens the related dialog box. If you place one or more icons on the drawing window they will remain in place the next time you start the program. This way the most frequently used functions may be displayed on the screen at all times.

2.4.1 Snap



This option enables you to match various elements to grid points or other elements. Using the snap icon you can turn on/off the arranged snapping adjustments. The snapping algorithm can be specified by the next two icons. The points selected by this option will become so-called hot-spots, indicated by the change in the drawing pen's appearance when you drag the mouse close to them.

You can adjust the snapping option to:

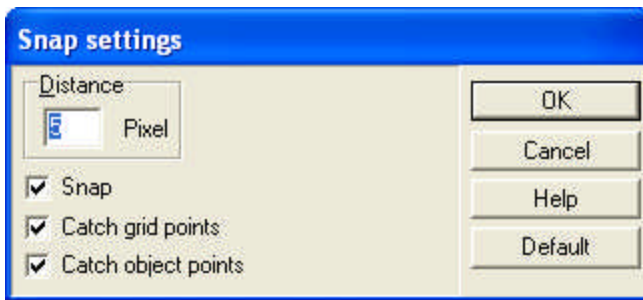
-  Snap ON/OFF
-  snap to grid points
-  snap to object points
-  snap to areas (slabs, columns, symbols, etc.)

When you drag the mouse over a so-called hot-spot, a small symbol appears next to the drawing pen/selection arrow. The symbol appears as one of the following::

- **+ (white and black)** means that you are close to a grid-line or point
- **a white pipe** means that you are moving along the edge of a certain element (e. g. a wall)
- **a black pipe** means that you are above a certain element's corner/angle-point (e. g. of a polygon or at the end of a wall)
- **a small rhombus** means that you are above the area of a polygon (e. g. a roof, symbols, column)


The symbol indicates in advance what kind of matching you are about to perform: a cross meaning matching to grid-points, pipe meaning matching to object points, etc.

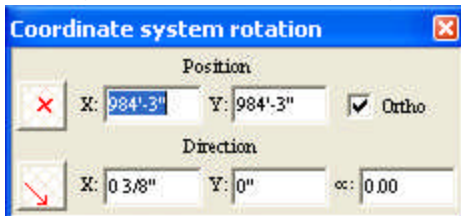
Matching adjustments can also be set in the dialog box opened by **Options/Snap**.





Distance: n pixel. The matching is carried out according to the values entered here. The entered values refer to pixels, taking into account screen resolution.

2.4.2 Rotating the coordinate-system

To open the coordinate system rotation box, click on this icon: . With this option you can enjoy the benefits of orthogonal editing in a rotated coordinate-system. After clicking the icon the following dialog box opens:



Here you can specify the extent of rotation.


- By choosing **Ortho** you can rotate the coordinate-system orthogonally,
- By clicking this icon  you can set the desired orientation of the coordinate-system (and the grid):
 - in the fields **X,Y** you can enter values which generate a line spanning from the origin of the coordinate system. The new coordinate system will have the orientation of this line as its default orientation,
 - in the field α (alpha) you can set the desired orientation in degrees,
 - by fixing 2 points in the drawing window: the coordinate system is rotated to the orientation determined by the two points.
-  Use this icon to specify the point around which the coordinate-system is to be rotated by clicking on any point in the drawing window. A new grid point is generated here and the grid originates from this point.

Note: In ORTHO mode you can draw along the four axes (or by 45 degrees increments) by pressing Shift or Ctrl while inserting an element.

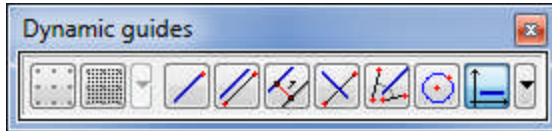
Note: After entering values into the relevant fields you need to press Enter to have the program calculate and apply the desired extent of rotation.

Note: If you want to rotate the system by fixing 2 points, first you need to switch off the matching to centimeters option, because this can modify the desired orientation when turned on. Note that by fixing the first point of the two, the software will readjust the grid.

2.4.3 Constraints

You can open the window containing the complete array of these icons with this button: .

The window looks like this:



Using these icons you can introduce different special constraints to the drawing and shifting of building elements.



Move by grid: The drawing pen or the selected building element will move by grid-points after choosing this option. The scaling of the grid can be adjusted in **Options/Change Grid....**



Move by unit: The drawing pen or the selected building element will move by centimeters (or inch). The default scale of movement is 0.1 millimeters (or 1/16") when the option is switched off. The same function can be activated by pressing **F3**.



Parallel constraint



Parallel constraint with distance



Perpendicular constraint



Bisector of the angle constraint



Circle constrains



Orthogonal constraint

Note: Orientations can be specified by selecting a wall. When the small white pipe appears next to the cursor you can select the wall, and thus use its axis as the desired orientation to be applied.

2.4.3.1 Parallel constraint



Click on this icon to insert elements parallel to a specified line. There are two ways to set the orientation of the line to be followed:

- ❖ select an elements (eg. a wall) which provides the line's orientation
- ❖ specify a line by selecting two points on the drawing area.

For example, to place a wall parallel to a given wall:

1. select the first point of the wall
2. click the parallel constraint icon
3. select the wall to which you wish the new wall to lie parallel to
4. place the wall's second point

2.4.3.2 Parallel constraint with distance




Clicking this icon will enable you to create new elements parallel with and a certain distance from a given element. After clicking the icon you can specify the parallel by selecting two points.

To do this:

1. **Specify the orientation:** set the orientation of the line to be followed by selecting two points. Note that this readjusts the orientation of the coordinate system, and the grid will also be rotated in the specified direction.
2. **Position the line of reference:** The specified line of reference can be shifted to any point you select with your mouse.
3. **Set the distance:** The desired distance will be a distance from the above-mentioned point on the Y axis, in the negative or positive direction.

For example, in the case of existing walls the simplest way to create a parallel wall to a certain distance is as follows:



1. Click the parallel constraint with distance icon ,
2. **Specify the orientation:** you can set the orientation to be followed by selecting the two end points of the existing walls. Note that the direction from the first to the second selected point will become the positive direction on the X axis of the rotated coordinate-system. This will also rotate the grid to the adjusted orientation, and the second point will emerge as the origin of the coordinate system, shown by small red X.
3. **Position the line of reference:** You can shift the reference line to another position by selecting a point within the drawing area. This makes the reference line shift to the new position. This can also be done by entering the respective X and Y values:
4. **Set the distance:** Press X or Y and enter the desired values determining the distance of the new element to be created from the reference line. After pressing enter (or left clicking on the desired point) the index line will jump to this point, enabling you to fix the first point on the axis.
5. When inserting the first point of the element (e.g. a wall) you can use so-called projections, from the reference line to the index line's axis by selecting one of the three projection options. This way when you select a reference point the program will not take it as the element (e.g. a wall) 's end point, but instead generates a point according to the adjusted projection option, by projecting it to the reference line.
6. Select the second point of the element (e.g. a wall). If necessary you can use the projection options here as well.

Note: After setting the distance the coordinate-system will be readjusted to its original orientation. This holds true not just in the case of drawing new wall sections, but also when creating sections of other kinds of building elements.

Note: Switch off the snap to unit option when specifying the orientation of the reference line, for it can slightly alter the requested orientation.

2.4.3.3 Perpendicular constraint




Clicking on this icon enable you to move perpendicularly to an element or a reference line. After clicking on it there are two ways of setting the orientation:

- ❖ selecting the wall to which you want to insert an element perpendicularly
- ❖ specify the orientation of the reference line by selecting two points.

For example, in the case of drawing a slab, you need the next section of the polygon to be perpendicular to a wall.

This can be done by:

1. Press the  icon.
2. Choose the wall to which you want to draw perpendicularly.
3. Choose the second point of the slab-section.

2.4.3.4 Bisector of the angle constraint



This icon enables you to move and draw along the bisector of two lines. There are two ways to set the line's orientation after clicking on the icon:

- ❖ Adjust the orientation of the two vectors by selecting the two respective points for each. This determines the orientation of the bisector along which you are now able to draw or insert new element.

An arrow indicates the direction of the two specified vectors -you will be able to draw both forwards and backwards along their bisector.

2.4.3.5 Circle constraint



Click on this icon

Draw a circle

Select the icon of the drawing element

Draw the element from any point of the circle

For example, to place a wall on a circle:

1. place the first point of the wall
2. click the circle constraint icon
3. draw a circle
4. place the wall's second point-- this second point can be on the circle.


For example, to place a wall on a circle:

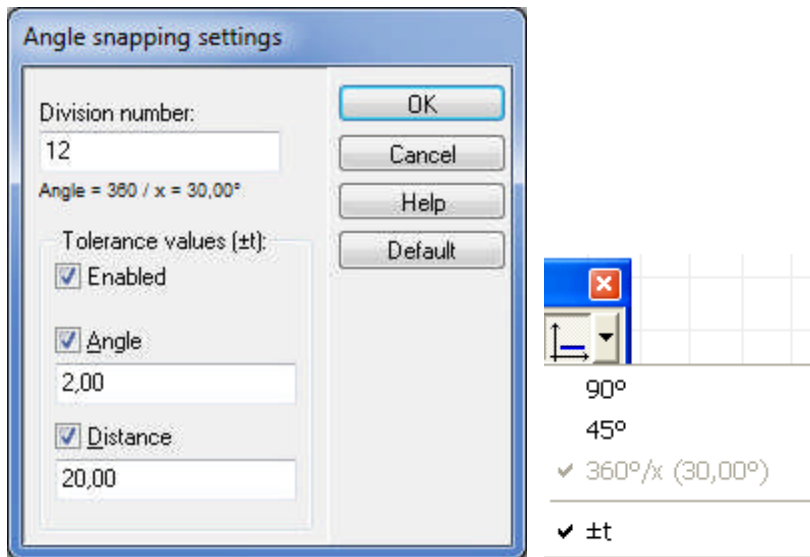
1. click the circle constraint icon
3. draw a circle
2. place the first point of the wall -- this first point can be on the circle.
4. place the wall's second point-- this second point can be on the circle.

2.4.3.6 Orthogonal constraint



Click on this icon to move and draw along the coordinate system's two axes. For example, in the case of walls you can easily and accurately create horizontal or vertical wall sections using this feature. This option can be switched on/off by clicking on the icon, by pressing Ctrl+O, or by clicking Ortho in the Options menu.

Pushing the  icon enables you to move parallel to the X/Y axis of the coordinate system or to a given line. The parameters of this option (*Angle snapping*) can be adjusted in the dialogue found at **Options/Angle snapping settings**.




Division number (x): $360/x=30$. With the help of this option you can put constraints on the orientation of new wall sections (and other linear structures). For example, set 12 as the division number and new walls (lines, etc.) will have an orientation as described on the dialog.

Tolerance values (±): Set this option on and the software will automatically adjust walls (and other structures) if you move them within a range of the predetermined angles. That is, if the division number is set to (eg.) 12 and this option to 2 degrees, then if you move a wall section to an orientation of 30 degrees, it will automatically switch to 30 degrees. Tolerance values can be defined in degrees or in absolute distance. Use the small pipe that appears next to the mouse to select which of the latter two options you want to use.

Note: To draw lines (wall sections etc.) with an orientation of 90 (180, 270) OR 45 (90, 135 etc.) degrees press down Shift 90 (180, 270) OR Ctrl 45 (90, 135 etc.). To draw lines with the orientation defined as described above, press down Shift AND Ctrl 30 (60, 90, 120.. etc.).

Note: Pressing Shift or Ctrl while inserting an element allows you to draw along the four axes (Shift) or by 45 degrees increments (Ctrl).

 Clicking this icon enables you to move and draw along the coordinate system's two axes. For example, in the case of walls you can easily and accurately create horizontal or vertical wall sections using this feature. This option can be switched on/off by clicking on the icon, by pressing **Ctrl+O**, or by clicking **Ortho** in the **Options** menu.

Note: By pressing Shift or Ctrl while inserting an element you can draw along the four axes (Shift) or by 45 degrees increments (Ctrl).

2.4.4 Projection modes



Projection options make designing your floor plan quicker and easier.

You can choose between 3 different projection modes:

1. Projection **perpendicularly** to the reference object
2. Projection to the reference object **parallel to the X axis**
3. Projection to the reference object **parallel to the Y axis**

The projection options can be used for inserting a building element in a specific **position** and **orientation**. This involves using a certain point of an existing element to determine the new element's coordinate points. The program derives these by projecting perpendicularly to the reference object's orientation or parallel to the X or Y axis.

Note: that the new element's orientation will be predetermined by the selected projection mode and by the parameters of the reference object.

2.4.5 Division modes



You can apply various division modes to the inserted building elements. By these modes you will be able to divide building elements (walls, slabs, polygons, curves, etc.) by a number of flexible division modes. The division marks can be attributed to elements that have subsections. Such are, for example, walls, railings, lines, circles, curves, columns, slabs and the borders of shaded or filled-in areas.

The marked points can be fixed and displayed by the command **Lock Division Points** which is found in the **right click menu** when you click on an object.

The division can be done in three ways:

Division: the entered value determines the number of subsections that a certain element's section will be divided to.

For example, if you enter 2, you will see a new matching point at the middle of the relevant section when you move the mouse over it. The appearing small marker can be used as a matching point, enabling you to match to division points easily.

By distance: the entered data determines the distance between division points to be marked on the given element.

By percent: the entered data determines where to put the division point expressed in a percentage of the total length of a given building element and calculated from one end of it. For example, if you enter 20, the program divides the section into two 20-80% sections and to insert a marker here.

Reverse: This button will reverse the order of division.

2.4.6 Line Style



In this dialog box you can adjust the line styles of the elements being created or edited. The width, color and style of the line can all be specified here. The element which is selected or subsequently drawn will be created accordingly.

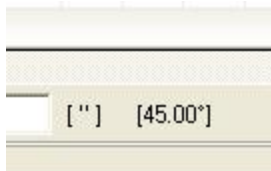
Note: A line style can apply to multiple parts of a building element, such as the contour and/or layer contour of a wall.


2.4.7 Creating arcs

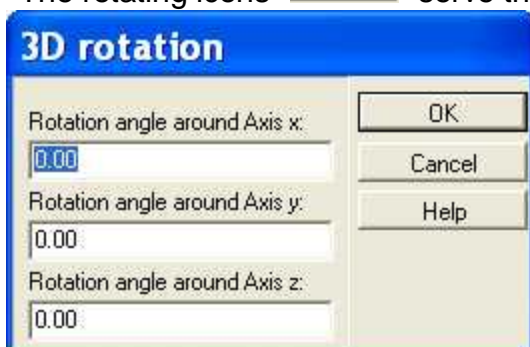
This icon can be used in designing polygons. With it you can insert arcs into the polygon. Arc-sections can be inserted into any polygonal structures, such as roofs, slabs and columns, etc.

2.4.8 Rotation

The easiest way to rotate elements (symbol, roof, roof-structures, stairs, columns) is with the **+** and **-** keys. The default rotation value is **45** degrees. This can be changed to **5** degrees with the function key **Shift+F3**. By pressing **Shift+F3** again, the feature is switched off. The rotation values (45/5) can be changed in **Options/Rotation settings** or by clicking on the [45.00] field.



The rotating icons  serve the same purposes, as the **+** and **-** keys.

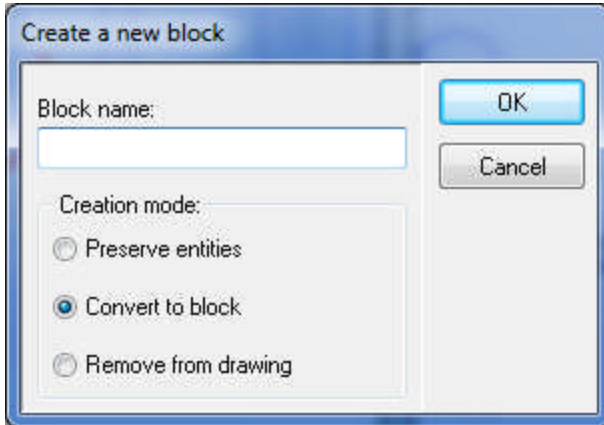


Symbols may also be rotated by providing the magnitude of rotation numerically. After selecting the symbol on the floor plan choose *3D rotation* from the right-click menu, and in the upcoming dialog box you may specify the values of rotation along all three axis.

2.4.9 Blocking

Create a block:

We can group graphic elements into blocks. In order to do this, we must select already existing graphic elements. The dialog of creating a new block will appear after clicking on **Managing blocks / Creating blocks** among the right mouse button commands.



Creation mode:

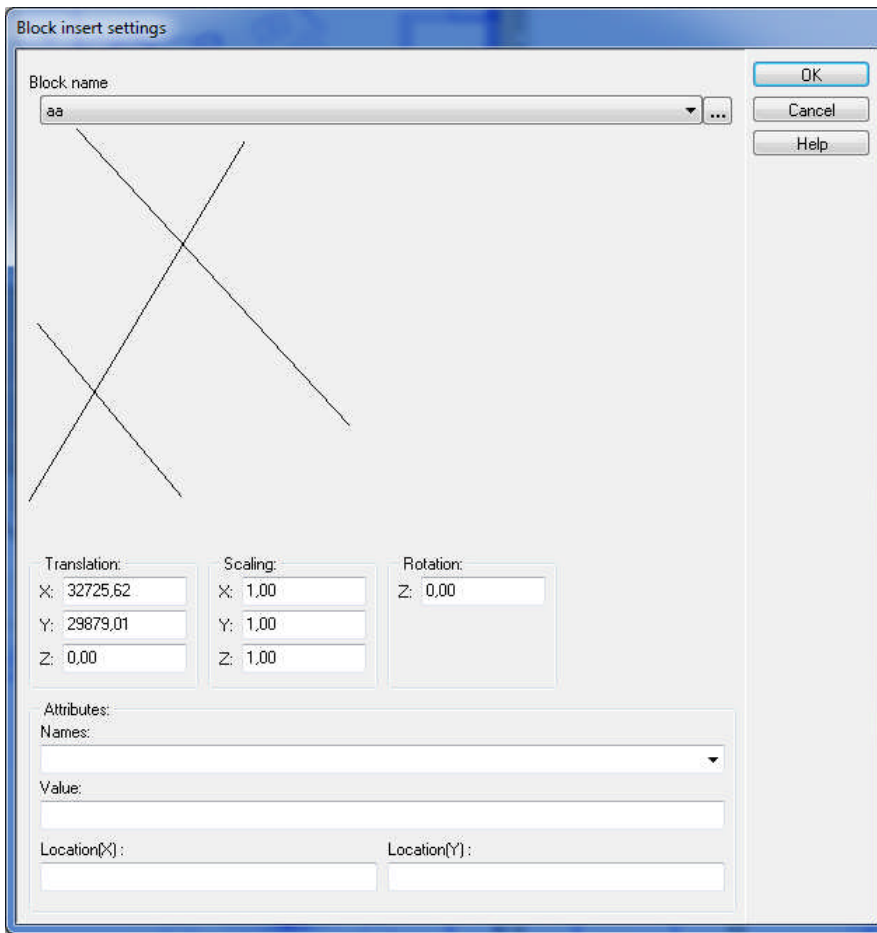
Preserve entities: the elements will be kept as individual entities. The block can be multiplied with the help of **Editing / Managing Blocks / Inserting a Block**.

Converting elements to blocks: These elements will be capable of being selected and managed as one block.


Removing elements: the elements will be removed and will be available only as blocks. The block can be multiplied with the help of **Editing / Managing Blocks / Inserting a Block**.

Insert a block:

The created blocks can be extended and rotated with the help of **Scaling** and **Rotation**. The blocks can be multiplied in their original form or with their new properties.



2.5 Foil settings (Ctrl+R)

This  icon opens the Foils dialog box:

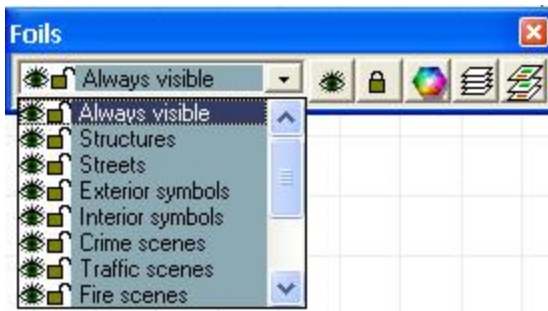


Building elements can be inserted on different foils. Foils and elements may be rendered visible or invisible, movable or fixed.

The program includes a number of foils. Each element can be inserted to a default or chosen foil, which can be adjusted in **Options/Foil assignments**. The adjustments can be canceled by clicking on **Lock current foil** in the **Options** menu.

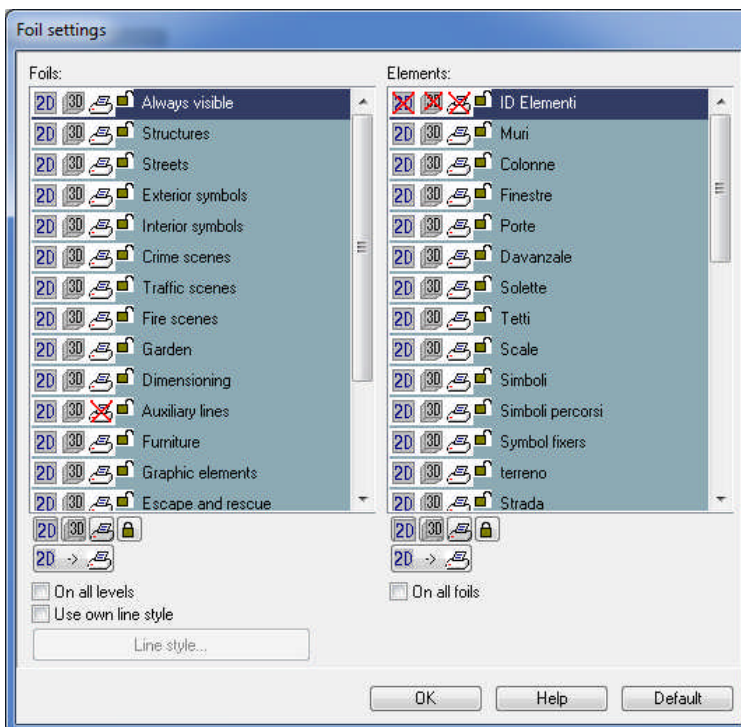
By switching off this option you can insert elements on a previously specified foil, and can change between foils by choosing pertinent building elements. For example, if the current foil isn't locked, a wall would be inserted on the **Structures** foil, terrains on the *Garden* foil and so on. You can see the changes between different foils in the Foils dialog box's display line when inserting different kinds of elements.

If you switch on the **Lock current foil** option you will see the name of the chosen foil displayed in the above field and all elements will be inserted onto this foil. It is more practical to use the automatic distribution foils to building elements, as it makes designing quicker both for 3D visualization and for printing your scene.



Changing between foils can be done by clicking on the scroll-down arrow and selecting the respective foil name. In the foil-list foils defined by the program are shown on a blue background - these are fixed and cannot be deleted or modified.

2.5.1 Foil dialog



Foils dialog

Foils appear on the left side of the dialog box element settings on the right. Clicking **Show all/Hide all** selects or deselects all foils, or all elements within a selected foil. Elements (such as structures, partition structures, etc) can be inserted optionally on the given foil. Structural elements (doors, windows, walls) on a foil can be individually turned on/off, or alternatively, all elements of the foil can be visualized by pressing **Show all**. Furthermore, the mobility of elements can also be adjusted by clicking on the small lock in the foil settings window. This command can be applied to an entire foil by pressing the button **Lock all/Unlock all**.


The visibility and mobility of foils or individual elements can be switched on/off by the small icons marked by an eye or a lock, respectively. The appearance of the lock and eye icon next to the name of the respective element shows its current visibility/mobility status. If the eye (or lock) is open the element is visible (or movable) and invisible (or unmovable) when closed.

2.5.2 Use foil colors

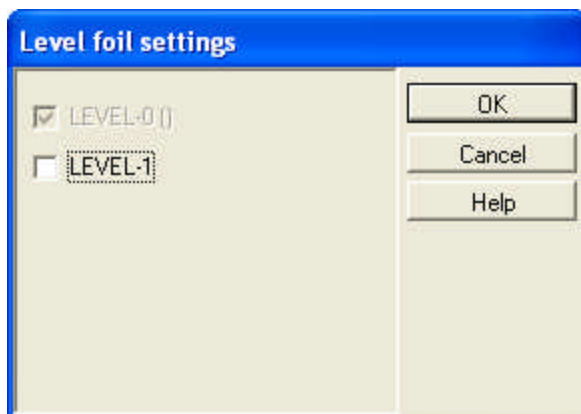


Colors and multiple line styles can be applied when editing foils. This feature allows you to easily distinguish the elements of different foils.



Foil color may be adjusted in the **Foil dialog** by switching on **Use own line style**, and clicking **Line style**. The adjusted colors and line styles of foils can be switched on by the icon **Use foil colors**. .

2.5.3 Level foil settings (Shift+R)




Level foil settings

Level foils ensure the visibility of levels not being edited momentarily. Using this feature you can render the other levels visible within the currently active window. Using foils within levels can be done with the help of the **Level foil settings** dialog, which can be started in **View/Level foil...**, by pressing **Shift+R** or with the icon. The currently active level is displayed in grey. A level can be visualized by clicking on its name.

2.6 Changing between absolute/relative coordinate-systems

The X, Y values of a selected are to be understood relative to the origin. The origin

- in the **absolute** coordinate system is the upper left corner of the drawing window, and so the x and y axes extend downward and to the right, respectively
- in the **relative** coordinate system is the lower left corner of the window. The x and y axes extend upwards and to the right.

You can change between the **Absolute** and **Relative** coordinate systems by **F5**, or with the  icon.

2.6.1 Using the coordinate-systems

When using the **relative coordinate system** the position of the 0,0 reference point varies during the editing process and can be relocated to any point within the window.

The position of the reference point is indicated by a small red cross.

Repositioning the reference point can be done using the function key **F4** or by moving the cursor to the new desired location and pressing the left button of the mouse.

For example, When setting the first point of a wall in relative mode, the **dX,dY,a,d** values show the **X,Y** distance from the first point, whereas **d** shows the length of the wall and **a** displays its orientation.

When using the **absolute coordinate-system** the dX, dY fields will always show the values from the same fixed origin.

2.7 Selecting and modifying elements



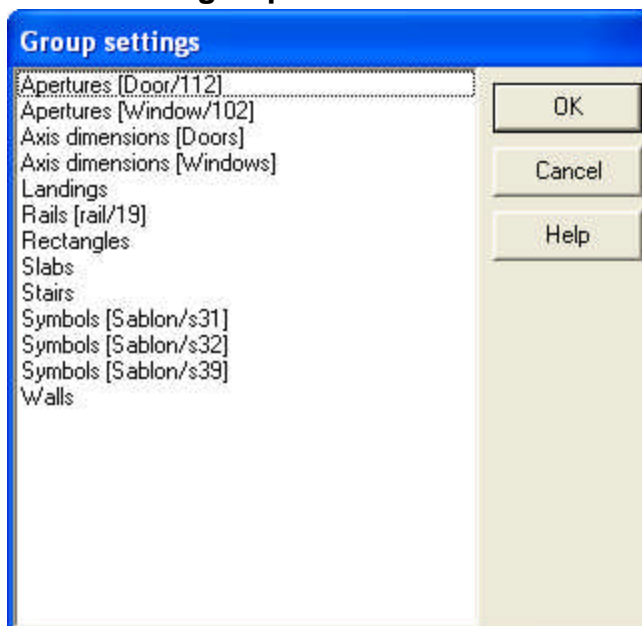
Clicking on this icon switches the program into selection mode. Elements can be selected individually or in groups.

Individual selection: move your mouse over an element and left click on it. Once selected, the element changes its color. You can select further elements by holding down **Shift** or **Ctrl**. Pressing space or **Ctrl+N** or **Right Button Menu/Selectable items..** also toggles between superimposed elements to assist in selecting them.

Double clicking on an selected element opens its dialog box, where you can enter or change values of its various parameters.

The dialog can also be accessed by right clicking on the selected element and selecting **Properties...** in the scroll-down menu.


Selection in groups:



It is possible to select all of the elements in a certain area. This can be done by drawing a box around the group of elements desired. The selected elements change

their color. Further elements can be added to these by holding down **Ctrl** or **Shift** and selecting new elements. Clicking on selected elements, deselects them. Double clicking or right clicking within the selected area opens up a menu where you can access a **Group Settings** dialog box containing the data of all selected elements by clicking on **Properties name** (Apertures (Door/112)...etc.). Here you can change the parameter values of all elements in the group at the same time.

The selected elements can also be **moved or shifted** at the same time by:



- dragging elements while holding down the left mouse button
- pressing **X** or **Y** and entering values for the desired displacement
- pressing the  icon and moving the elements with your keyboard arrows or with *Shift+keyboard arrows*.

Moving end-points or corner points: If you want to shift an end-point of an element or a corner point of a polygon, you should first click on it with your mouse. You can select the desired end or corner point when you see a **black pipe** next to the selection arrow. Once a small rectangle appear on the point selected, you can proceed to carry out the modifications described above.

If there are multiple elements superimposed at the desired point, you can select among them by pressing **Space** or **Ctrl+N**, or you can open up the list of **Selectable items** by right-clicking.

Adjusting the color of selected elements

2.7.1 Moving elements with the keyboard arrows

Moving elements with the keyboard arrows: You can modify the position of elements with the keyboard arrows. Select one or more elements with the mouse, then click on the  icon to enable the program to use cursor keyboard arrows for shifting elements. You navigate using the cursor arrows in centimeters or millimeters, or 1/16 inch or inch (press F3 to change between the two), whereas pressing **Shift** along with an arrow will enable you to jump in meters or feet. Clicking the  icon again will disable this feature.

2.8 Libraries

Crime scene elements are found in the various libraries, which themselves can be further expanded by creating new elements. The program comes with extensive and highly detailed libraries. Using this array of building elements will help you to make your scene more elaborate and photo-realistic. You can also find out about new ways of using the provided structures. Library elements can be found in the LIB folder.

Elements are sorted into the following groups:

- **Object (special crime, fire-protection, gun, traffic etc. symbols, furniture, railings, roofs, landscape, etc.) libraries:** Building elements are stored in the **3DMODELS.LIB** and ***.BT2, BT3, BTN** files. You can create your own libraries using the **3D MODELER**. New objects are stored in the **MODELER.LIB** and ***.BT2, BT3, BTN** files. In the case of 3D visualizations, the 3D symbol is automatically loaded and inserted in the appropriate position and orientation from **3DMODELS.LIB** and **MODELER.LIB** library.

- [Library of photographic symbols:](#)
- **BMP libraries:** It is possible to insert BMP files into your project, either from the BMP libraries or directly by importing a BMP file. These libraries are found among the symbol libraries. In the **BMP** electrical library you can find different electrical objects with modifiable parameters (height, width, etc).
- **Texture library:** contains BMP, JPG files, which can be used for surface textures. The file [TEXTURE.INI](#) is responsible for allocating the textures to elements.

Note: The more you use your own, self-created objects, images, etc. the more unique and personal your project becomes. By using your creativity you can greatly expand the boundaries of the software, making the end product much more attractive.

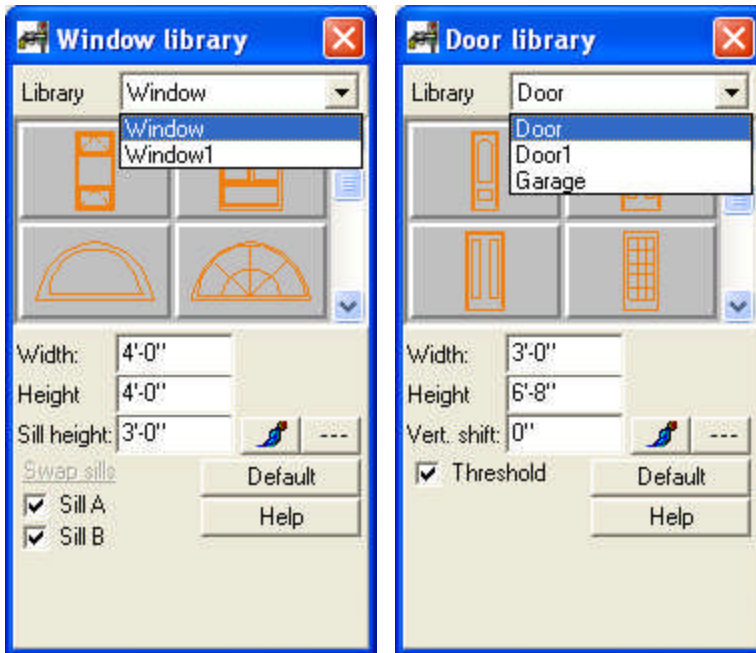
2.8.1 Symbol library

- **Symbol library:** Crime scene elements can be found in the 3DMODELS.LIB library file. Graphic symbols of the building elements are grouped into BT2, BT3 files. A list of symbol libraries can be found in the SYMLIBS.DAT file. **BT2** files contain the top views of symbols, whereas **BT3** files contain the three-dimensional axonometric views. You can create your own symbols and crime scene elements using the 3D MODELER, which also enables you to group them into libraries. These elements are then stored in the MODELER.LIB library file, while their entries are stored in SYMLIBS.DAT. New BT2, BT3 files are created as well.



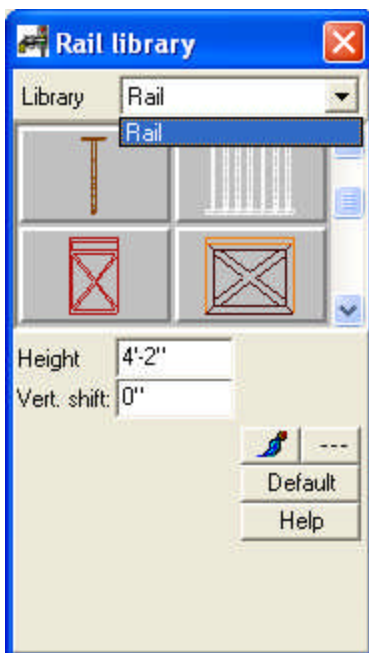
2.8.2 Library of doors and windows

- Libraries of windows and doors: these elements can be found in the **3DMODELS.LIB** library file. Graphic symbols are grouped into **BTN** files. The list of these **BTN** files can be found in the **WINLIBS.DAT** and **DOORLIBS.DAT** file. The **BTN** files contain the frontal view of apertures. 3D views of windows or doors are stored in the **3DMODELS.LIB**. You can create your own structures by the **3D MODELER**, which also enables you to group them into your own libraries. These new apertures are then stored in the **MODELER.LIB** library, their entries in **WINLIBS.DAT** and **DOORLIBS.DAT** and their new **BTN** files are created as well.



2.8.3 Library of rails

- Library of rails:** Elements from the library of rails can be found in the **3DMODELS.LIB** file. Graphic symbols are grouped into **BTN** files. The list of these **BTN** files can be found in the **RailLIBS.DAT** file. The **BTN** files contain the frontal view of apertures. 3D views of symbols are stored in the **3DMODELS.LIB** file. In the case of 3D visualizations, the 3D symbol is automatically loaded and inserted into the appropriate position and orientation from this library. You can create your own rail using the **3D MODELER**, which also enables you to group them into libraries. These new apertures are then stored in the **MODELER.LIB** library file, while their entries are stored in **RailLIBS.DAT**. Their new **BTN** files are created as well.



2.8.4 Library of roofs, dormers etc.

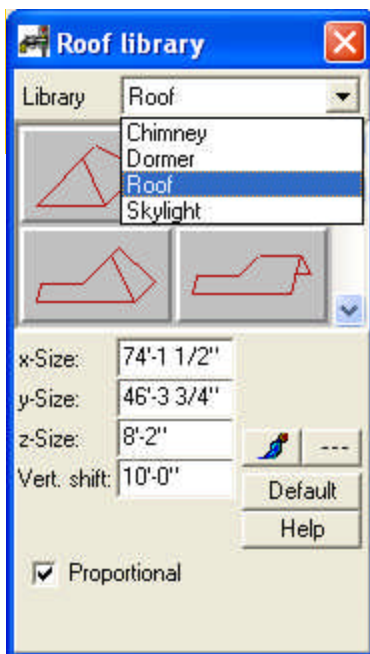
- Elements from the library of roofs, dormers, skylights, chimneys are stored in the **3DMODELS.LIB** file. Graphic symbols of the elements are grouped into **BT2, BT3** files. The list of these libraries can be found in the **RoofLibs.DAT** file. **BT2** files comprise the top view of symbols, whereas **BT3** files contain the three-dimensional axonometric view. 3D symbols are stored in the **3DMODELS.LIB** file. In the case of 3D visualizations, the 3D symbol is automatically loaded and inserted in the appropriate position and orientation from this library. You can create your own elements using the **3D MODELER**, which also enables you to group them into libraries. These elements are then stored in the **MODELER.LIB** library file, while their entries are stored in **RoofLibs.DAT**. Their new **BT2, BT3** files will be created as well.

Roof.bt2 bt3: library for roofs.

Chimney.bt2 bt3: Library for chimneys. You must use the file name **CHIMNEYN** when you add new elements.

Skylight.bt2 bt3: Skylights. You must use the filename **SKYN** for newly added elements!

Dormer.bt2 bt3: Dormers. You must use the filename **DORMERN** for newly added elements.



Note: The software automatically locates skylights, chimneys etc. on the roof. Pay attention to creating your own library names, because the names determine how the program positions new objects on the roof!

2.8.5 Photo library

The software includes a rich collection of photographic images. Images are grouped into the following libraries: **ANIMALS, BALCONIES, BUSHES, FLOWERS, PHOTOS, PHOTOS1, PEOPLE, TREES**. Libraries can be expanded by adding your own pictures. Libraries are coded in **PSL** files.

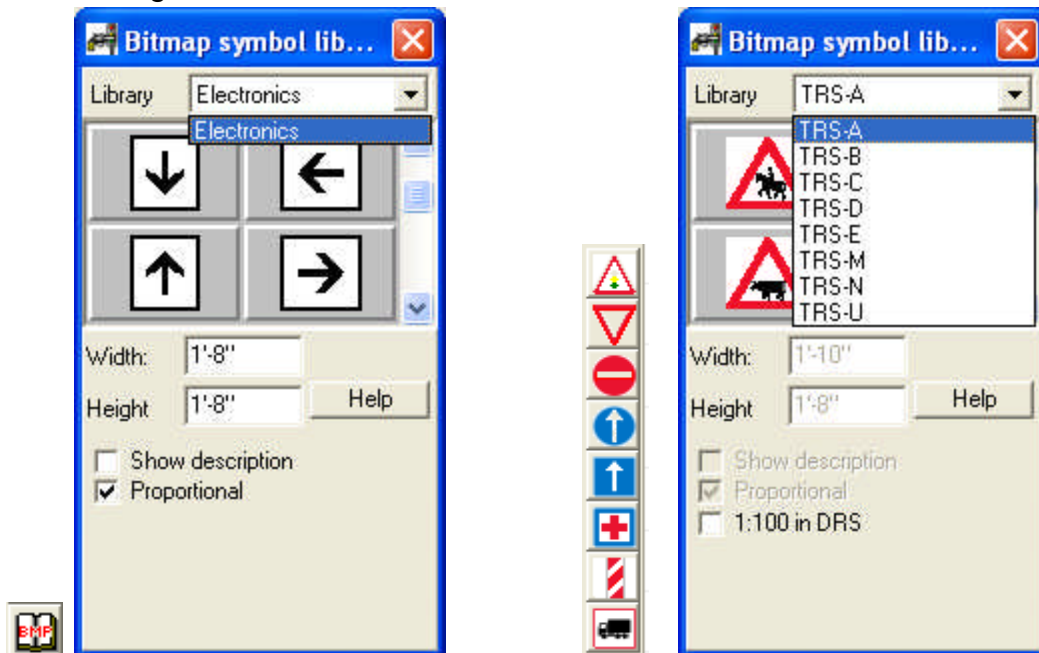
FotoLibs.dat: the list of libraries can be found here: **Photos, Photos1, Photos2, Photos3, Photos4, Photos5, Photos6, Photos7**



Expanding photo libraries

2.8.6 BMP libraries

BMP/WMF libraries: You can import BMP files directly or from libraries into your scene. These libraries can be found among libraries of different symbols. The **BMP** electrical library contains different electrical objects with modifiable parameters, such as their height, width, etc..

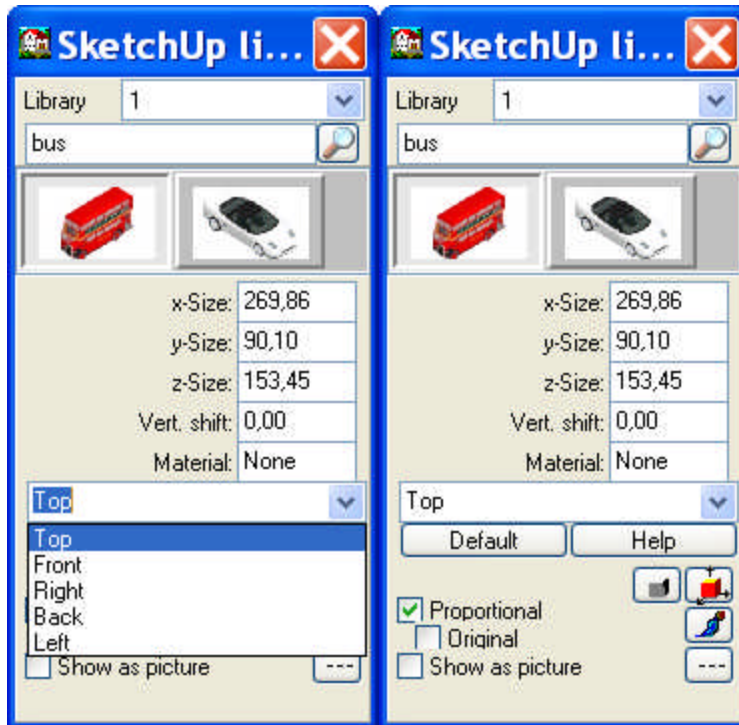


2.8.7 SKP libraries

The program enables the use of SketchUp files in the library. A multitude of pieces of furniture and other useful symbols are available on-line, modelled and stored in SKP format. These elements can be used with the help of the programme. Libraries can be formed from the SKP files

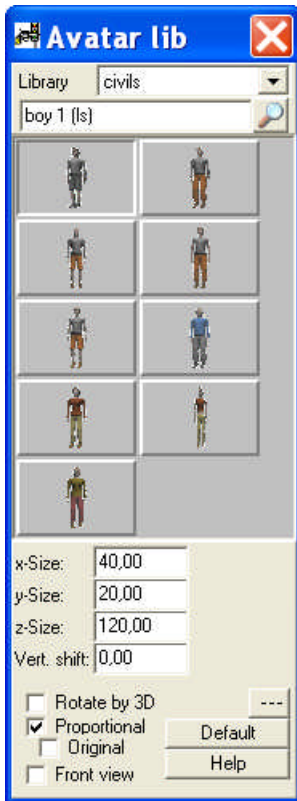
(**Settings/SketchUp symbol**). From the libraries created in this way the symbols are easy to place in the building. In the course of filing in the library the program produces the symbol's painted and linear view and axonometric images, from which the user is free to choose and use on the floor layout plan.

The SketchUp symbols can be placed on the floor layout plan after selection from the library. The presentation on the floor layout plan may be the linear view or the painted image generated in the course of filing in the library and its viewpoint can also be changed. It can be specified by setting Show as image and the Upper/Front/Right/Left/Rear view in the dialogue. It can be modified by View/ ... upon right-clicking on the symbol marked. The symbol's size and horizontal shifting can also be set.



2.8.8 AVATAR symbols





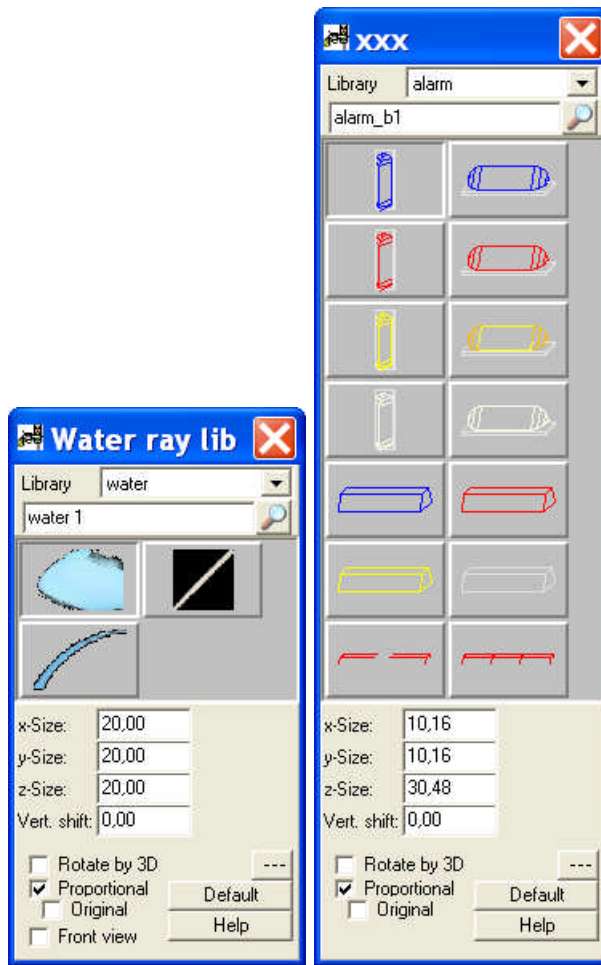
AVATAR people



AVATAR firefighters



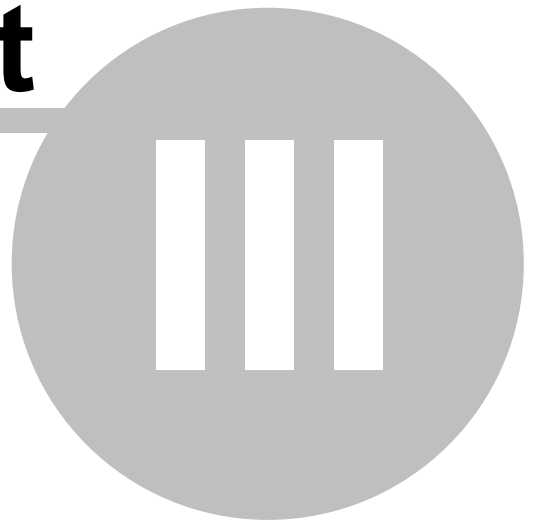
Explosion symbols: fire and smoke



Water symbols

Alarm symbols

Part




3 Options

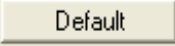
In the Options menu, you can set the features of the drawing window and specify the default values of building elements. Options are grouped into eight major groups.



1. **Default values** of elements can be set here.
2. Criteria of editing in the drawing window can be specified here (Ortho, Boundary extension, Snap).
3. Different parameters of foils can be set by these options.
4. Further parameters of editing: grid unit size, measurement units, selection color, texture settings, rotation settings can be specified here. You can insert new elements into the Bitmap symbol library.
5. Auto save and Automatic update, number of the Most recent files features can be set here.
6. Page settings: the parameters of the drawing sheet can be determined here.

3.1 Default values

You can specify initial values for all elements. New values can be entered into dialog boxes by opening **Options / Default values / the name of the element**, or by selecting the  icon, which appears to the left of the drawing window after pressing the icon pertaining to the given element.

Having specified the parameters, the entered values can be saved to the registry by pressing the  button and Save. By saving the adjusted values, they will serve as default settings of the relevant element. Furthermore, the entered values are

saved with the project file too. Consequently, the saved values will supersede the default adjustments when loading a project. Default values are stored in the REGISTRY.

Deleting registry entries
About dialogs


3.1.1 Deleting entries in registry

Each dialog box has a **Default** button by which newly entered values may be saved. Default settings are applied automatically whenever a new project is launched. Individual projects may have their own saved adjustments, which may differ from the default settings. These adjustments are saved within the registration entries of Windows, and can be deleted by **Regedit** in the following way.

1. Close 3D EyeWitness.
2. Launch **REGEDIT** by typing REGEDIT into the field brought up by pressing **Start/Run**.
3. Look for
 - + **My Computer**
 - + **HKEY_CURRENT_USER**
 - + **SOFTWARE**
 - + **DESIGNSOFT**
 - + **3D EyeWitness Vn.nn** where + stands for sub-levels in the tree-structure, which can be accessed by clicking on the + symbol.
4. Select **3D EyeWitness Vn.nn** and delete it by pressing the **Delete** button.

Pay attention when deleting registration entries **3D EyeWitness** must be closed down when performing this.


3.2 Generate walls from lines

Walls can be created from lines or curves. First draw one or more lines and arcs. The selected line(s) will serve as the centerline of the wall(s). Click on the  icon, or select Edit/Wall/Build from lines, and select the lines and arcs. Press **G** letter and the walls will be created. This is an alternate way to construct walls quickly. The selected lines may remain displayed on the screen, or can be deleted by pressing Del. These lines can also be automatically deleted by the program by switching off **Options/Generate walls from lines/Draw walls and keep lines**.

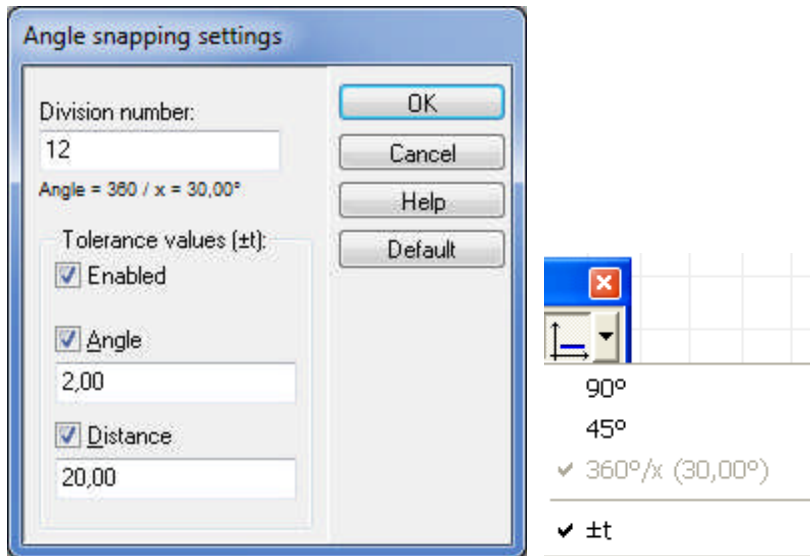
3.3 Orthogonal editing



Click on this icon to move and draw along the coordinate system's two axes. For example, in the case of walls you can easily and accurately create horizontal or vertical wall sections using this feature. This option can be switched on/off by clicking on the icon, by pressing Ctrl+O, or by clicking Ortho in the Options menu.

Pushing the  icon enables you to move parallel to the X/Y axis of the coordinate system or to a given line. The parameters of this option (*Angle snapping*)

can be adjusted in the dialogue found at **Options/Angle snapping settings**.




Division number (x): $360/x=30$. With the help of this option you can put constraints on the orientation of new wall sections (and other linear structures). For example, set 12 as the division number and new walls (lines, etc.) will have an orientation as described on the dialog.

Tolerance values (±): Set this option on and the software will automatically adjust walls (and other structures) if you move them within a range of the predetermined angles. That is, if the division number is set to (eg.) 12 and this option to 2 degrees, then if you move a wall section to an orientation of 30 degrees, it will automatically switch to 30 degrees. Tolerance values can be defined in degrees or in absolute distance. Use the small pipe that appears next to the mouse to select which of the latter two options you want to use.

Note: To draw lines (wall sections etc.) with an orientation of 90 (180, 270) OR 45 (90, 135 etc.) degrees press down Shift 90 (180, 270) OR Ctrl 45 (90, 135 etc.). To draw lines with the orientation defined as described above, press down Shift AND Ctrl 30 (60, 90, 120.. etc.).

Note: Pressing Shift or Ctrl while inserting an element allows you to draw along the four axes (Shift) or by 45 degrees increments (Ctrl).

 Clicking this icon enables you to move and draw along the coordinate system's two axes. For example, in the case of walls you can easily and accurately create horizontal or vertical wall sections using this feature. This option can be switched on/off by clicking on the icon, by pressing **Ctrl+O**, or by clicking **Ortho** in the **Options** menu.

Note: By pressing Shift or Ctrl while inserting an element you can draw along the four axes (Shift) or by 45 degrees increments (Ctrl).

3.4 Boundary extension

This option can be used when you paste an element into your project. If the boundary extension feature is on, the pasted elements will be copied and pasted together with the surrounding area of the grid (extending it to the boundaries of the outer grid units). This may help you to position the pasted area, for example when when pasting it to another level.

Note: When placing the copied elements, you can drag them by the center or by one of the corner points. You can change between these by pressing **Space**.

3.5 Snap



This option enables you to match various elements to grid points or other elements. Using the snap icon you can turn on/off the arranged snapping adjustments. The snapping algorithm can be specified by the next two icons. The points selected by this option will become so-called hot-spots, indicated by the change in the drawing pen's appearance when you drag the mouse close to them.

You can adjust the snapping option to:



Snap ON/OFF



snap to grid points



snap to object points



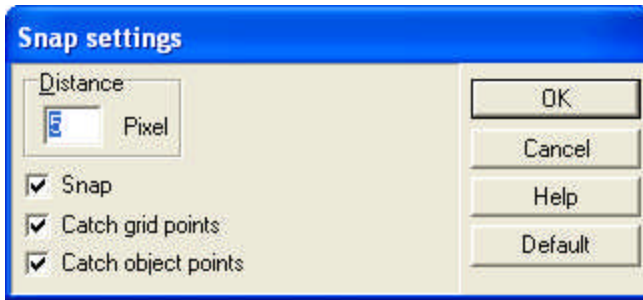
snap to areas (slabs, columns, symbols, etc.)

When you drag the mouse over a so-called hot-spot, a small symbol appears next to the drawing pen/selection arrow. The symbol appears as one of the following::

- **+ (white and black)** means that you are close to a grid-line or point
- **a white pipe** means that you are moving along the edge of a certain element (e. g. a wall)
- **a black pipe** means that you are above a certain element's corner/angle-point (e. g. of a polygon or at the end of a wall)
- **a small rhombus** means that you are above the area of a polygon (e. g. a roof, symbols, column)

The symbol indicates in advance what kind of matching you are about to perform: a cross meaning matching to grid-points, pipe meaning matching to object points, etc.

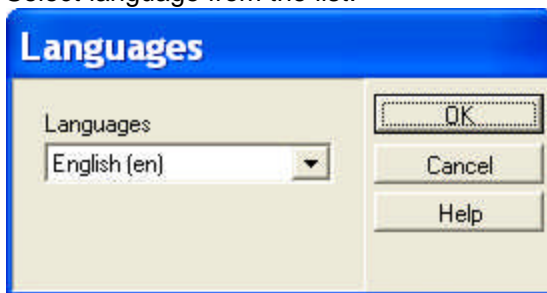
Matching adjustments can also be set in the dialog box opened by **Options/Snap**.



Distance: n pixel. The matching is carried out according to the values entered here. The entered values refer to pixels, taking into account screen resolution.

3.6 Select language

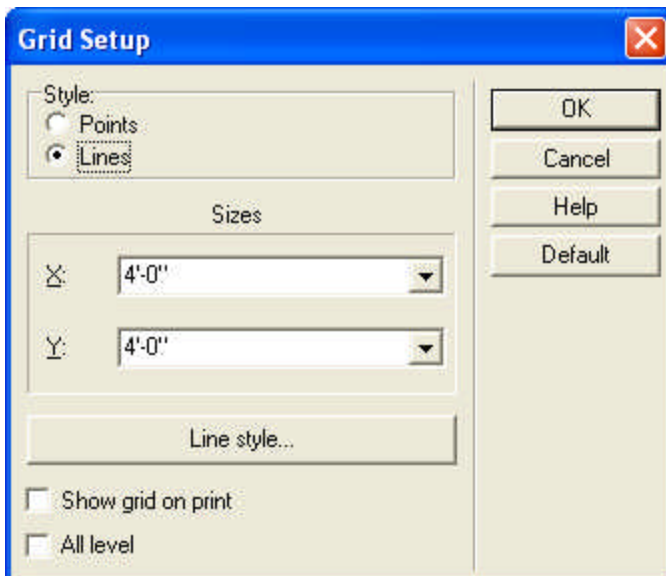
Select language from the list.



3.7 Grid size

The drawing sheet is based on a grid. The size of the grid may be adjusted in **Options/Change grid...**

The visibility of the grid can also be set here, as well as which levels the grid applies to.



- **Points:** only the corner points of the grid are displayed
- **Lines:** the grid is fully displayed
- **Sizes: X:** the horizontal size of grid units **Y:** vertical size of grid units
- **Line Style:** the grid line style
- **Show grid on print:** the grid will be displayed on printed materials

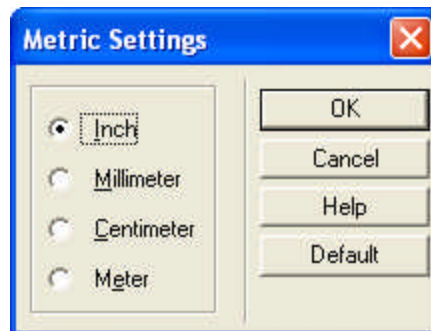
- **All levels:** switching on this option applies the specified grid on all levels of the project. Disabling the option allows you decide for each level whether to use the grid.

3.8 Unit of measurement

Changing the unit of measurement: Choose between four possible units of measurement:

Inch / Millimeter / Centimeter / Meter

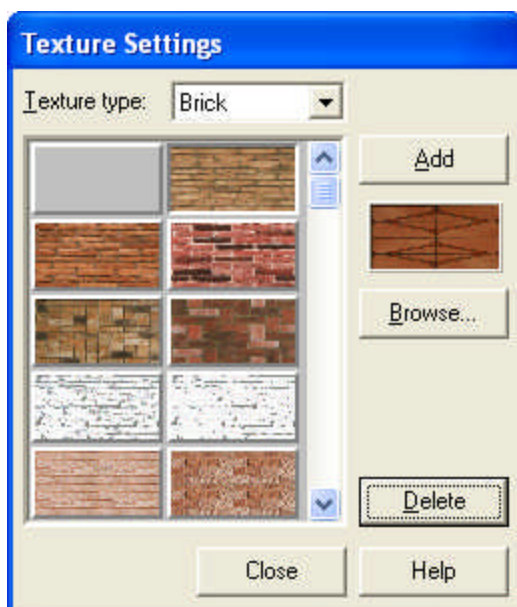
After specifying the unit of measurement, the motion of the cursor will be displayed accordingly on the coordinate line. In addition data entered into dialog boxes will also be in the specified units.



3.9 Color of selection

The color used to indicate selected elements, which is by default red, can be changed by clicking on **Change selection color**. The rubber lines will also appear in this color.

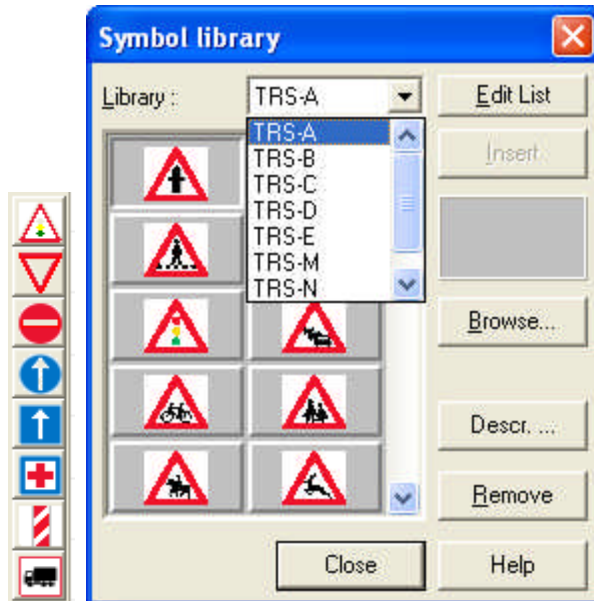
3.10 Texture settings



You can insert or delete a texture from the **TEXTURE** library.

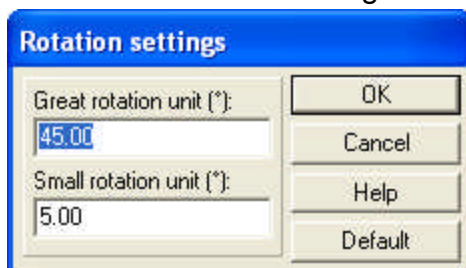
3.11 Bitmap symbol library

You can insert or delete new WMF file into the bitmap WMF libraries.



3.12 Rotation settings

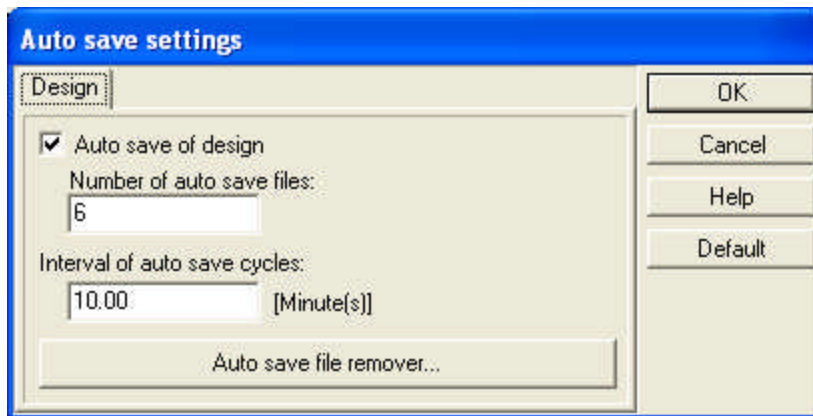
Elements may be rotated using two possible rotation steps, the values of which can be specified in the **Rotation Settings** dialog. This dialog can also be accessed by clicking on `[45.00°]`. You can change between the two steps by pressing **Shift+F3**.



3.13 Auto save

Using the auto save feature during editing guarantees the retrieval of the most recent state of your project. Using this feature is highly advised. The frequency of auto saving can be adjusted. These specifications determine how often the software saves **MYH** and **LDR** files of the project.

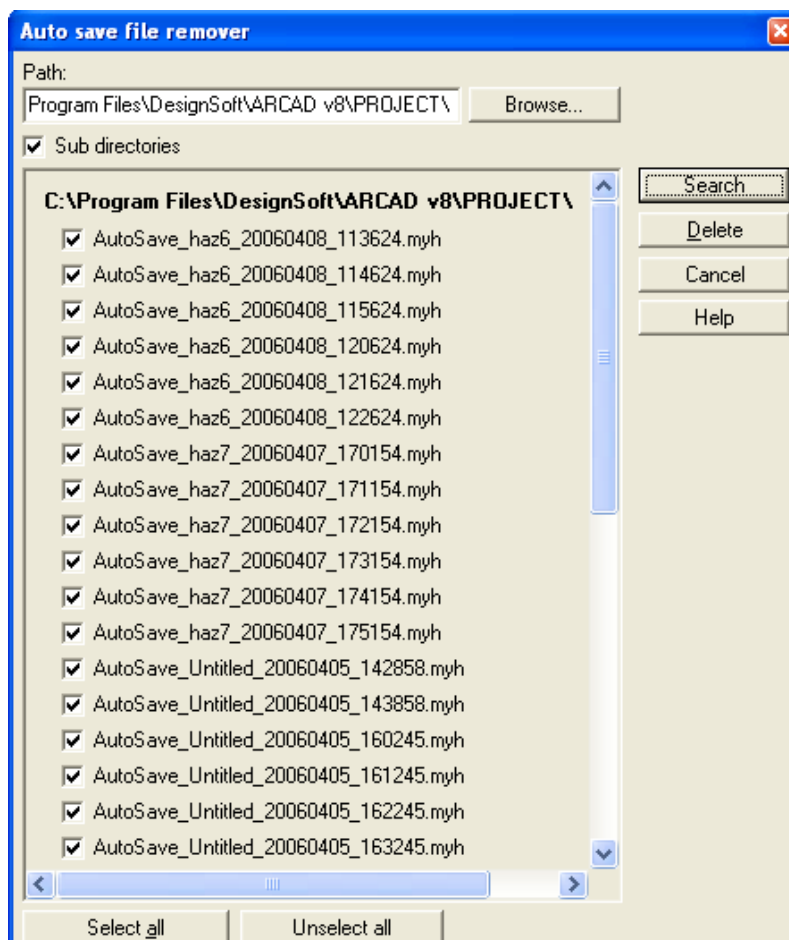
The file name follows the ensuing pattern: AutoSave_name_date_time.myh. That is to say, after AutoSave comes the name of the project, the date and time.



The "depth" of auto save can be set here too. This determines the number of saves necessary to overwrite previous auto save files.

Note: The frequency of auto saves should not be adjusted to a frequency of more than once every ten minutes, as this will impede the steady continuation of work.

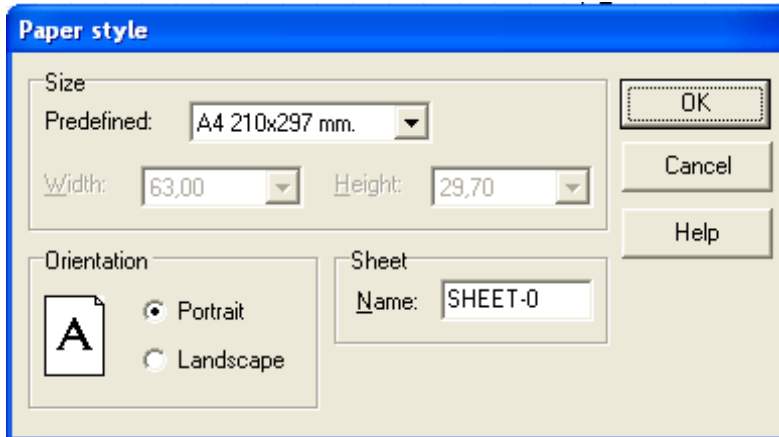
3.13.1 Removing auto save files



A vast number of files can be generated due to automatic saving during editing. It is practical to occasionally remove some of these transitional files from your hard disk. This can be done in the above dialog box. By pressing **Search**, the program assembles a list of **Autosave** files, from which you may select and delete by pressing **Delete**. You can remove all Autosave files by pressing **Select all** and then proceeding to delete them.

3.14 Page settings

Here you can specify the size, format and type of the page.



Choose **User defined** in the list of possible paper sizes, and you can set the page's size independantly. The orientation of the page can be set to **Portrait** or **Landscape**. A name can also be assigned to the drawing sheet. The software provides the default name of **SHEET-n**.

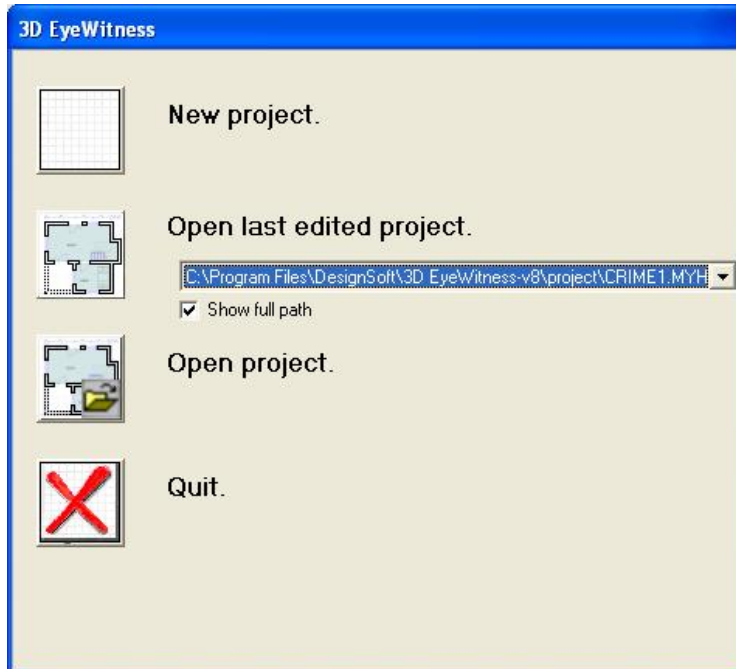
Part

IV

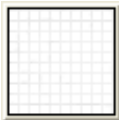


4 File handling

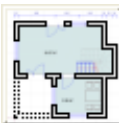
After starting the software, you are prompted to choose between launching a new project, continuing editing the most recently opened file, or opening a previous one. Choose from among these options from within the dialog box that appears when the program starts.



Projects/Drawings/Drawing sheets: In the upper field of the dialog box you can choose what type of file you are looking for: projects (**MYH**), drawings (**LDR**) or drawing sheets (**DRS**).



New project: Clicking on this button opens a new, empty drawing window where a new project can be started.



Opening last edited project: Next to the icon is a pull-down list of the projects edited during the last session can be found. The name of the last file edited appears in the line to the right of the icon. To view the other files, click on the arrow to reveal the rest of the drop-down list. To open a project, select it and click on the icon.



Open project: Projects that already have a previously adjusted extension can be accessed by this icon. By clicking on the icon, you can browse the libraries and find the desired file.



Quit.



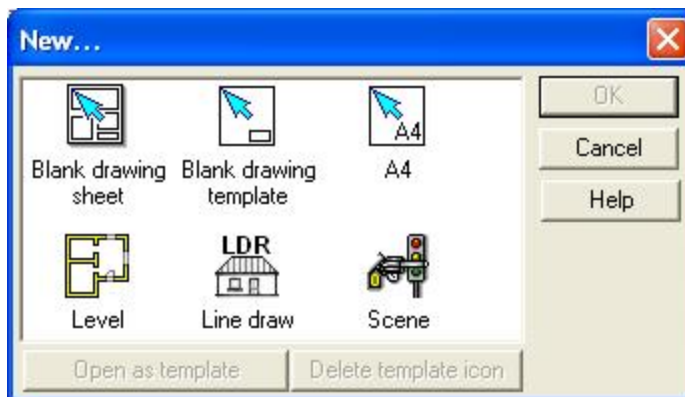
FILE menu

4.1 New project



New Project: Clicking on this icon opens an empty drawing window where a new scene can be started.

File menu/New: Pressing **New** in the file menu opens this dialog box.



By choosing one of the icons, you can start various kinds of projects.



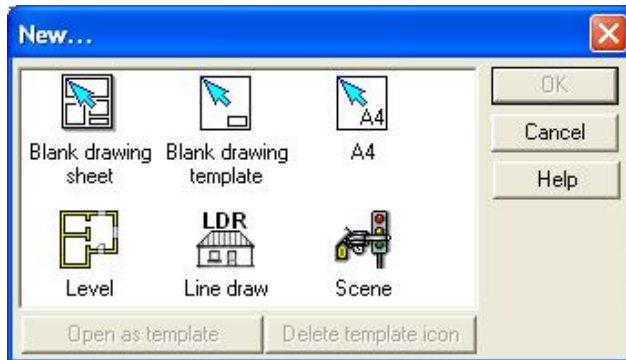
Scene **Scene:** will be prompted to provide a file name for the project. Then a new drawing window is opened, with one empty level to begin with. The default designation of this level is LEVEL-0, though this may be modified. The scene will be saved as an **MYH** file.



Level **Level:** Choosing this option brings up a dialog box where you may specify the default parameters of the new level. After setting the parameters the new drawing

window is opened. The whole project may be saved as a single **MYH** file. Each level is edited in a separate drawing window, which can only be closed down together by selecting **File/Close**.

Open a new drawing sheet by selecting **File/New**. From the dialog box that appears, select the type of project you'd like to begin.



Blank drawing sheet: Open a new drawing sheet where you may transfer several other plans/drawings.

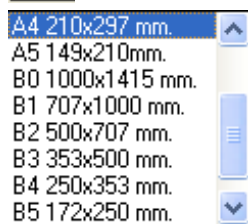


Blank drawing template: Create a customized drawing sheet.



A4: Open a pre-set A4 drawing sheet template.

The size of the drawing sheet may be specified either in the dialog that appears after selecting **Blank drawing sheet** or by selecting **Settings/ Sheet format**.



Predefined sizes: Select a sheet size from the scroll-down list or enter a custom size.

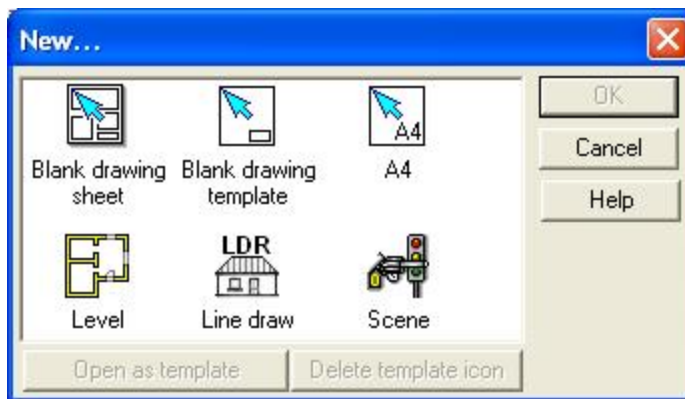
Width/Height: The dimensions of the sheet

Orientation: **Portrait / Landscape**

Name: The name of the drawing sheet, displayed on the window tab.

Note: The name of individual levels may be modified in the **New level** dialog box. You may create any number of levels required for your project.

4.2 New drawing sheet



Blank drawing sheet

Blank drawing sheet: Floorplans, 3D images or section of a project can all be placed a drawing sheet. After clicking on the icon, you will be prompted to Working with a drawing sheet differs designing in the standard editing window in that on the drawing sheet it is only possible to only 2D editing is possible, in addition to transferring 2D and 3D plans from editing windows. Raised levels and building elements transferred to the drawing sheet are not displayed graphically, only their access paths are noted. Drawing sheets are saved as **DRS** files.

Note: Changes made to the original plans are automatically applied to the transferred materials on the drawing sheet.



A4

Working on your (named A4) self-designed drawing sheets: Projects saved within the **TEMPLATE** session are displayed as icons in the **New** dialog box and can be opened and used as drawing sheets. Two dimensional floor plans, 3D visualizations or sectional views of your projects may all be introduced on the templated drawing sheets. On these drawing sheets (similarly to default drawing sheets) you can only design in two-dimensional graphical mode. Transferred projects are only represented by their access path (not visually), consequently the **DRS** files of the projects tend to be relatively small. Projects on drawing sheets are saved as **DRS** files.

Note: The name of the **TEMPLATE** or **DRAWING SHEET** may be modified in their opening dialog box, where you can also specify the size of the sheet.

4.3 New drawing template



Blank drawing template

Creating new templates for drawing sheets: You can create your own templates for drawing sheets to be used later on when you transfer projects onto drawing sheets. After clicking on the icon, you may specify the size of the template you will be working on. Templates are used for storing certain elements that you use on every new drawing sheet. For example, you may want to include a frame, logo, or corporate information in a default template. In addition to two-dimensional drawings in

the **LDR or DXF** formats), **BMP, JPG** or **WMF** images can also be transferred to this sheet. You may assign an icon to the template sheet when saving it, which can be seen later in the dialog box brought up by pressing **New**.

Icons can be named **A0, A1, A2, A3** or **A4** and are stored in the **PROJECT** library.



These are the five icons: **A0, A1, A2, A3, A4**. The name of the icons are displayed under them, while the file names are used for identifying the corresponding **TPL** files. Later on, if you want to modify one of the templates you can access it by the file name. It is expedient to use the same name for both the file and the icon. These files are saved in the **TPL** format.



A4

Working on your (named A4) self-designed drawing sheets: Projects saved within the **TEMPLATE** session are displayed as icons in the **New** dialog box and can be opened and used as drawing sheets. Two dimensional floorplans, 3D visualizations or sectional views of your projects may all be introduced on the templated drawing sheets. On these drawing sheets (similarly to default drawing sheets) you can only design in two-dimensional graphical mode. Transferred projects are only represented by their access path (not visually), consequently the **DRS** files of the projects tend to be relatively small. Projects on drawing sheets are saved as **DRS** files.

Note: The name of the **TEMPLATE** or **DRAWING SHEET** may be modified in their opening dialog box, where you can also specify the size of the sheet.

4.4 Opening a file

The program can open four kinds of files:

1. **MYH files:** Files containing the floor plan of multi-story buildings. Opening the file loads the entire project, each of its levels in a separate window. You may switch between them using the tabs at the bottom of the drawing window. The name or number of the selected level is also displayed in the uppermost line, next to the file name. Changing between levels can also be done by selecting the desired level in the **Window** menu.

2. **LDR files:** Files containing line diagrams of various structures. In the floor plan designing mode it is also possible to create line diagrams of 3D views. These drawings can then be saved into **LDR** files, and be accessed later.

3. **DRS files:** Files containing drawing sheets. Floor plans, line drawings, sectional views or 3D images of buildings may all be set up on drawing sheets. If the transferred plans are modified in their original files, their representations on the drawing sheet also change correspondingly. The drawings, 3D images, etc. themselves are not displayed on the drawing sheet, instead, only their access path is included. Consequently, loading a **DRS** file not only opens the drawing sheet itself, but also the related files (in separate windows). The various elements introduced on the drawing sheets are saved in separate files (for example, levels, sectional views and 3D drawings are all saved as separate files). Line diagrams are always saved as **LDR** files, whereas levels are saved as **MYH** files.

Note: Loading a **DRS** file not only opens the drawing sheet itself, but also the related files. **MYH** files may only be transferred from the same scene. Elements from multiple projects may be introduced by using **DXF** files (**File/Export** or **Import**).

4. TPL files: You can create your own templates, to be used later on when you transfer projects onto drawing sheets. Templates are used for storing certain elements that you use on every new drawing sheet. These templated drawing sheets are saved as **TPL** files. By opening them as **TPL** files, it is possible to modify the template itself. Floor plans cannot be transferred to these sheets, only 3D line diagrams, multi-color or sectional views (**LDR** or **BMP, JPG** files). It is possible to assign icons to templates, which can then be opened in the **New file** dialog box as drawing sheets.

4.5 Closing a window

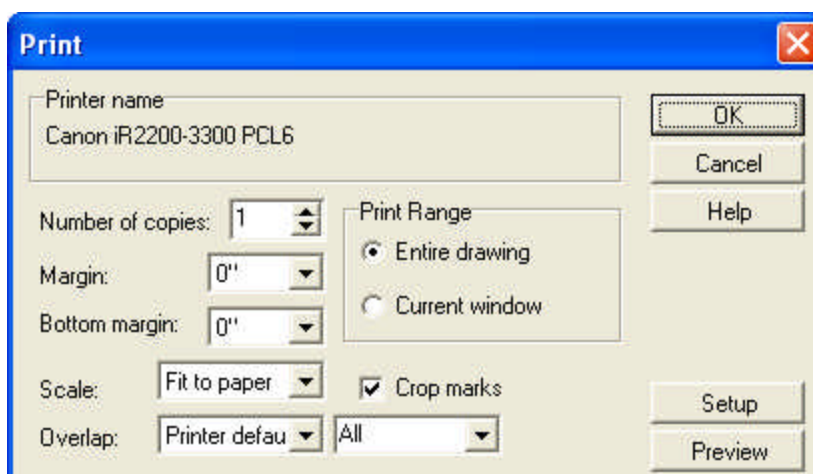
Active windows are closed down by pressing **Close**. If their contents were modified without saving, you will be prompted to save the changes. If you are editing several levels at the same time, all of them are saved into a single **MYH** file. Since windows of 3D (**LDR** files) are saved as separate files, the program prompts you in succession to save each file separately.

4.6 Saving files

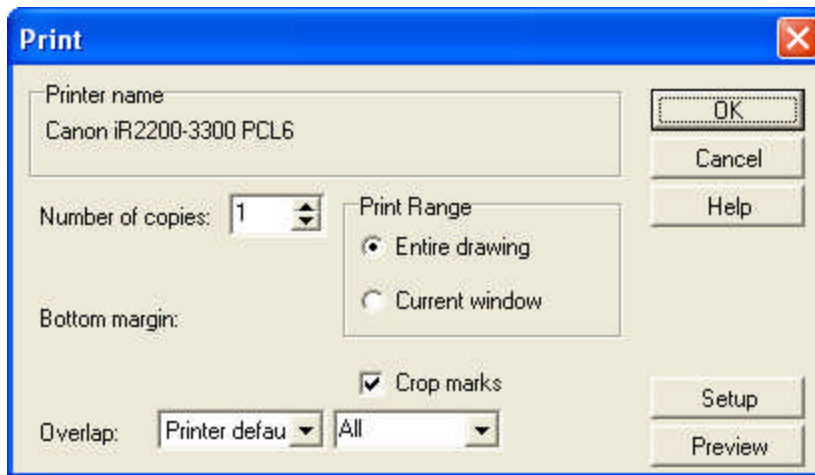
Save and Save as: Both commands brings up the same dialog box. Here, you can specify the filename and its destination. In the case of multi-storey buildings, all of their levels are saved into a single **MYH** file. The **MYH** file contains all information pertaining to the scene. The file extension is always determined by the active window. Saving **DRS** files also entails the saving of the files used on the drawing sheet.

4.7 Printing

To print the contents of the drawing window, press **Print** in the menu to open the relevant dialog box. There the selected printer's name appears. Parameters can be changed by pressing **Properties**. Pressing **Preview** enables you to see the layout of the printed page in advance.



Print from the floorplan



Print from the drawing sheet

Number of copies: You can define the number of copies.

Margin, Bottom margins: You can define the margins

Print range: - Entire drawing: The entire drawing is to be printed.

- **Current window:** Only the currently visible parts of the project is be printed.

Scale: to print from the 2D floorplan or LDR drawing you can define the scale.

Crop marks: Switching on this option enables you to see where the drawing sheet was trimmed. This is particularly of use when matching the sheets of multi-page projects.

Overlap: Printer default/New (All/Left/Right/Upper/Lower): Here the margins for multi-page printed projects can be set. The necessary minimum margin for multi-page projects can be seen on the Print preview page.

4.8 Printer setup


This command brings up the **Printer setup** dialog box. Here the printer's type, name, resolution, size of the paper to be used, etc, may be set.

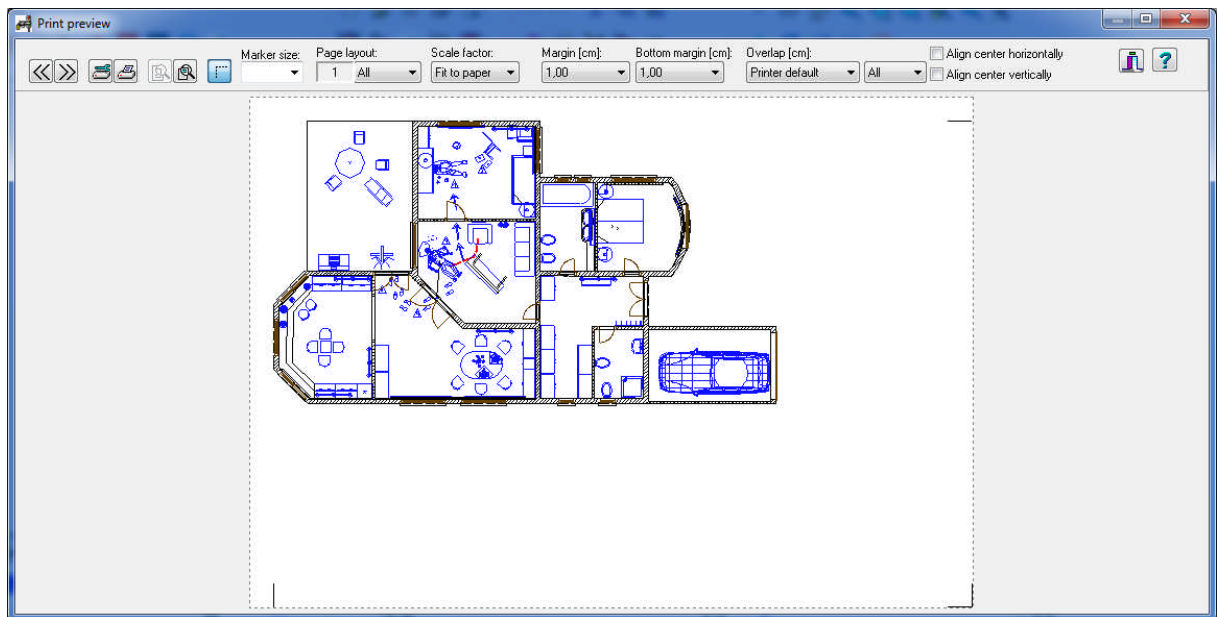
4.9 Print preview

Here you can look at the page before printing it.

4.10 Print to PDF

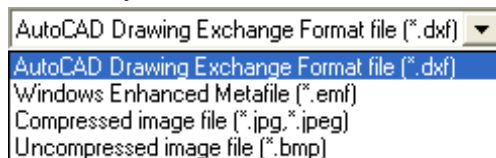
Printing into PDF file can be directly activated from the program. The generation of a PDF file can be started with the File menu Print into PDF file command. The scale is shown in the dialogue that appears at this point, along with paper size, margin and other data of the sheet. The data are saved in a printable PDF file.

In the view appearing at this point it is by clicking on Settings  that the user can set the size of the drawing sheet and the portrait or landscape orientation of the required print job.



4.11 Export

With this command you can export data about a project to other programs. Here, you can convert drawings into **DXF**, **EMF**(Windows Enhanced MetaFile), **JPG**, **BMP** files . You may also create files that can be read by, Word, Corell, etc.



4.12 Import

DXF files: You may import AutoCAD DXF files of line diagrams into your project, which can then be modified.

SOKIA SDR: you can import datas from SOKIA

G2D files from 3D EyeWitness DOS: It is possible to import files created in the DOS version of 3D EyeWitness.

4.13 Scene Inventory

Using this command you may assign scene inventory, specific building materials and costs to the structures you design. Further summaries and price calculations on the listed materials can be obtained in the **Excel -Materials inventory** program.

Note: The **Wall ID** takes on the value of -1, if it is switched on (this can be done in **Foils/Wall ID**) before using **Bill of Materials** or **Export of Materials**.

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5 File formats

The following types of file formats may be used in 3D EyeWitness:


- **projectname.MYH**: The scene --for multi-storey buildings.
- **drawing.LDR**: 3D line diagrams.
- **drawingsheet.DRS**: drawing sheets, that may contain 3D images of the scene.
- **template.TPL**: Template files
- **name.DXF**: Projects saved as **AutoCAD DXF** files by using **File/Export**
- **name.EMF**: Projects saved as Windows Enhanced MetaFiles. These files can be opened by other programs (Word, Corell).
- **name.XLS**: Scene inventory list
- **name.SKP**: Import Google SketchUp SKP files and use as symbols
- **multicolorpicture.BMP, *.JPG**: Visualizations of scenes or their interiors. Pictures can be saved from 3D mode or ray trace.
- **movie.AVI, GIF, MP4, FLV, SWF**: Movies can also be created from your projects. These are then saved as **AVI, GIF, MP4, FLV** or **SWF** files and can be accessed by **Windows Media Player** (among other video programs).
- **name.WRL, name.WRZ file**: Interactive 3D pictures of buildings that can be opened by programs that can handle **VRML** files. These pictures can then be freely rotated, magnified, etc.
- **name.DXF**: 3D images of buildings can also be saved as **3D DXF** files. **DXF** files do not contain surface patterns, with the exception of colors. 2-dimensional ground plans can also be saved as **DXF** files.
- **name.MOV**: Panoramic pictures and movies. With the  **RAYTRACE** modul (Switch on Panoramic picture) you can create images spanning over 360 degree. These can be saved as .mov files and accessed by **QuickTime**. Films of this file format are made by linking together panoramic images - these files can also be opened by Quicktime.
- **name.KMZ**: Export Google Earth KMZ files from 3D

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6 Dialogs: The Basics

Data about scene elements can be specified in various types of dialogs. Dialogs can be opened by the  icon, or by clicking on the name of a building element in **Options/Default values**. If an element has already been set up on the screen, its dialog can be opened by selecting and double-clicking the element or by right-clicking and pressing **Properties**.

Dialogs may be one- or multi-windowed depending on the element. In simple dialog boxes you can adjust all pertinent parameters in the dialog box itself. In multi-window dialog boxes, slots indicate the name of the different subdialogs. By selecting from these, you can change between subdialogs. Certain elements have parameters that can only be modified in the right click menu. The data in the dialog box is divided into the following subgroups:

- Geometry*
- Visualization*

6.1 Geometry

In this dialog you can define the values of parameters determining the shape of a scene element. Various types of parameters need to be specified for the various elements.

Typical parameters:

- **WIDTH:** The width of structures is applied in the adjusted unit of measurement. A set of pre-given values can be accessed by clicking on the small arrow adjacent to the field. New values may be introduced as well.
- **HEIGHT:** Used for defining the height of an element.
- **VERTICAL SHIFT:** Defines a vertical shift relative to the floor level.

6.2 Visualization

In this dialog you can assign colors and textures to building elements displayed in 3D; as well as line styles or hatchings to elements in 2D mode. These options can be found in every elements' dialog box.

6.2.1 Colors and textures


Colors and textures can be attributed to any 3-dimensional object. Different textures (or colors) may be assigned to each side of a given object. These textures can be seen on the 3-dimensional visualization of the object. Surface textures are stored as **JPG**, **JPEG** or **BMP** files. The list of accessible textures can be further expanded. Their files are stored in the LIB library. Textures are listed in the same order as in the **TEXTURE.INI** file. In the dialog box they are displayed at a low resolution (128*128). In 3D mode they are displayed at their maximal resolution, stored in the respective files. Different sets of textures can be assigned to distinct kinds of building elements (walls, roofs), but it is also possible to use textures normally used for other elements. Materials are grouped into functional categories (eg. tile, brick, plasterwork). This grouping can be seen in the **TEXTURE.INI** file, where the list of relevant files appears after the bracketed category names.

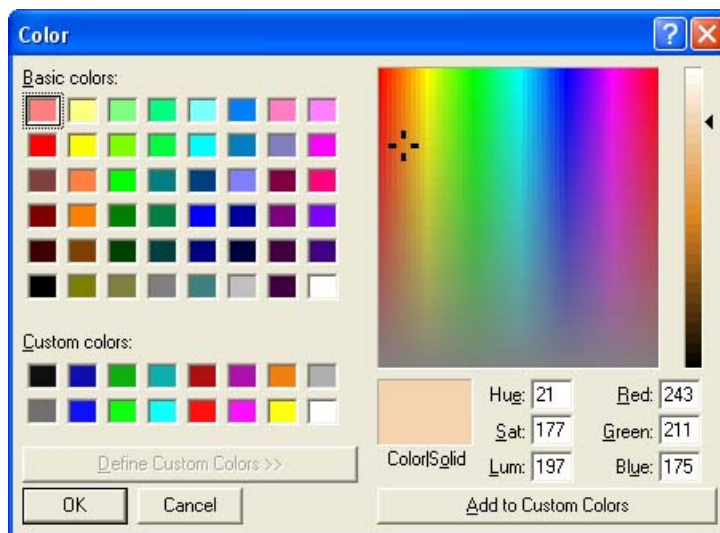
Category names cannot be modified, but can be complemented. Textures (and colors) can be adjusted to be transparent or reflective in **Properties**.


Note: A texture (or color) already assigned to one side of an object can then be transferred to other surfaces.

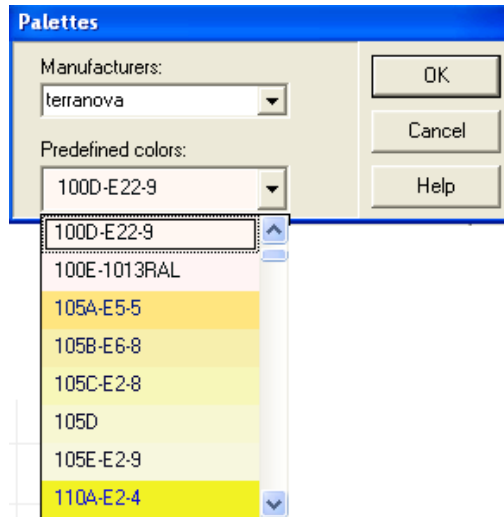
For this, you should first select the object, then right-click on it and press **Side operations/Swap textures** (or **Copy surfaces**).

6.2.1.1 Colors

Colors can be assigned to objects by pressing this button . Pressing the button opens the dialog box with the palette, where you can select from among the **RGB** colors. In the sixteen field at the bottom, you can fill in the most frequently used colors. First you must to select one of the provided colors, then press **Add to Custom Colors**. These adjustments do not have to be saved, as they are stored automatically.




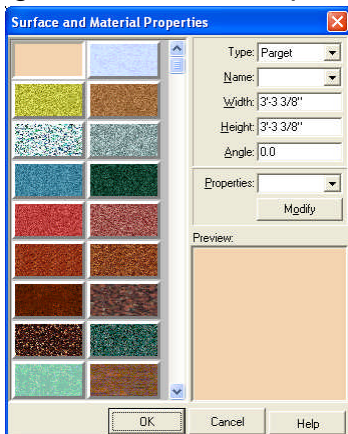
By right clicking on this button , you may open other palettes directly. In this way, you may access pre-set color palettes (such as DIRP-RAL, Hasit, Terranova). Palettes provided by the program have colors identified by their color-code.



Reflective properties and transparency can be adjusted in **Properties/Modify**.

6.2.1.2 Textures

Next to the  button, you will find various textures to choose from. To their right, are listed their parameters:

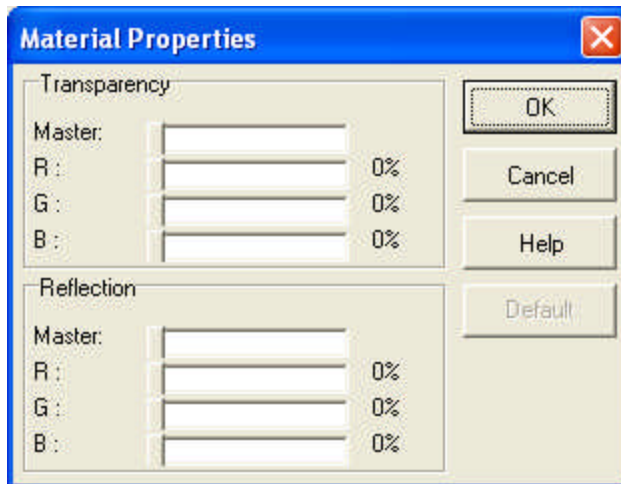


- **Type:** pressing the arrow opens the list of available materials. You can also navigate within the list by pressing the first letter of a desired material's name, speeding up the selection process.
- **Name:** This is the file name of the selected material. By pressing the arrow you can select others directly by their name.
- **Width, Height:** Here you can define the size of the texture as it will appear on the desired surface.
- **Orientation:** Here you can provide the orientation of the textural surface on the object's surface.
- **Properties:** Here you can choose between prearranged material types which have specified reflective and transparency properties.
- **Modify:** You may modify the reflective properties (or transparency) of the above materials. With the *Master* scrollbar all three scrollbars can be

shifted at the same time, whereas in the fields RGB /red, green, blue/ reflectivity/transparency can be changed for a single color dimension.

6.2.1.3 Transparency and reflectivity

You may modify the reflective properties or transparency of the above materials. With the *Master* scroll bar all three scrollbars can be shifted at the same time, whereas in the fields RGB /red, green, blue/ reflectivity/transparency can be changed for a single color dimension.

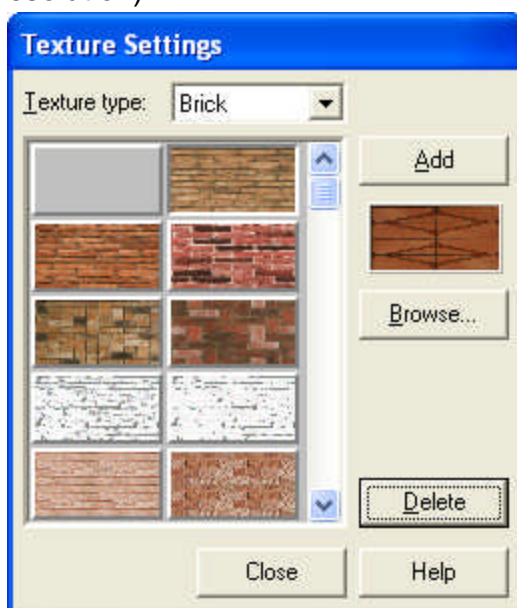


RGB (red, green, blue): Here, reflective properties (and transparency) can be adjusted separately for these colors.

Master: Properties can be changed for all three colors at the same time.

6.2.1.4 Creating new textures

BMP and **JPG** files consist of an optional number of pixels. For 3D visualizations it is expedient to use high-resolution images as textures. (In 2D editing this is not important as the textures displayed on their buttons are always converted to a lower resolution).



New textures can be created and saved into **TEXTURE.INI** in **Options/Texture settings**. In the file groups are indicated by their group name being enclosed in

brackets. The files of textures follow the group name, each in a separate line. These file lists can be changed, select the group to be changed and click **Browse** for selecting a new texture, or by pressing **Delete** you can remove existing textures from the list. The new texture is always introduced after the one that is currently selected.

Note: Renaming **TEXTURE.INI** is highly advised against, as it entails the transfer of all files (including photo symbols) from **LIB** to into every group, and everywhere the entire list will appear! This would make navigation extremely difficult, and might also result in the general slowdown of the program, if your computer has limited memory resources.

6.2.1.4.1 Structure of the TEXTURE.INI file

These are the group names in the file, next to them, you may find the description of the group, that appears within **3D EyeWitness** in the **Type** field of the **Texture settings** dialog box.

[BRICK]

tegl0001

.

[PARGET]

kekfal

.

[WALLPAPER]

.

[FLOORING]

.

[GLAZED-TILE]

.

[WAINSCOT]

.

[GRASS]

.

[PICTURES]

.

[STONE]

.

[PARQUET]

.

[ROOF-TILE]


.

[TEXTILE]

.

[WATER]

6.2.2 Line styles for 2D ground plans and sectional views

Line styles can be adjusted by pressing the  button, or **Contour** in the dialog boxes of various building elements. This includes defining the type, thickness and color of the lines. In dialog boxes line styles for ground plan editing and sectional views (**Sectional surface lines**), and line styles for structures visible in 3D view

(**Non-sectional surface lines**) can be separately adjusted. In line style dialog box itself, you can specify the style (eg. dashed), thickness and color of the lines.

Line styles dialog box:


- **STYLE:** Different line styles can be selected for drawing. You can choose between dashed and continuous line styles, that can be accessed by pressing the small arrow to the right of the field and selecting from the drop-down list. The parameters of dashed lines can be seen in the fields *Length/Space* under *Line style settings*. Further line styles can be created and added in **Options/Line Style Editor**.
- **THICKNESS:** The thickness of the drawing lines can also be changed. You can choose between lines of different thickness from the drop-down list be accessed by pressing the small arrow to the right of the field. Lines of new thickness values can be created and added in **Options/Line Style Editor**.
- **COLOR:** Colors can be also assigned to the drawing lines. The color currently selected is indicated by the button **Line color...**, and can be changed by clicking on it and selecting a new one from the upcoming palette.

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7 Dialogs

Data about scene elements can be specified in various types of dialogs. Dialogs can be opened by the  icon, or by clicking on the name of a building element in **Options/Default values**. If an element has already been set up on the screen, its dialog can be opened by selecting and double-clicking the element or by right-clicking and pressing **Properties**.

Dialogs may be one- or multi-windowed depending on the element. In simple dialog boxes you can adjust all pertinent parameters in the dialog box itself. In multi-window dialog boxes, slots indicate the name of the different subdialogs. By selecting from these, you can change between subdialogs. Certain elements have parameters that can only be modified in the right click menu. The data in the dialog box is divided into the following subgroups:

- Geometry*
- Visualization*

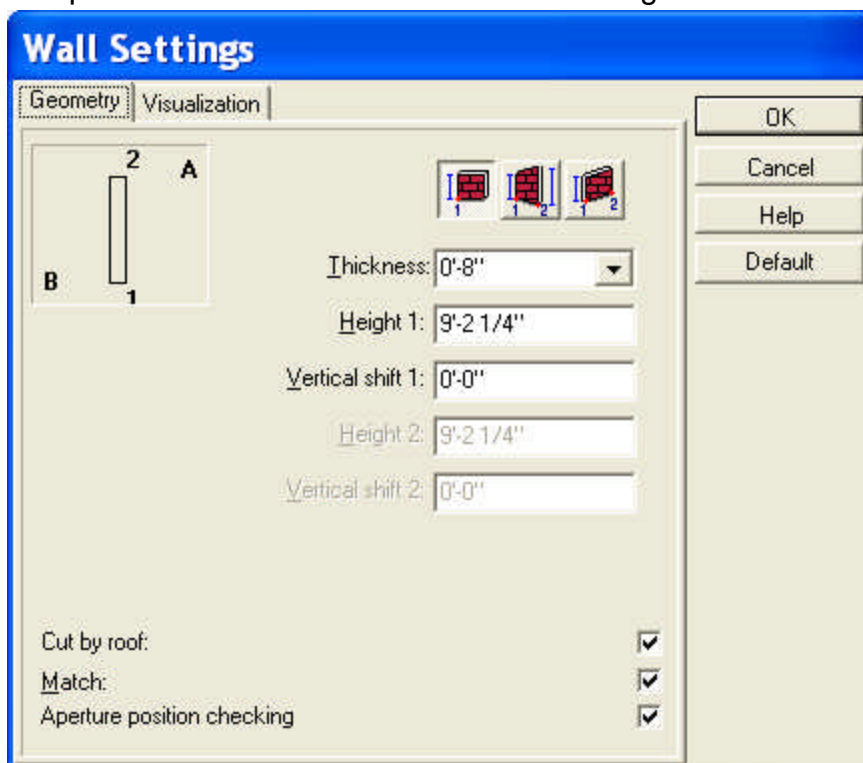
7.1 Walls

The dialog box of walls is a multi-select window as well. Different kind of parameters are grouped into the sub-dialogs. These sub-dialogs are: geometry, visualization.

Geometry
Visualization


7.1.1 Geometry

The parameters in the **GEOMETRY** sub-dialogs are:



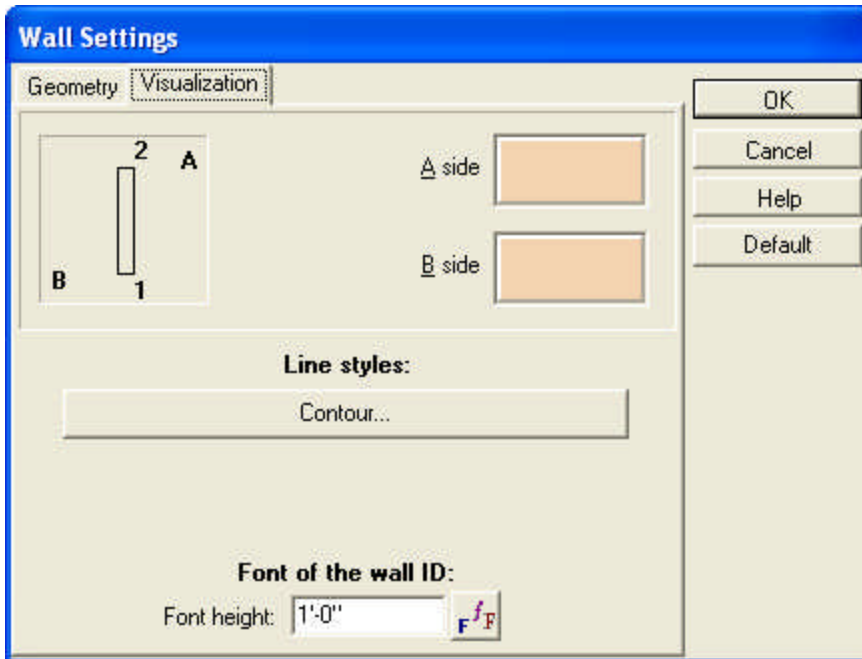
- **THICKNESS:** You may adjust the thickness of the wall (in the pre-set units). Data that was entered before can be seen in the roll-down menu activated by clicking on the small arrow. You can select values from these or provide new ones.
- **HEIGHT 1 and 2:** The height of the two end points of the wall. In the default setting the height of the wall is the same as the clearance (belmagasság??). By modifying the level height you also change the height of walls set to the clear height (belmagasság), whereas walls set to a different level remain the same. The clear height (belmagasság) is given by the level height minus the slab height. (szintmagasság - födémvastagságból)
- **VERTICAL SHIFT 1 and 2:** The height of the two lower end points of the wall. If set to 0 cm, the wall has the zero level as its starting point.




You can choose which end points you want to specify by the icons . The vertical shift parameters are to be applied according to the chosen icon.



7.1.2 Visualization

In **VISUALIZATIONS** you can specify the visual properties of building elements, regarding their floor plan and 3-dimensional display as well.



- **A side, B side:** Colors or patterns for both sides of a wall can be set here. The signs in the upper left corner of the dialog box (A, B and 1,2) help you to make the adjustments. Click on the (colored) field next to A or B to select the given side of the wall. Clicking on this field brings up a dialog box where you can select the desired color and/or pattern for the wall.
- **Line styles:** By pressing , you can specify the line style of walls for 2- or 3-dimensional views.
- **Font for the IDs of walls:** An ID can be set for each wall section, which is used in Bill of Materials-Scene Inventory listings. The ID can be displayed on the floor plan by going to **View/Foils/Wall ID**. The default ID is -1, this is displayed until asking for a **Bill of Materials** listing.

7.2 Pillars

You may also include pillars into your project. These can be built into walls or introduced anywhere else on the floor plan. The dialog box can be opened by first pressing the pillar icon , then pressing  at the top of the row of icons, found on the left side of the screen. You can adjust the parameters of the column in the upcoming dialog box.

Geometry: here you can set the geometrical properties of the column.

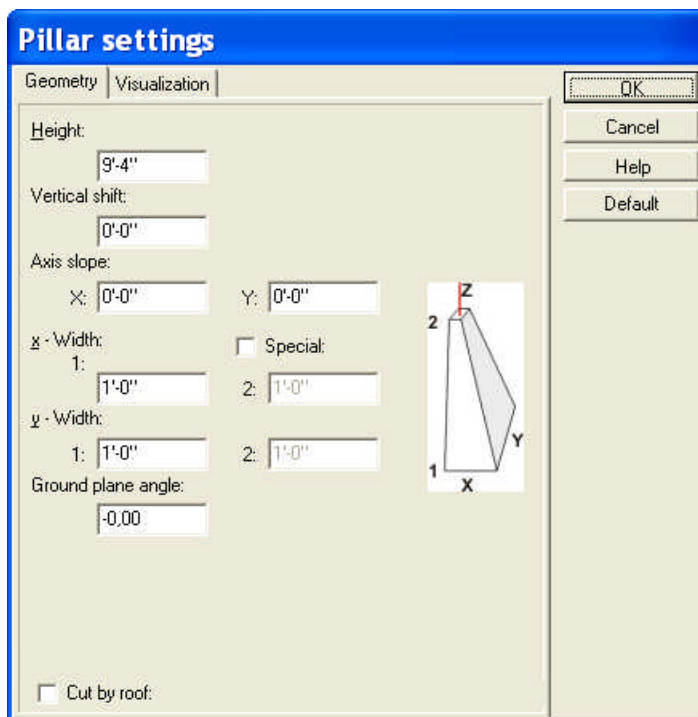
Visualization: properties determining the 2D and 3D visualization of the elements.

Constructing rectangular columns

Constructing circular columns

Constructing polygonal columns

7.2.1 Geometry



- **Height:** Height of the lower and upper plane of the column. In default mode it is equal to the level height. If the latter is modified, the height of default columns will also change accordingly.
- **Vertical shift:** Height of the lower plane of the column.
- **Axis slope (X,Y):** Assign a different X and/or Y value to the centre of the upper and lower plane, creating an oblique column.
- **X-size (1,2):** size along the X axis for the lower and upper plane.
- **Y-size (1,2):** size along the Y axis for the lower and upper plane.
- **Ground plane angle:** ground plane angle of the column. You can rotate the column by the + and – icons.
- **Cut by roof:** The column cannot go higher than the roof's plane, and will be cut by the roof.

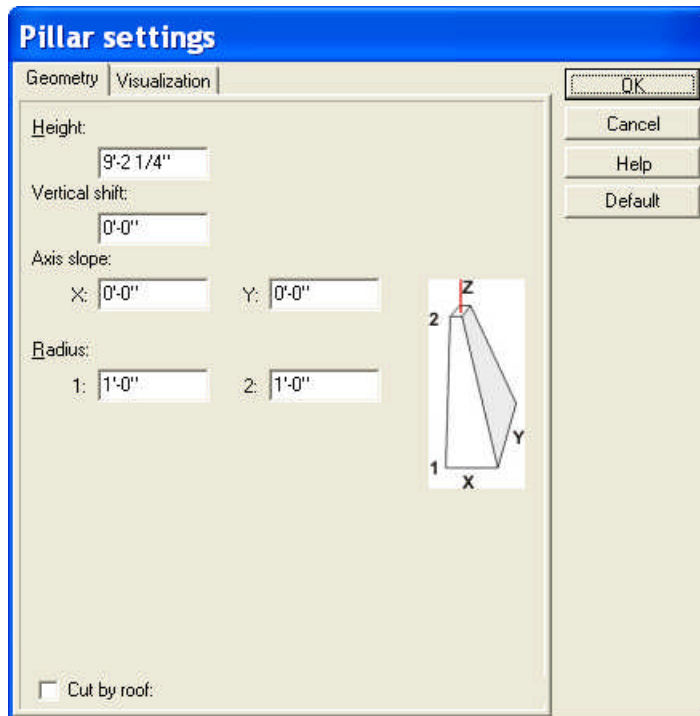
Visualization: Surface Properties: Click the color tile to choose a surface texture for your column. Any change made here will appear in 3D renderings.

When all the necessary changes have been made, click “OK,” then follow step 2 above.

7.2.1.1 Rectangular pillars

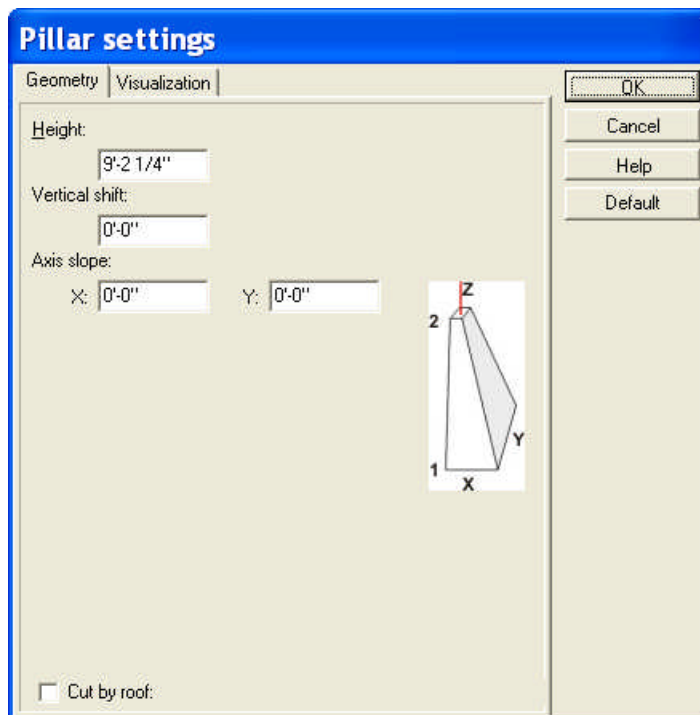
- **X-size (1,2):** size along the X axis for the lower and upper plane.
- **Y-size (1,2):** size along the Y axis for the lower and upper plane.

7.2.1.2 Circular pillars



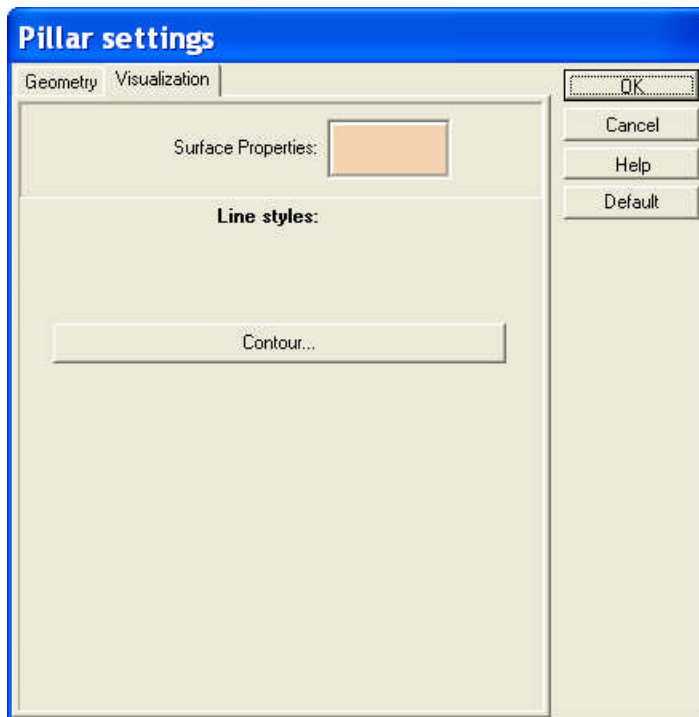
R 1,2 : The radius of the column

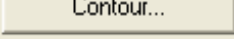
7.2.1.3 Polygonal pillars



7.2.2 Visualization

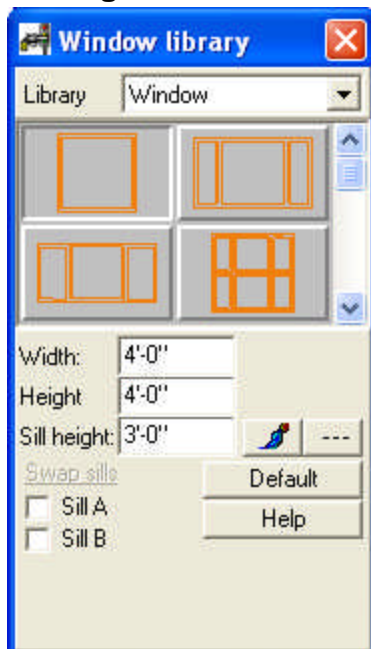
Here you can specify the visual properties of building elements, regarding their floor plan and 3-dimensional display as well.



- **Line styles:** By pressing , you can specify the line style of pillars for their 2- or 3-dimensional views, barring sectional visualizations.

7.3 Windows

Using the window library





The available set of windows are depicted in the upcoming window library. Moving your cursor above them yields information on their parameters (name, width, height).

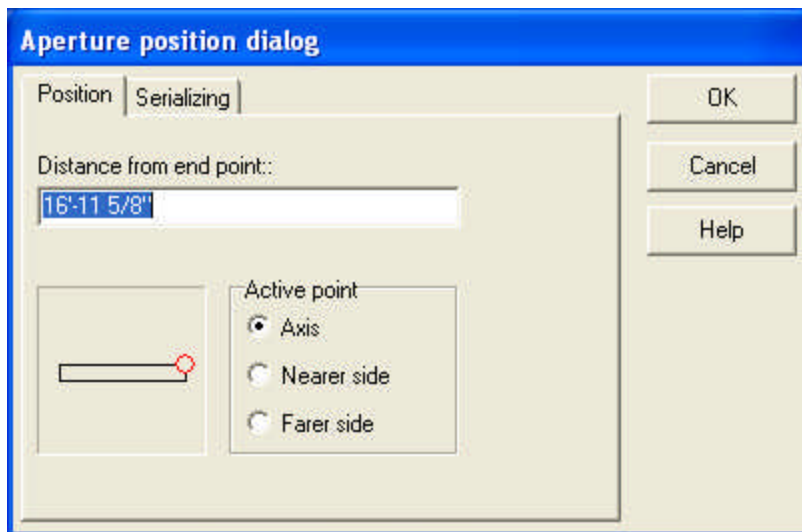
- **LIBRARY:** Press the downward looking arrow next to Library to open the different sub-libraries of windows. Click on the desired sub-library, then proceed to select a window.
- **Width, Height:** Here you may modify the default height and the width of windows. After typing in the new values press Enter.

- **Sill height:** You may set the sill height of the window here. The default setting is always 90 cm.

Note: Press **Enter** after filling in the new values.

-  Pressing this icon allows you to modify the element's **3D color** within the library.
-  Pressing this icon allows you to modify the **2D line style** of an element.
- **Sill A, B:** You can also assign sills to the window. Their properties can be adjusted in *Advanced*.
- **Swap sills:** Sills on the two sides of the window may be swapped.

7.3.1 Locating the apertures



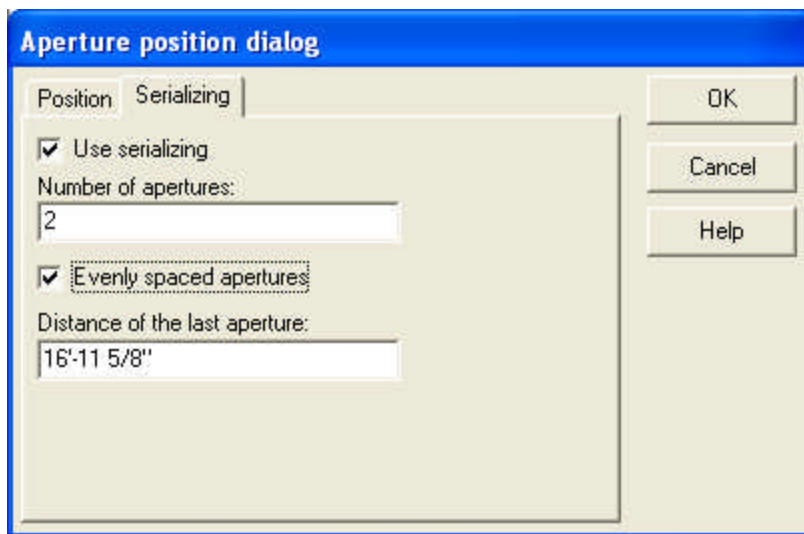
Graphical field: In this field you can see the distance of the aperture from the end point of the wall. The distance is numerically displayed in the above field as well.

Distance from endpoint: Displays the distance between the aperture (indicated by a red circle) and the end point of the wall.

Active point: Axis / Nearer side / Farer side: Defines the point of reference from which the distance is measured.

Note: This dialog box opens by pressing **X** or **Y**, while positioning the window along the wall.

7.3.2 Introducing multiple windows



This dialog enables you to introduce multiple windows at the same time. First you will need to define their distance to each other. Ticking in *Use serializing* opens the fields where you can adjust the following parameters:

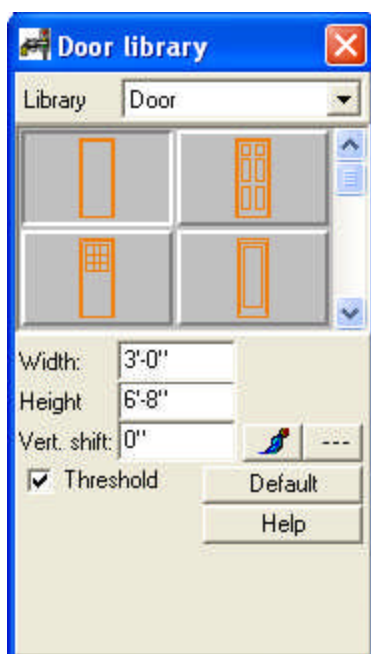
Number of apertures: Adjust the number of apertures.

Distance of last apertures: Here you may define the distance between apertures. The starting point is defined in the previous dialog (*Position*). The entered values have to be positive.



Evenly spaced apertures: By this feature you can request an even distribution for the apertures. The software calculates their distance, you shall only define their number.

Note: This dialog box opens by pressing **X** or **Y**, while positioning the window along the wall.

7.4 Doors



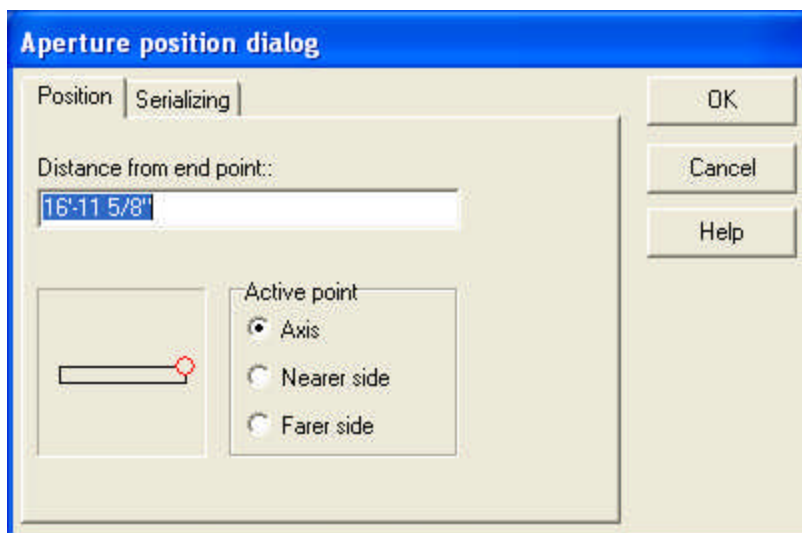
The available set of windows are depicted in the upcoming window library. Moving your cursor above them yields information on their parameters (name, width, height).

- **LIBRARY:** Press the downward looking arrow next to Library to open the different sub-libraries of doors. Click on the desired sub-library, then proceed to select a door.
- **Width, Height:** Here you may modify the default height and the width of doors. After typing in the new values press Enter.
- **Vertical shift:** Vertical shifting of the door. Press Enter to apply the changes.
-  Pressing this icon allows you to modify the element's **3D color** within the library.
-  Pressing this icon allows you to modify the **2D line style** of an element.
- **Threshold:** The floor plan display of the threshold can be switched on/off.

Note: In the dialog Level manager you may also set the **Floor level** - this will be added to the specified **Vertical shift**. The modified **Floor level** can only be seen in the 3D mode.

In **Visualizations** you may define the line style and hatching patterns for 2-dimensional visualization on the one hand, and textural patterns for 3D visualizations on the other.

7.4.1 Locating the apertures



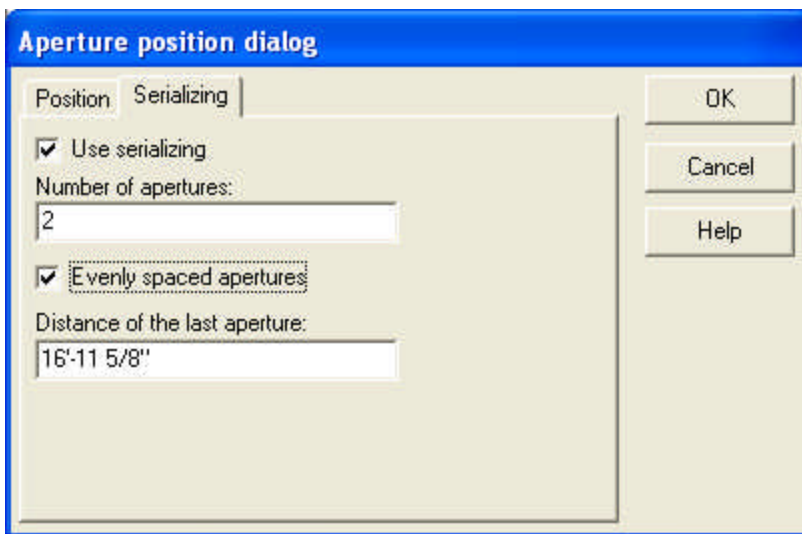
Graphical field: In this field you can see the distance of the aperture from the end point of the wall. The distance is numerically displayed in the above field as well.

Distance from endpoint: Displays the distance between the aperture (indicated by a red circle) and the end point of the wall.

Active point: Axis / Nearer side / Farer side: Defines the point of reference from which the distance is measured.

Note: This dialog box opens by pressing **X** or **Y**, while positioning the window along the wall.

7.4.2 Inserting multiple doors



This dialog enables you to introduce multiple windows at the same time. First you will need to define their distance to each other. Ticking in *Use serializing* opens the fields where you can adjust the following parameters:

Number of apertures: Adjust the number of apertures.

Distance of last apertures: Here you may define the distance between apertures. The starting point is defined in the previous dialog (*Position*). The entered values have to be positive.

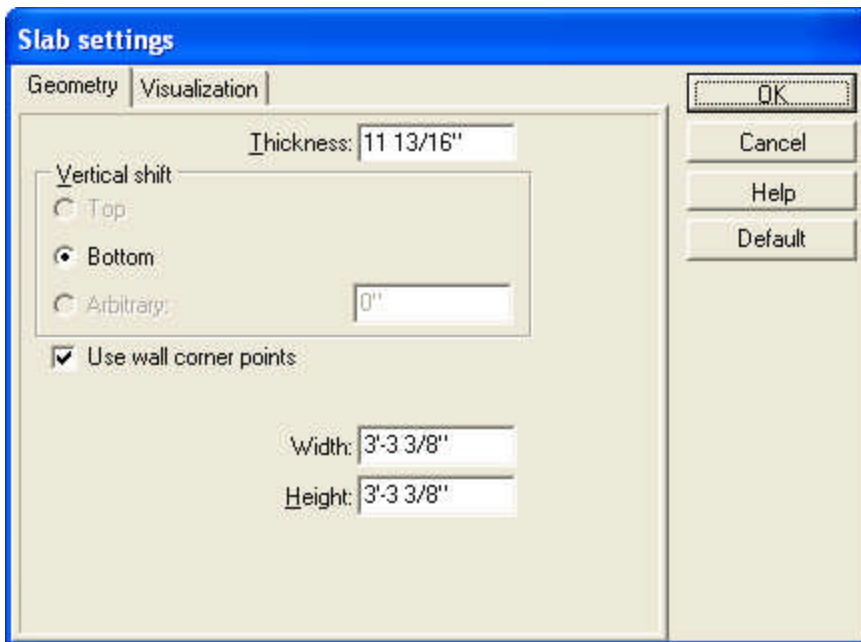
Evenly spaced apertures: By this feature you can request an even distribution for the apertures. The software calculates their distance, you shall only define their number.

Note: This dialog box opens by pressing **X** or **Y**, while positioning the window along the wall.

7.5 Slabs

The properties of slabs can be adjusted in the appropriate dialog box, after selecting a slab type.

7.5.1 Geometry

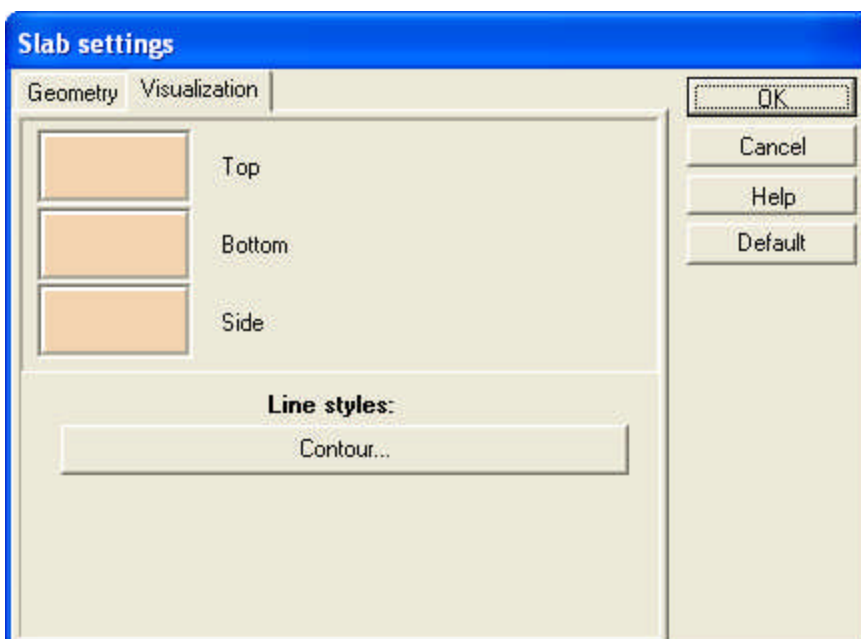


- **THICKNESS:** Adjust the thickness of the slab. The default value is 20 centimeters.
- **VERTICAL SHIFT: Top/Bottom/Arbitrary:** Adjust the height of the upper plane of the slab.
- **Use corner points of the wall:** By using this option, the software matches the slab with the corner points of the wall.

The following options are displayed only for certain types of slabs:

- **Width, Height:** when drawing rectangular slabs you may set an initial size for it, which can be modified later on.
- **Radius:** You can set an (initial) radius for circle-shaped slabs.
- **Number of arc sections:** circle-shaped slabs are actually entered in the form of polygons - here you may set the number of sections of the polygon.

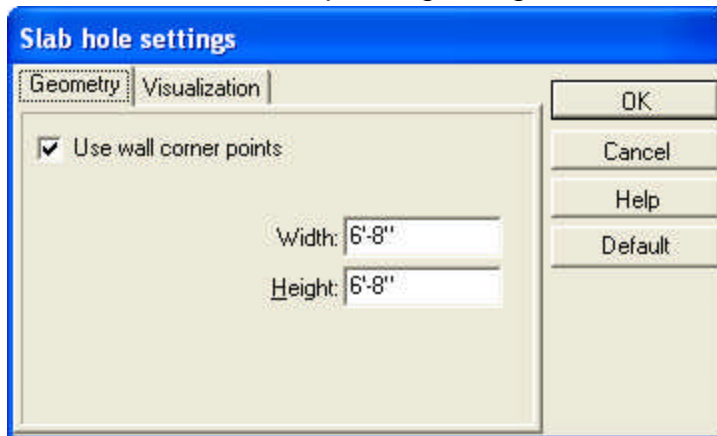
7.5.2 Visualization



- **Surface: Top/Bottom/Side:** You may assign a pattern to the different sides of the slab, which will be displayed in 3D view.
- **Line styles: Contour:** Here, you may specify the line style of slabs for 2- or 3-dimensional views, barring sectional visualizations.

7.6 Slab cleavage

Cleavages can be introduced into slabs. The parameters of these apertures/holes can be set in the corresponding dialog box.



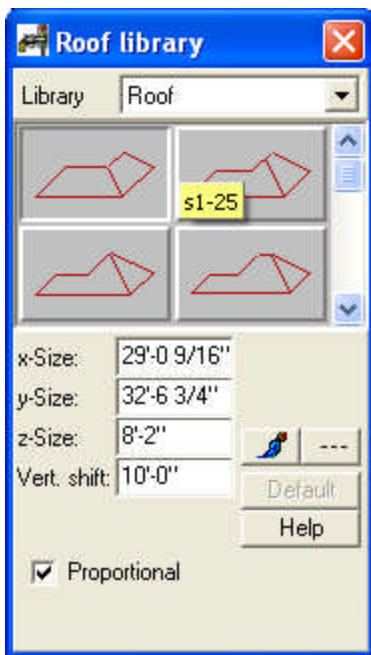
7.6.1 Geometry

- **Use corner points of the wall:** This option will ensure the matching of the slab to the wall's corner points and thus the aperture will also be inserted correspondingly. You can specify the properties of the aperture by the following parameters, depending what type you selected:
 - **Width, Height:** In the case of rectangular apertures you can set the initial size here.
 - **Radius:** The radius of circular apertures.
 - **Number of arc sections:** circle-shaped apertures are inserted in the form of polygons - here you may set the number of sides of the polygon.

7.6.2 Visualization

Here you may set a pattern for the lateral sides of the cleavage (hole)


7.7 Roofs




7.8 Automatic ROOF designer



After clicking on the icon, you should draw the polygonal structure of the roof. In the right click menu or select the icon, you may decide whether you want to draw the shape of the roof or you want to have it automatically generated (along the external edges of the building) by providing a reference point.


You may also switch on the feature **Room or building shaped** , with this feature activated you need only to click on an outer wall of a building, and the room is automatically created along the walls.

Switching on  the feature **Use corner points of the supporting structure** entails a shape along the wall structure, without taking into account the thickness of the wall's layers.

If you switch off **Room or building shaped** you shall have to draw the shape of the roof yourself. When drawing the roof you are helped by the appearing black pipes (if *Snapping* is turned on).

After having designed the polygonal shape of the roof the **Automatic roof designer** window appears. Here you can set the roof pitch, choose from different kinds of roofs (normal, hip roof, with gable). The roof pitch is the same all along the roof. However, along the edges of the roof, other parts of a different orientation can be attached by the **Automatic roof designer**.

7.8.1 Specifying the roof's thickness and height

With the  icon a dialog box is brought up wherein you may set further properties of the roof:

Changing the roof's thickness (for 3D mode): The roof covering has no thickness in default mode. Here you may assign a thickness to it in different ways, shown on the drawings on the right.

None: no thickness assigned.

Vertical: The roof covering gains a vertical thickness of the entered value, as shown on the drawing.

Perpendicular, with horizontal eaves: As above, the roof covering gains a vertical thickness of the entered value, but the lower plane of the roofing has a horizontal orientation.

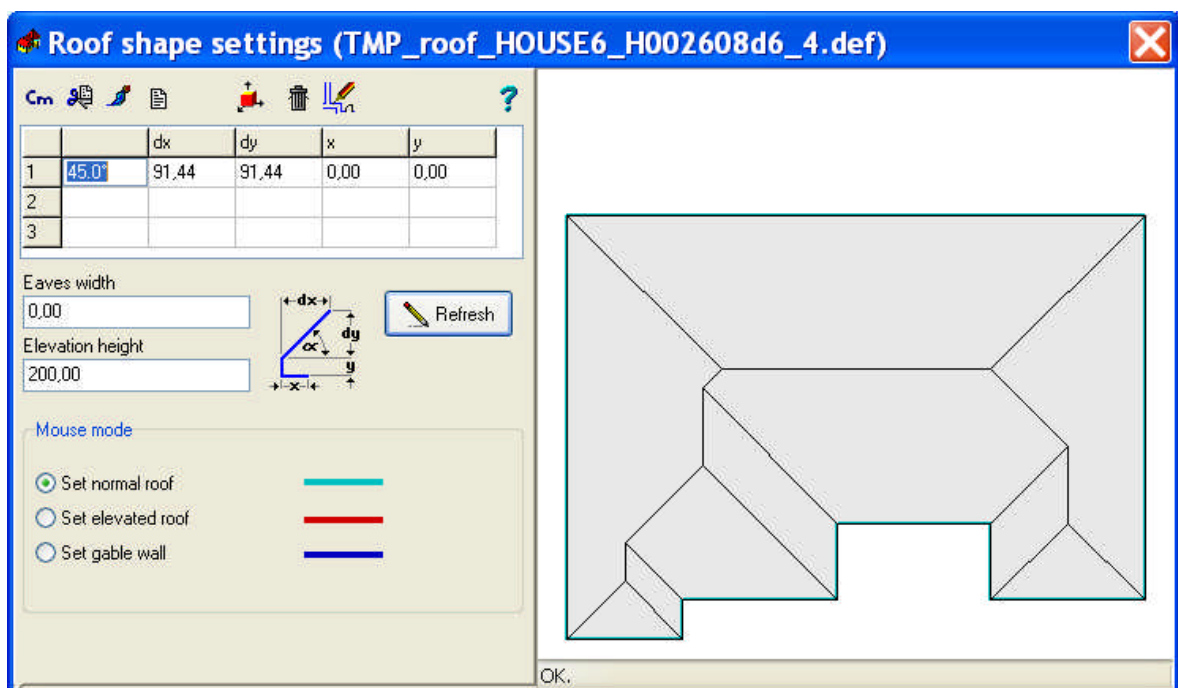
Perpendicular, with vertical eaves: the roof covering gains a vertical thickness of the entered value, the lower plane of the roofing having a vertical orientation.

Perpendicular, with cut (two-way) eaves: the roof covering gains a vertical thickness of the entered value, the lower plane of the roofing having a vertical and a horizontal part.


Thickness (a) : This is where you may set the value of thickness for the roofing.


Roof vertical shift: Here you may give the vertical height of the roof's lowest point (?) relative to the level height.


7.8.2 Designer Window




 **Cm/Inch icon:** select a unit of measurement

 Clicking this icon erases the values (of the roof pitch) entered into the fields 1,2,3

 Visualize the roof in 3D mode

 By clicking on this icon, you may set the other properties of the roof

 Set the properties of the valley, the ridge and the eaves

 Visualize the roof in 3D mode with colors and paintings



Remove the roof and return to the 2D designer



Transfer the roof to the plan and return to 2D mode



Help

1,2,3: the values of the roof pitch (steepness) may be entered by filling in the fields dx, dy or by specifying the angle and then hit Enter. After entering two values the third is automatically calculated by the software.

dx or dy: If there is a break (fracture?) in the roof pitch, then you may set the position by dx and dy, dx determining its position from top view and dy its height.

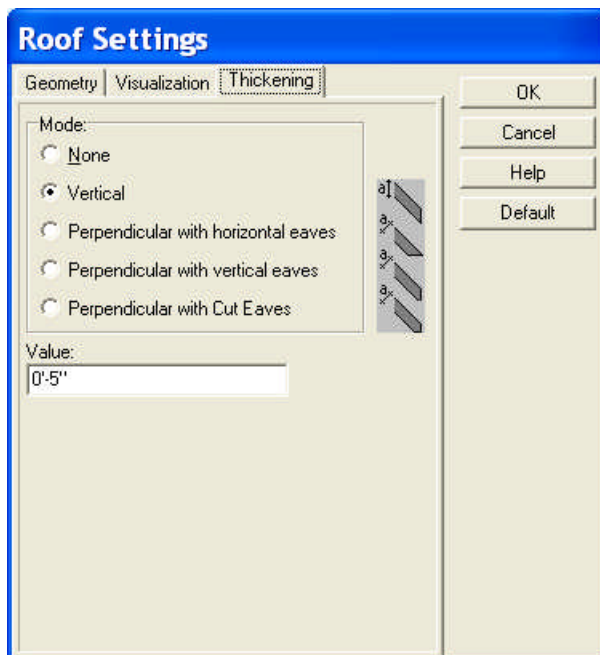
Width of the eaves: Set the width of the eaves. This entails the expansion of the roof's contour by the submitted value and the rearrangement of its overall structure.

Elevation height of hip roofs: Here you may set the height where the tetokonty starts from. You may enter a negative value as well, this creates a roof plane reaching down.

Mouse function:

Normal roof/Hip roofs/Set gable wall: After selecting the roof type, click on an edge of the wall, and the roof will be reconfigured accordingly, which is displayed in the visual field.

7.8.3 Specifying the roof's thickness and height



With the double click on the roof a dialog box is brought up wherein you may set further properties of the roof:

Changing the roof's thickness (for 3D mode): The roof covering has no thickness in default mode. Here you may assign a thickness to it in different ways, shown on the drawings on the right.

None: no thickness assigned.

Vertical: The roof covering gains a vertical thickness of the entered value, as shown on the drawing.

Perpendicular, with horizontal eaves: As above, the roof covering gains a vertical thickness of the entered value, but the lower plane of the roofing has a horizontal orientation.

Perpendicular, with vertical eaves: the roof covering gains a vertical thickness of the entered value, the lower plane of the roofing having a vertical orientation.

Perpendicular, with cut (two-way) eaves: the roof covering gains a vertical thickness of the entered value, the lower plane of the roofing having a vertical and a horizontal part.



Thickness (a) : This is where you may set the value of thickness for the roofing.

Roof vertical shift: Here you may give the vertical height of the roof's lowest point (?) relative to the level height.

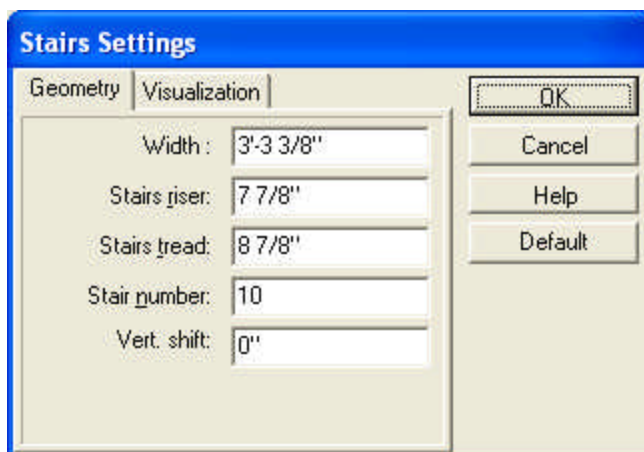
7.9 Stairs

Simple winders can be directly inserted to the floor plan. These have the advantage of being introduced swiftly and easily, but have limited complexity and no internal supporting structure can be constructed for them. Winders can be interconnected through landings, by positioning the landing's plane to the appropriate height through **Vertical Shift**.

Railings may also be added to stairs.

The dialog box described in the followings can be opened by clicking on  and then on .

7.9.1 Geometry



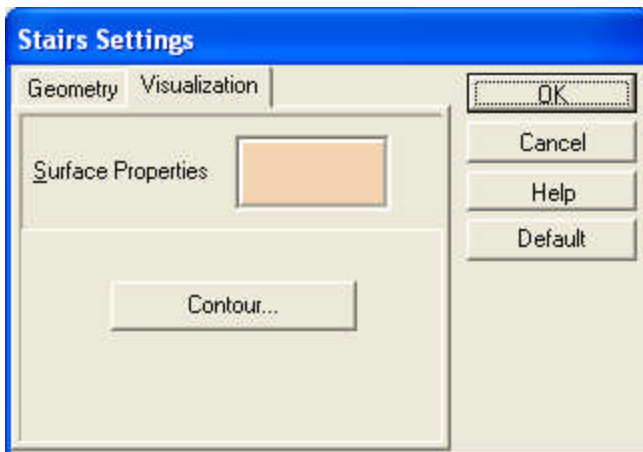
Width: the width of the winder.

Stairs riser, stairs tread: properties of a single step in the stairs.

Number of steps: number of steps on a winder

Vertical shift: vertical shifting of the winder.



7.9.2 Visualization



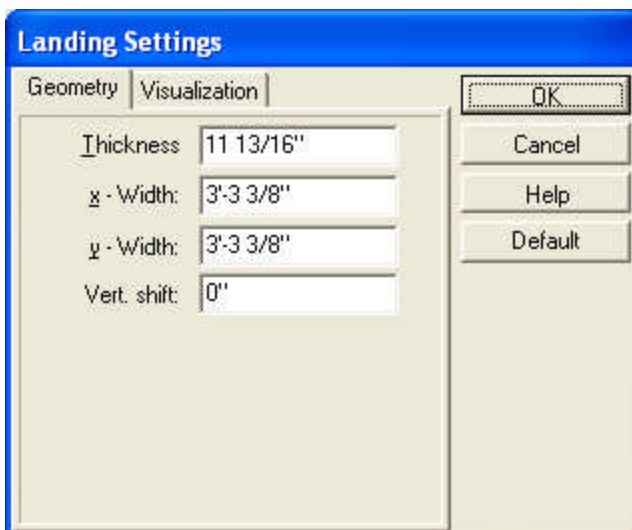
Surface properties: a pattern can be assigned to the surface of the stairs (visible in 3D mode). **Contour:** line styles for the floor plan.

7.9.3 Landings

Winders can be interconnected through landings. You will have to specify the landing's vertical and floor plan position, the latter can be modified graphically by stretching its margins. Modified values are entered into the dialog box as well. Landings can be only rectangular in their shape. More complex shapes can be introduced as slabs.

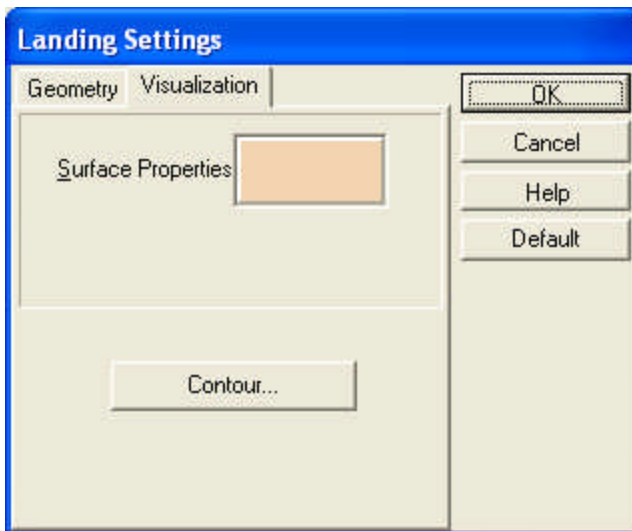
The dialog box of landings can be opened by clicking on  and then on .

7.9.3.1 Geometry



| | |
|-----------------------|---|
| Thickness: | Thickness of the landing. |
| X-width: | The size of the landing along the x axis. |
| Y-width: | The size of the landing along the y axis. |
| Vertical shift | Vertical position of the landing's upper plane. |

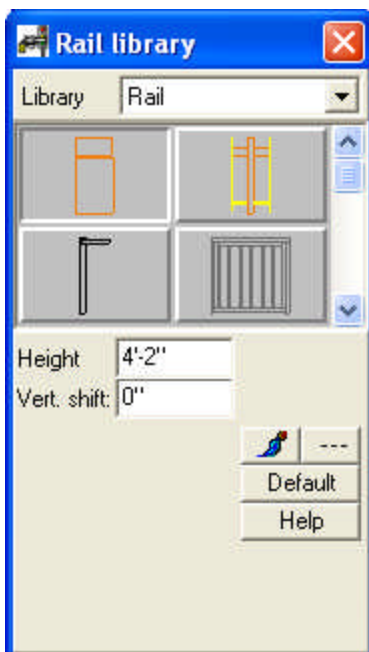
7.9.3.2 Visualization



Surface properties: pattern can be assigned to the surface of the landing (visible in 3D mode).

Contour: line styles for the floor plan.

7.9.4 Railings



Rails can be added to stairs. Different types of rails can be selected from the graphical library. Properties of rails may also be set here.

Height: Height of the rail. Each has a stored height, which may be modified here.

Vertical shift: The height of the underside (lowest point) of the rail. This parameter does not have to be changed normally as the railing is adjusted to the height or the landing that you put it on.

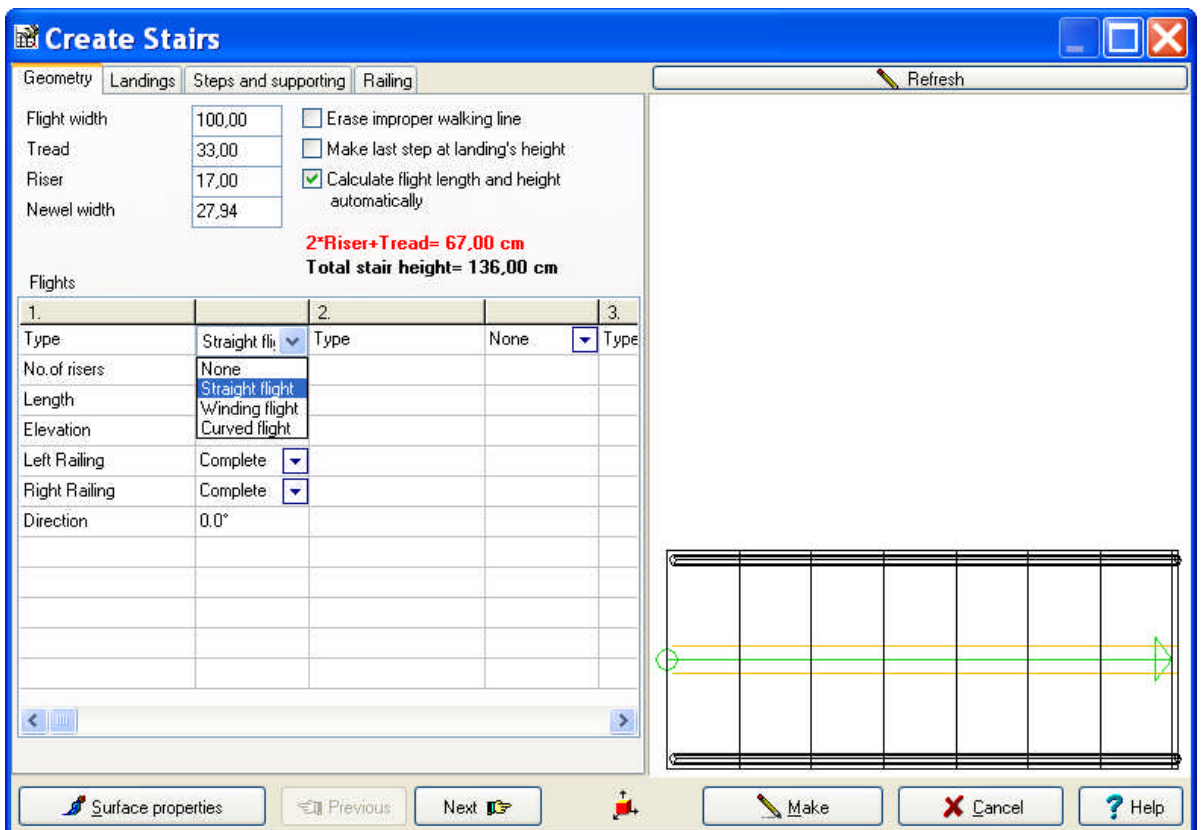


Change the default color of the element, displayed in **3D mode**.




The **2D line style** of the elements can be set here.

7.10 Designing stairs by winders



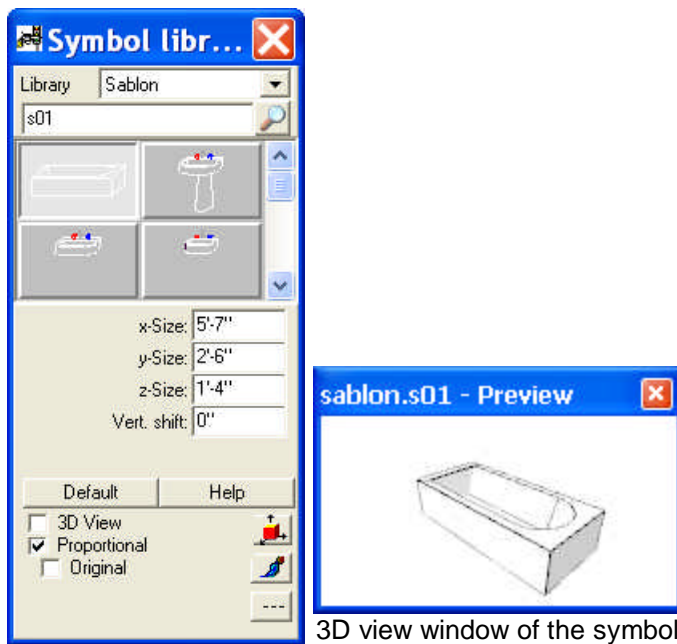
Designing winders individually: The software also enables you to design stairs individually.

Designing stairs by designing its constituent winders one-by-one: The stair designer may be opened by the  icon. In this window you may specify the type of the stairs:

Curved flight. After that, you can set the properties of the winder. This is a multi-window dialog, therefore you may also adjust a supporting structure, a landing for the winder, or set the number of steps, the parameters of steps etc.

As you fill in the parameters of the stairs, a sketch of the corresponding structure (from a bird's eye view) is continuously shown in the graphical window on the right. You may correct and overwrite the values you previously entered. (The software prompts you on certain errors.)

7.11 Symbols



3D view window of the symbol

Library: You can change between the sub-libraries of different objects.

GRAPHICAL WINDOW: You can see elements by their axonometric drawings. Click on any object to select it.

You can adjust the size of elements in the following fields:

X-size: Size of the element along the x axis.

Y-size: Size of the element along the y axis.

Z-size: Size of the element along the z axis

Vertical shift: The height of the lowest point of the symbol.

3D View: You can select the 2D or 3D drawing of the symbol.

Proportional: Switching on this option activates an automatic proportional readjustment of elements, meaning that changing one of the sizes causes the others to change by the same percent.



You can switch on the 3D windows of the symbol



Change the color of the elements (displayed only in **3D**)



Specify a line style for the **2D representation** of the element.

7.11.1 List of symbol libraries

FURNITURE, SABLON: these libraries contain bedroom/living room etc. furniture.

OFFIHOME: library of office furniture.

KITCHEN, SABLON: furniture and appliances for the kitchen.

BATHROOM: bathroom furniture.

LANDSCAPE, PATIO, STANDARD, TRAFFIC, LX-CARS, DECK: Libraries containing plants, garden furniture pergolas, cars etc.

TRAFFIC, LX-CARS, MACHINES, FIRECARS, AIRPLAN, ACCIDENT: libraries containing vehicles, elements for traffic junctions etc., used for modeling urban or transportation environments.

DRAIL, USER, GADGET, LAMPS: libraries containing decorative elements for facades and other supplementary structures.

CRIME, GUNS1, GUNS2, TRAFFIC, ACCIDENT: special libraries for scenes

AVATAR: special libraries for animation

7.12 Symbol route settings

| index | Position x ['] | y ['] | z ['] | Use route directions alpha ['] | beta ['] | gamma ['] | Speed v [mph] | Wait tw [s] | Time t [s] | Mirroring interval tm [s] |
|-------|-------------------|--------------|-------|-----------------------------------|----------|-----------|------------------|----------------|---------------|------------------------------|
| 001. | 997'-10" | 992'-3" | 0" | 0.00 | 0.00 | -156.17 | 10.00 | 0.00 | 0.00 | 0.00 |
| 002. | 968'-3" | 1005'-3 3/4" | 0" | 0.00 | 0.00 | -76.61 | 10.00 | 0.00 | 2.21 | 0.00 |
| 003. | 952'-3" | 984'-3" | 0" | 0.00 | 0.00 | 0.00 | 10.00 | 0.00 | 4.01 | 0.00 |

In the first **Points** window of the dialogue box the following information may be viewed and altered:

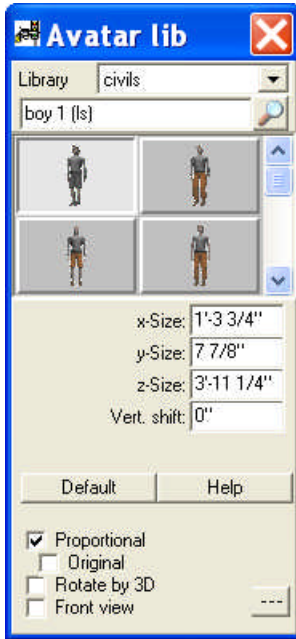
- **In the position field** the path data is specified. Here the dialogue takes the X and Y values from the symbol's position on the plan. The path's elevation or slope can be specified as the Z value. By selecting the Average function, the program will automatically calculate a Z value from the given X and Y values.
- **In the alpha, beta and gamma fields** the symbol's angles during movement may be specified. If you wish the symbol to alter its angular values in order to follow the direction of the path, select the Use Route direction parameter. The sliding control can be used to specify when the object begins to turn in order to follow a change in path direction. If this is set to minimum, then the object begins to turn in the direction of a new segment already at the beginning of the previous segment. If this control is set to maximum, then the object will change orientation only at the intersection point of the two line segments. If the Use Direction parameter is switched off, then the changes in the symbol's angular orientation may be written in individually. Here too automatic calculations may be requested by switching on the Average function.
- **Speed:** The symbol's speed may be set for each path segment. The Average option will calculate an average speed if given starting and ending speed values.
- **Delay:** The symbol may be made to stop for a defined time at segment endpoints. Also one may specify whether the symbol is to be visible before or after these delays.
- **Duration:** In the duration field specify the amount of time needed for each path segment. In the case of multiple animated symbols this function is very useful in a determining the delay values for each.
- **Mirroring:** It is possible to reflect a symbol about its own axis at with a given frequency. This is the easiest way in which to, for example, depict a walking figure.

Path: The path may be designated as visible or invisible. If visible, the color may also be specified.

Arrow: Directional arrows may be placed for each path segment. The size, color, and placement of these arrows may be specified in the dialogue box.

7.13 Insert AVATAR symbols

The objects to be used in the AVATAR animation can be taken from the Avatar symbol library. These symbols (people, functionaries, fire water and alarm sign) may be resized, given actions, and otherwise modified. It is also possible to animate these symbols moving along a path and using the ACTIONS parameter(CVILS and FUNCTIONARIES libraries). To do so, the path must be determined on the floor plan.

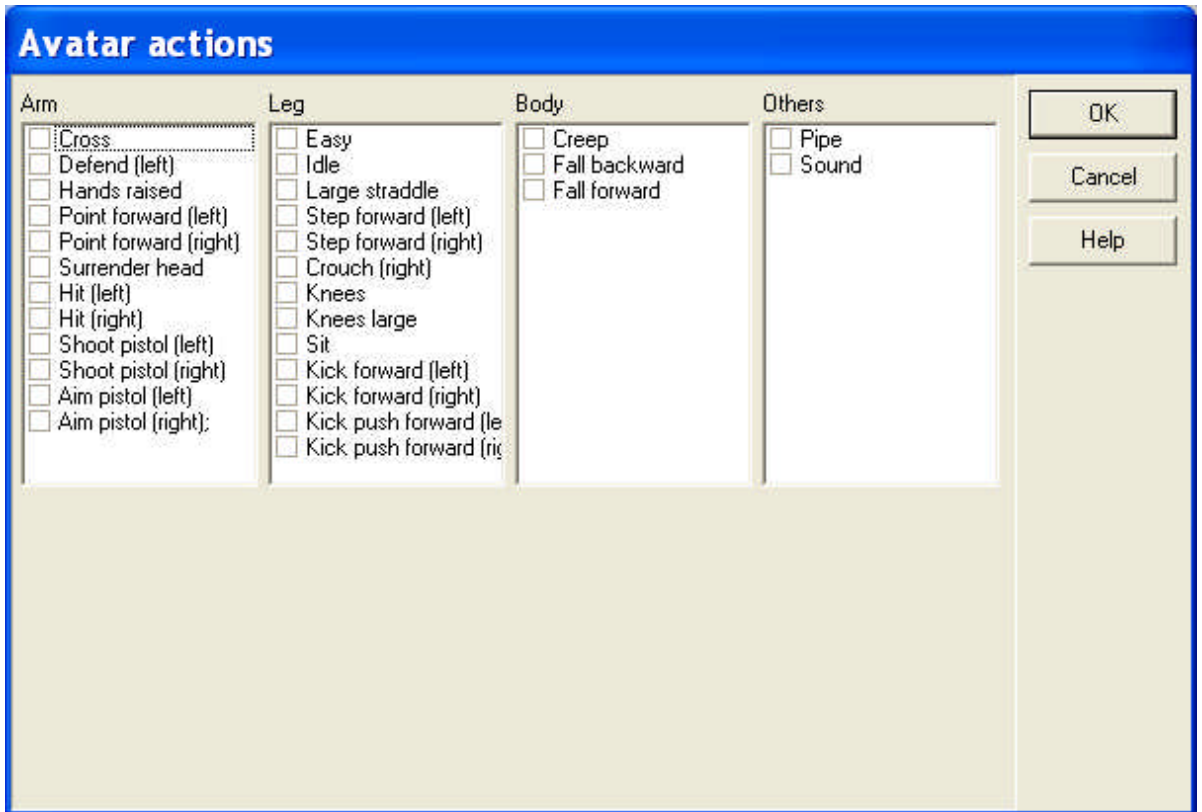


Symbol route settings (civils.boy 1 (ls))

Points | Route | Arrow

| Index | Position & Size | | | Use route directions | | | Speed | Waiting time | Time | Mirroring interval | Actions |
|-------|-----------------|--------------|------------|-------------------------------------|-------------------------------------|--------------------------|-------|--------------|------|--------------------|--|
| | x ["] | y ["] | z ["] | x ["] | y ["] | z ["] | [mph] | [s] | [s] | [s] | |
| 0. | 1047'-3 11/16" | 976'-3" | 0'-0" | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0,00 | 0,00 | 0,00 | 0,00 | <input checked="" type="checkbox"/> Visible |
| | 1'-3 3/4" | 0'-7 7/8" | 3'-11 1/4" | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input type="checkbox"/> Arm <input type="checkbox"/> Leg <input type="checkbox"/> Body <input type="checkbox"/> Others |
| 1. | 1041'-3 1/4" | 990'-9" | 0'-0" | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 10,00 | 0,00 | 2,14 | 0,00 | <input type="checkbox"/> Arm <input type="checkbox"/> Leg <input type="checkbox"/> Body <input type="checkbox"/> Others |
| | 1'-3 3/4" | 0'-7 7/8" | 3'-11 1/4" | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | |
| 2. | 1023'-5 1/8" | 997'-8 7/16" | 0'-0" | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 10,00 | 0,00 | 3,45 | 0,00 | <input checked="" type="checkbox"/> Visible |
| | 1'-3 3/4" | 0'-7 7/8" | 3'-11 1/4" | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | | | | <input type="checkbox"/> Arm <input type="checkbox"/> Leg <input type="checkbox"/> Body <input type="checkbox"/> Others |

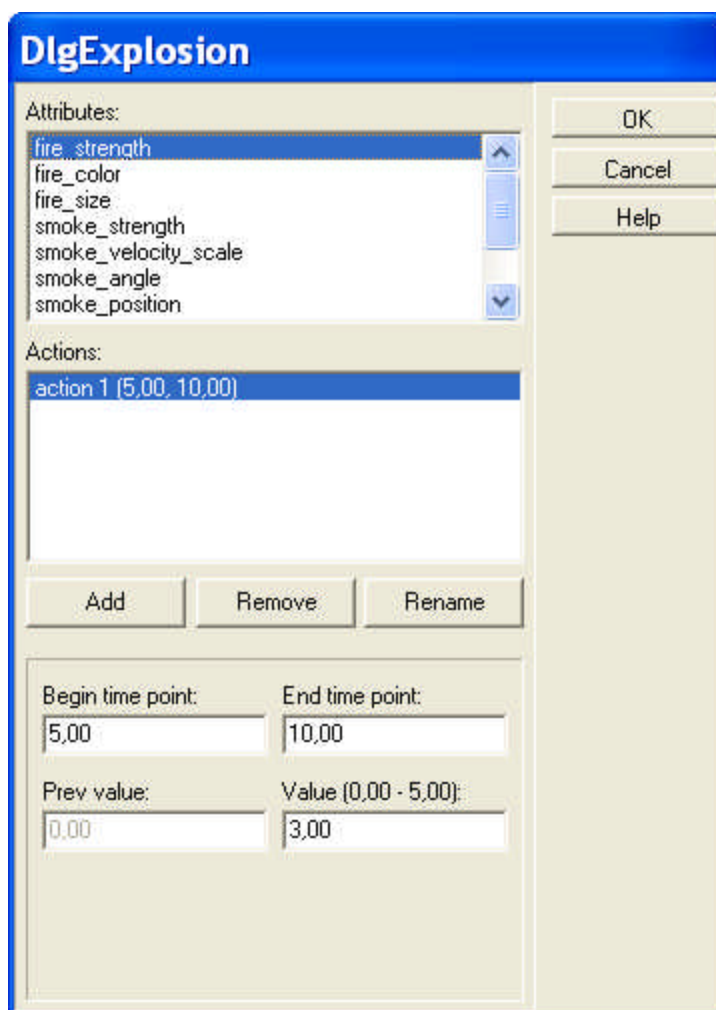
Buttons: OK, Cancel, Help, Default



FIRE and WATER elements:

To place a symbol in your scene, click on the desired symbol and drag the picture of the symbol to where you want to place it. Click again to anchor the symbol. Once the symbol has been placed, the picture will remain.

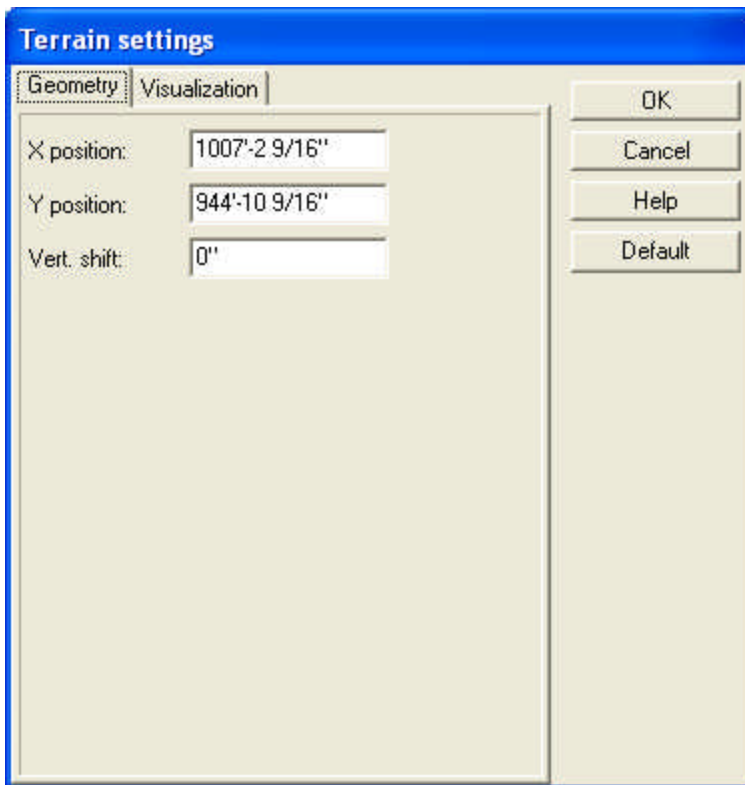
New items have been added to right-click ACTIONS menus. Select the element and click right to see it. These items make editing even faster.



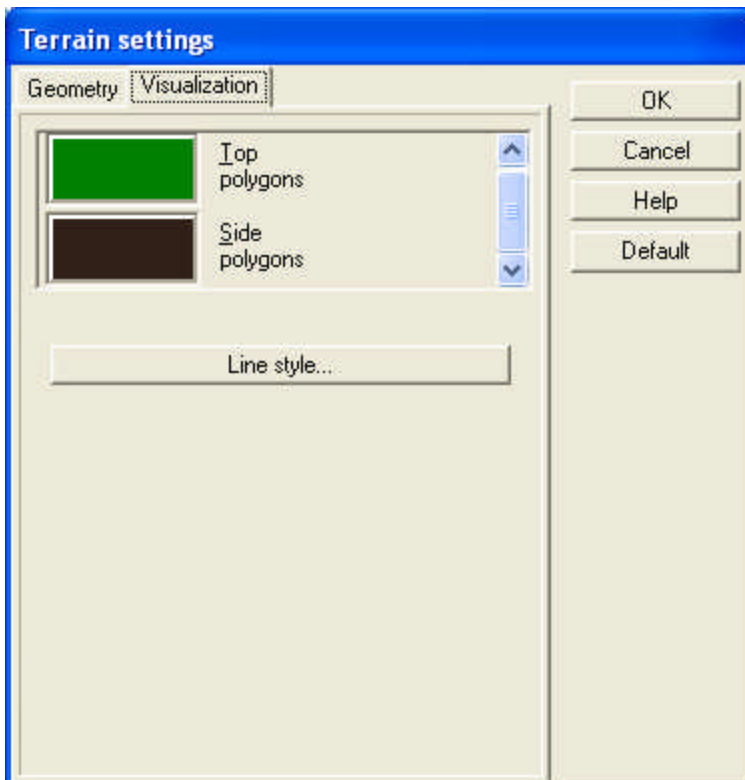
7.14 Terrains

You might also create 3-dimensional terrains with the help of **Terrain Designer**.

7.14.1 Geometry



7.14.2 Visualization



Top side ("polygon"): here you may assign a pattern to the (upper) surface of the terrain.

Side polygon: Patterns or colors for the lateral side of the polygon (the terrain).

Line style: these are the lines visible on the 2D floor plan. You can specify in the Terrain Designer where you want to section the terrain. Below the plane of section is the visible part of the terrain, above it the parts not displayed on the floor plan. Therefore the line styles set here will only apply to the former.

7.15 Photo symbols



X, Y, Z-size: size of the photo symbol. X and Y is used for 2D display, whereas X and Z for 3D visualizations.

Rotate by 3D: switching on this option makes both sides of the photo symbol visible in 3D, in the case of rotation.

Vertical shift: specify the height of the lowest point of the photo symbol.

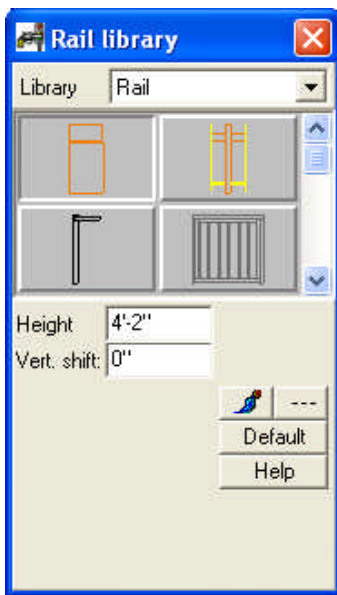
Proportional: Switching on this option activates an automatic proportional readjustment of elements, meaning that changing one of the sizes causes the others to change by the same percent.

 Specify a line style for the **2D representation** of the element.

Material: Assign a material to the building element.

Expanding the photo library

7.16 Rails library



Different kinds of rails can be chosen from the Rail library. Properties of the rail can also be adjusted here.

Height: Height of the rail. Each rail has a default height, which can be modified here.

Vertical shift: specify the height of the lowest point of the rail.




Change the color of the elements (displayed only in **3D**)



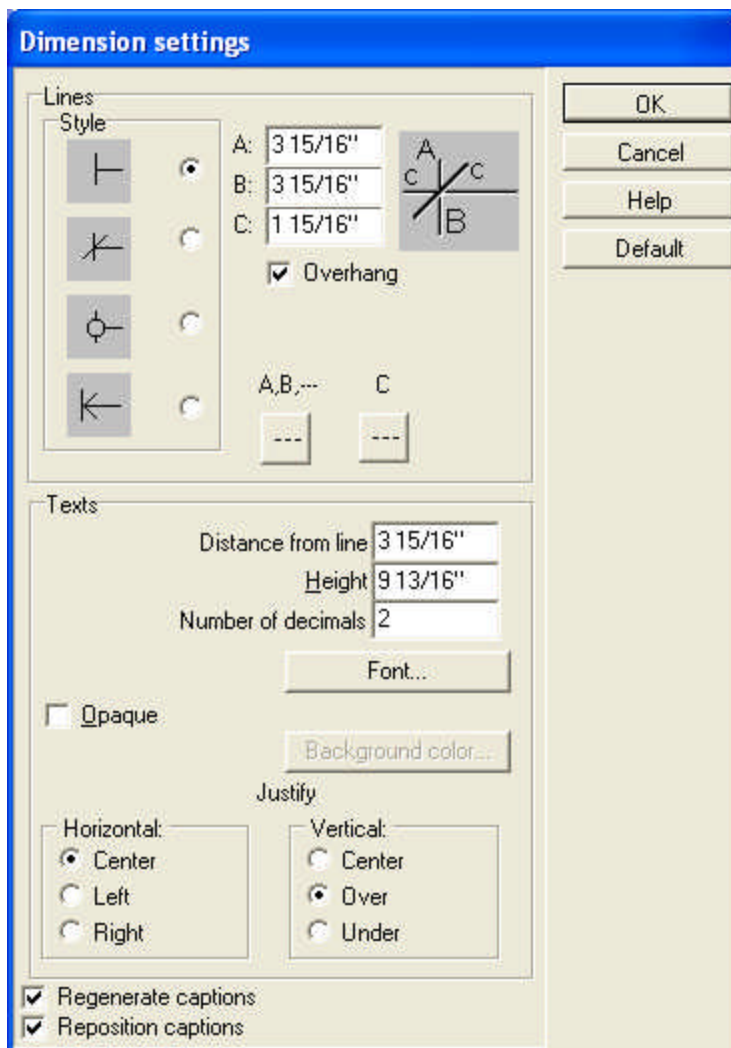
Specify a line style for the **2D representation** of the element.

Note: When putting railings on a stair or a stair-landing, you do **not** have to readjust its level in **Vertical shift**, as it is automatically harmonized with the stairs and landing.

7.17 Dimensioning toolbar

During editing you may need to have indications of the sizes of elements and their distances. The **Dimensioning** toolbar can be opened by pressing  in the upper line of icons or within the **Draw** menu in **Dimension lines**. **Associative dimensioning** are bound to elements, therefore the modification of the element also entails the modification of the scaling. For example, deleting the wall entails the deletion of the dimensioning (division lines) as well. The icons of the dimensioning toolbar appear on the left hand.

7.17.1 Adjusting the dimension lines



Style: you may set here the outlay of division lines and line endings. You can choose between four styles.

A, B, C: the size of division lines.

Overhang: Here you may add an overhanging section to the end of the line, which will have the same length as the line C.

Projection lines: A projection line, displaying a connection between walls and dimension lines, can be switched on here.

Line styles: 

- 1. Line style for the vertical division lines.
- 2. Line style of the oblique lines at division lines.
- 3. Line style of projection lines.

Texts: Here you may set the exact location and font style of the labels on dimension lines.

Distance from line: The distance of the label from the dimension line.

Height: The height of the label.

Number of decimals: number of decimals displayed.

Font: Font type (from Windows True Types), color and style of legends (normal, italic, bold).

Fitting: the position of labels relative to the line.

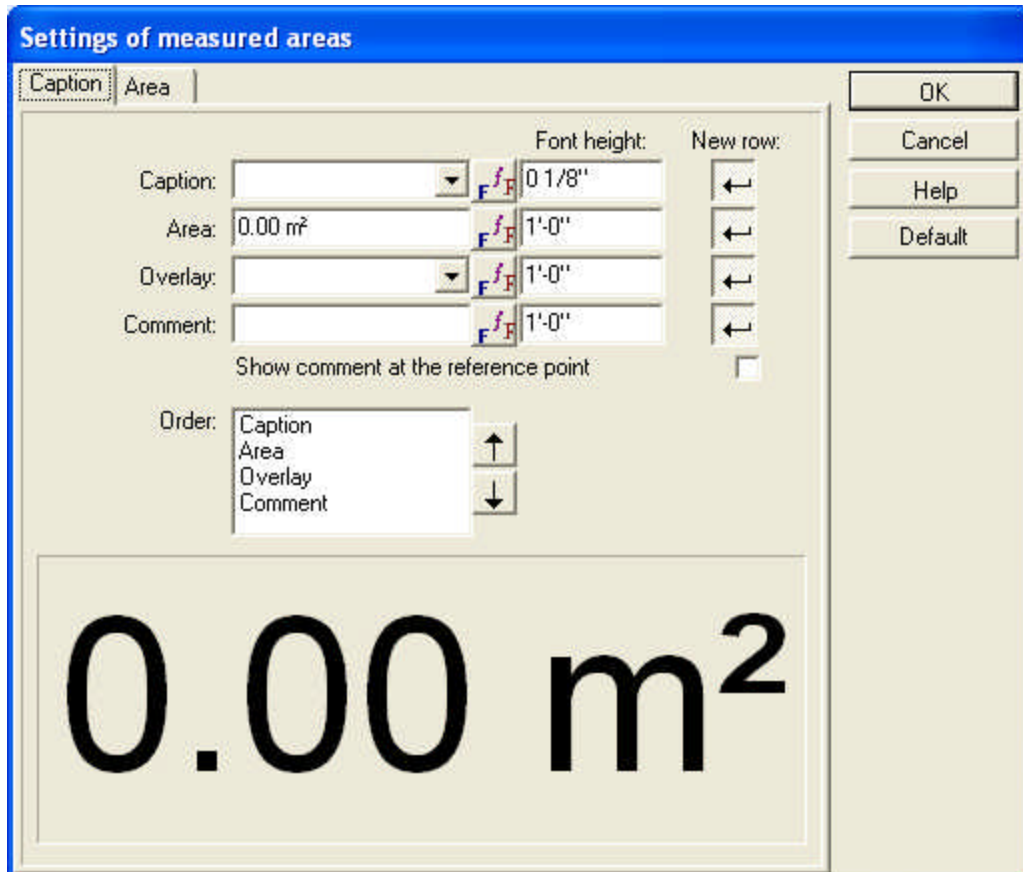
Horizontal: Center / Left / Right

Vertical: Center / Over / Under

Regenerate captions: Moving the dimension lines themselves do not change the values displayed in the labels. Switching on this option entails an automatic readjustment of the legends (values in labels).

Reposition captions: This option activates an automatic repositioning the captions, if the dimension lines themselves are moved.

7.17.2 Settings of measured areas



Setting the type of the room:

Caption: Here you can assign a category to a room. Entries may be selected from the slide-down list. You may also type in a new name to the field. New categories can also be entered with NotePad to the file **ROOMS.DAT**.

Area: The area calculated by the program. You may overwrite these values.

Overlay: select an overlay from the slide-down list. The entries of the list come from the materials of slab layers and from the file **OVERLAY.DAT**. This file can be modified by NotePad. You may also type in a new name to this field.

Comment : Further text to the caption may be added here.

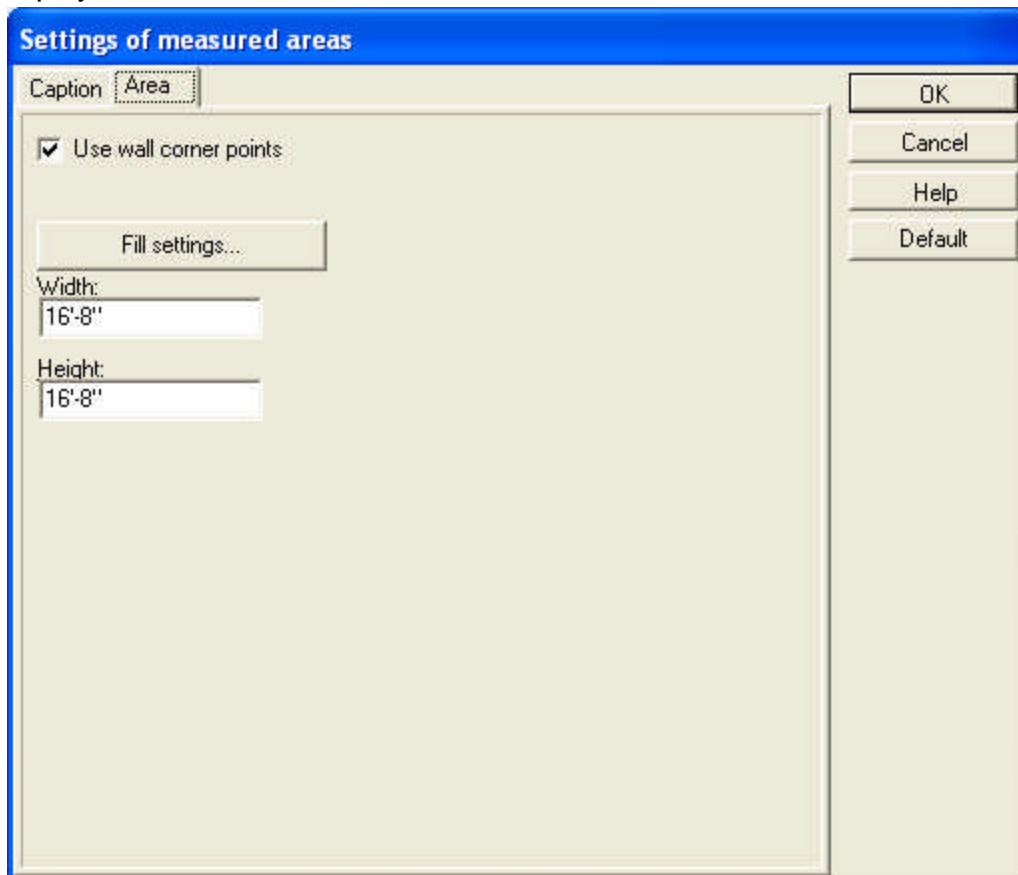
Order: Here you may set the order of the previous lines within the caption.

Font height: set the font size of letters within the captions.

New row: switching on this option puts the relevant line in a separate one from the previous.

Showing comment at the reference point: you may request the *Comment* to be displayed at the point of reference. It can also be positioned elsewhere on the floor

plan, thus at the point of reference only the other components of the caption are to be displayed.



Area sub-dialog:

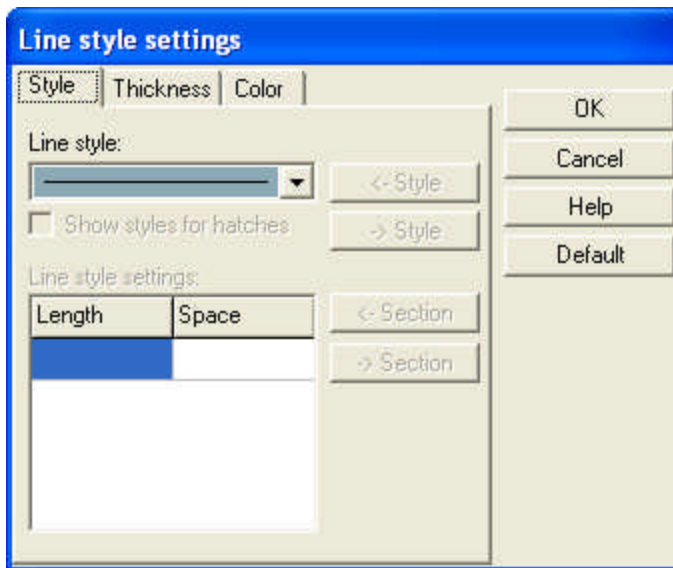
Settings of filled-in areas: You may set the fill-in pattern here.

Use corner points of walls: the software will catch the corner points of walls when drawing an area.

7.18 Geometrical elements

If you are drawing on the floor plan, you can assign colors, width and line styles for the lines, curves, circles, arrows etc. you draw. The dialog box for setting these properties are to be found in **Options/Default/Line drawings**.

7.18.1 Line styles

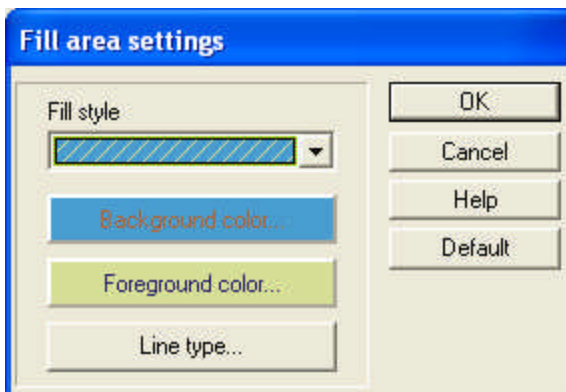


Style: Line styles can be assigned to the different lines. These can be continuous or dashed lines and can be selected from the slide-down list. The length of the line sections and the cuts may be adjusted in the field below in **Length/Space**. New line styles may be added through **Options/Line style editor**.

Thickness: You may also set the width of the lines being drawn. New thickness values can be added through **Options/Line style editor**.

Color: Colors can also be assigned to the lines. Click on the **Color** tab to select a color.

7.18.2 Specifying patterns for filled-in areas



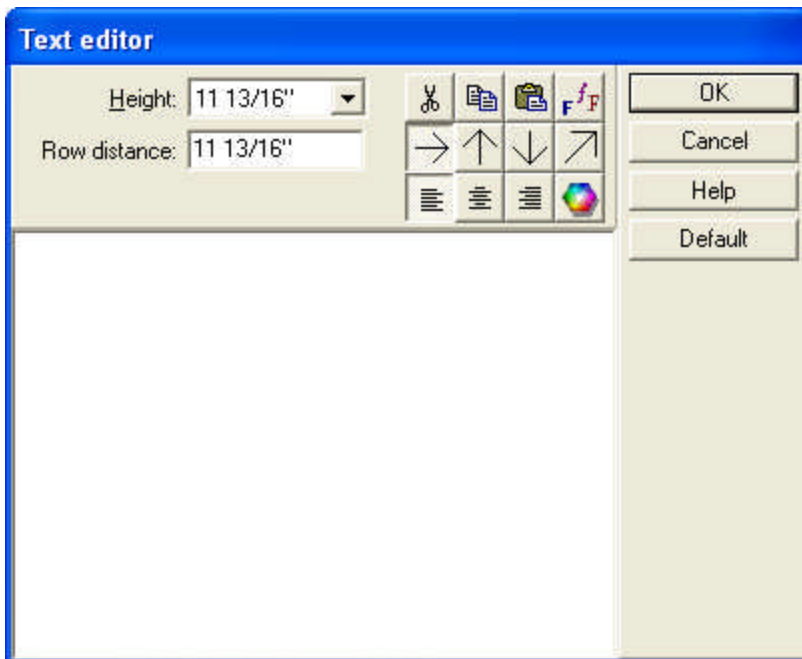
Fill style: choose between different patterns.

Background: choose a background for the pattern.

Foreground color: choose a color for the pattern itself.

Line type: line style for the pattern.

7.18.3 Inserting texts



Height: Here you may set the font size for the text.

Line distance: The distance between lines in the case of multiline texts.



the highlighted text may be **Cut** from the text by this icon.




you may **Copy** the highlighted text to the clipboard by this icon.



you may **Paste** in a text from the clipboard by this icon.



Font: Choose a font type for the text in the upcoming dialog. The font size should not be modified in the upcoming dialog. Colors may only be chosen from the pre-given list of colors, other colors can be selected from the color palette brought up

by pressing .



These icons determine the orientation of the text. In case of an oblique orientation the direction of the upper line of the text can be entered. For the other options you only need to select the desired orientation and the position of the text.



Alignment of multi-line texts: the text may be aligned to the right/left/center.

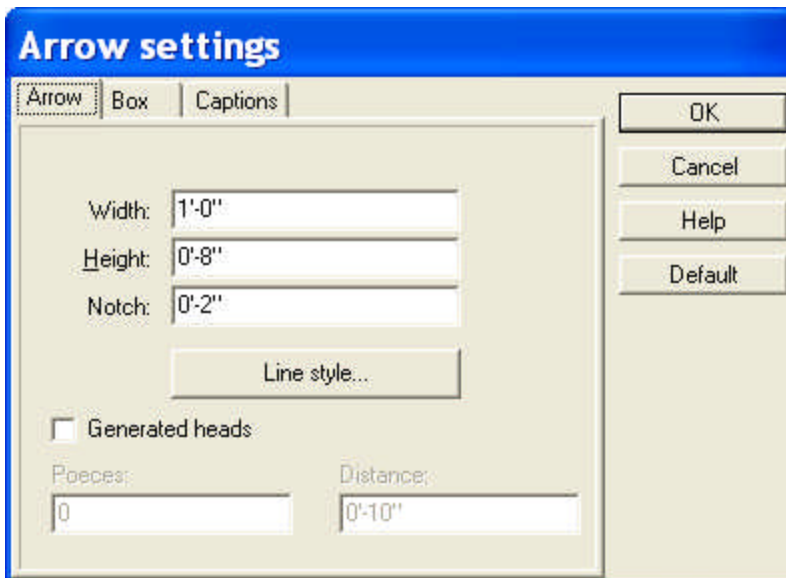


Color palette: you may set the color of the text here.

7.18.4 Inserting arrows and text boxes

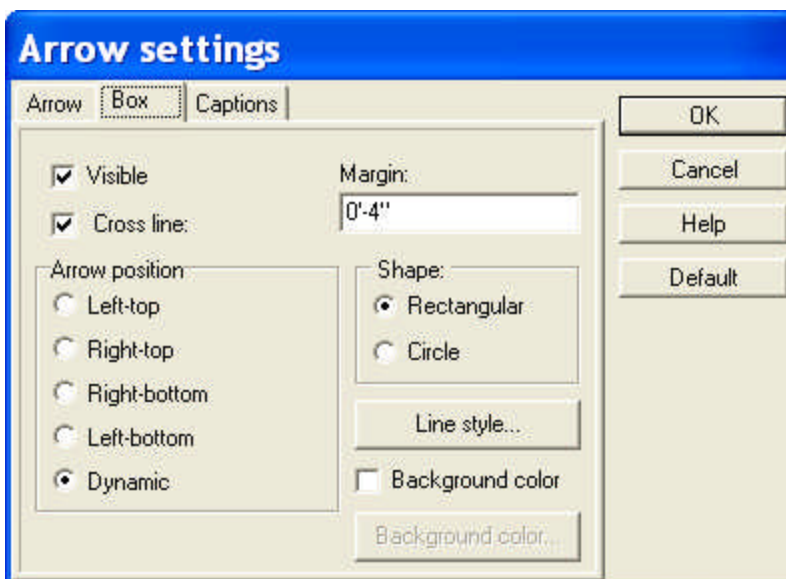
You can insert arrows to the project by pinning down its two end points, the second one constituting the arrow's head. In the dialog box the width, height and notch of the arrow may all be specified. A text box can also be attached to the end of the arrow.

7.18.4.1 Arrow settings



Shape: the type of arrow

7.18.4.2 Box settings



Visible: the box's visibility can be switched on/off here.

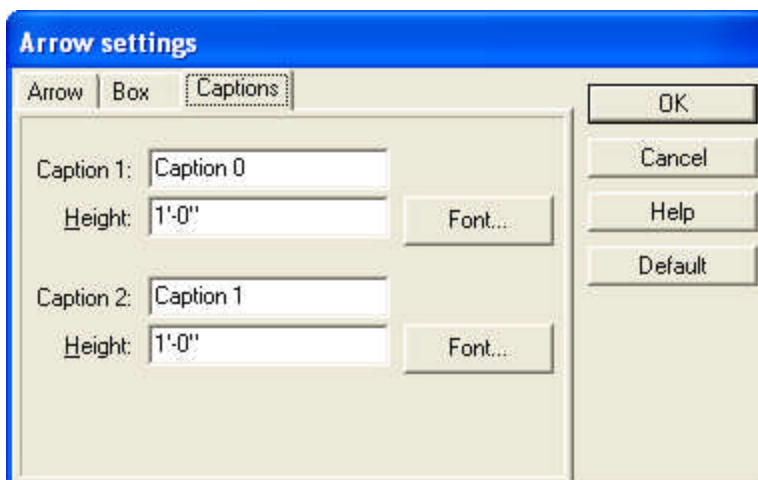
Cross line: you may introduce a dividing line between captions.

Margin: here you may set the margin's width.

Arrow position: set the position of the arrow relative to the box (which corner of the box the arrow should start from).

Number of captions: number of captions within the box.

7.18.4.3 Captions settings



Caption 1, 2: Enter the text of the caption.

Height: Set the font size (height) of the letters

Font: Font type of the text.

Part

VIII

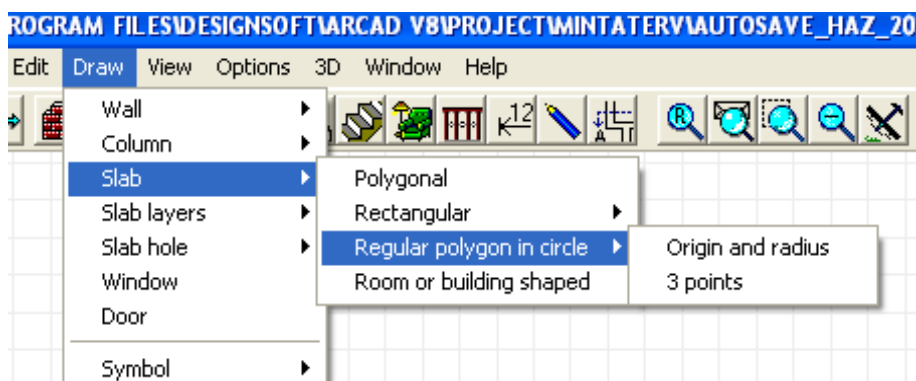


8 Draw

Introducing new building elements into the floor plan may be done in two ways:

- Clicking on a specific icon from the upper line of icons,
- Through the sub-menus of the Draw menu.

After choosing a given building element, the related icons appear on the left hand side of the screen. Different groups of icons belong to the different menus. By these icons you may access subtypes of the given building element more easily. In the **Draw** menu, a small arrow indicates if there are further sub-menus of a particular. Moving the mouse above these opens the sub-menu where you may select the desired command. In some menus there are even further sub-menus pertaining to the different building element sub-types.



The values are always entered and applied in the units set in **Options/Change unit**. The units may either be metric or in inches.


8.1 Drawing walls

After adjusting the parameters of a wall, draw the desired wall section. The icons on the left correspond to various wall types. To set the wall's length, enter two end points in one of the following ways:

- use the mouse to click on the desired end points
- use the arrow keys (press Shift before the pressing the arrow key to advance in meters, or the arrow keys alone to advance in centimeters)
- press X, Y, a, d and enter values into the fields at the bottom of the screen

Adjust the wall's width relative to the midline by pressing **Space**. Press **Shift** and **Space** to shift the layers on the A or B side of the wall.

Switch snapping on/off for elements already on the plan by going to **Options/Snapping**, or with the icons on the **Snapping** icon row. When snapping is switched on, "hot points" are indicated by a sign that appears next to the drawing pen

when passing by them. Automatic snapping may be switched off by clicking the  icon. The orientation of walls may also be adjusted using the icons opened by clicking *Constraints* in the lower icon row, or with the *Coordinate system settings* icons, also found in the lower icon row. Walls can be drawn in a 0, 45, 90, 135 degree, etc. orientation by pressing *Shift* or *Ctrl* while drawing, or by pressing **Ctrl+O**.

Adjust wall parameters in the fields **X**, **Y**, **a**, **d**. Open these fields by pressing the respective letter on the keyboard, and move between them by pressing *Tab*.

Note: After pressing X or Y, enter the position of the wall's end points. In the a field, specify the degree orientation of the wall, and its length in the field d.

Select the first point, then move the cursor to the second point. The values displayed in the **X** and **Y** fields show the distance of the cursor from the orientation point on the X and Y axis, **d** indicates the length of the wall, while **a** displays its orientation in degrees. If the relative coordinate system mode is switched on, the first point will function as the origin (0,0), indicated by a small red cross. The cursor's movement is displayed in the adjusted measuring unit.

8.1.1 Subtypes of walls



Single walls



Rectangle-shaped walls



Polyline walls



Curved walls



Build walls from lines and/or curves

The other icons are used for modifying walls already on the floor plan.



Merge intersecting walls



Unmerge walls



Cut off sections of a wall

After selecting the wall type and the starting point walls may be entered by

- moving the cursor to the second point (pressing down Shift or Ctrl enables you to draw walls in particular (90, 180, 270, 360 and 45, 90, 135 etc. degrees) orientations)
- moving by pressing the arrow buttons (by pressing down Shift you can move around in meters, without that, in centimeters)
- pressing **X**, **Y**, **a**, **d** and entering values into the respective fields:

| | | | | | | |
|---|----------|----------|---------|---------|------|----------|
| Δ | ax: 0.00 | ay: 0.00 | a: 0.00 | d: 0.00 | [cm] | [45.00°] |
|---|----------|----------|---------|---------|------|----------|

8.1.1.1 Drawing single walls



Single walls: Determine the position of the wall's end points. The first end point is marked by a red cross until the second is set.

8.1.1.2 Rectangular walls



Rectangular walls Draw four walls simultaneously with this feature. Select the first end, then use the moving rectangular frame to set the second point diagonal to it. These two points are the external points of the rectangle. Change the thickness of the wall by pressing **Space**.

8.1.1.3 Polyline walls



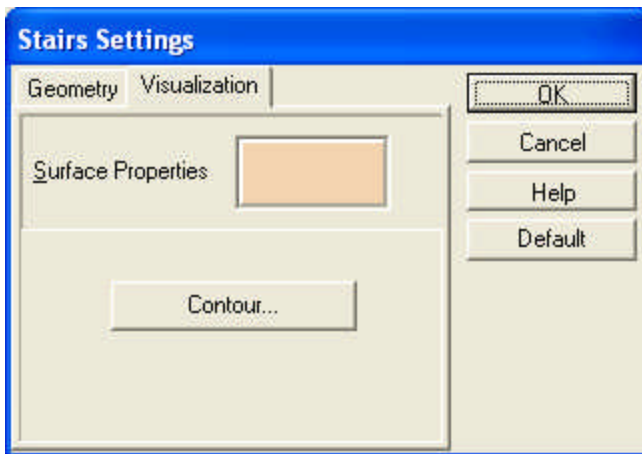
Polyline walls can be created by entering multiple points, which always serve as the starting point of the next section. Tilting can be used here as well (**Space**). This feature is convenient for designing stretches of interconnected, polygonal walls.

8.1.1.4 Curved walls



Create **Curved walls** by defining their two maximum and minimum values. The curve then appears; its arch can be defined by moving the cursor. Open the radius field by pressing **r**, or selecting **Radius determination** in the right-click menu. Enter a value for the radius, press Enter and the software automatically calculates the

central angle of the curve. If the central angle is entered, the program calculates the radius.



To generate a wall that is the complementary section of the circle defined by the curve displayed on the screen, select **Complementary section** from the right-click menu.

8.1.1.5 Build from lines or curves



First, draw linear or curved sections or series of sections, thereby defining the centerline of the prospective wall structure. Selected elements are highlighted in blue.

After this click on the icon or select **Edit/Wall/Build from lines or curves**. Then go on to select these lines and press **G** letter and walls will be imposed on the selected lines.

Thus you may create complex wall structures by defining the walls' axis by drawing lines and then impose walls on them. The lines may remain displayed in the axis of the wall, or may be deleted by selecting it and pressing **Del**. (If the line is selected it is highlighted in blue.)

The lines may also be automatically erased by the software by going to **Options/Generate walls from lines/Draw walls and keep lines** and switching the latter feature off.

8.1.2 Merge intersecting walls



Merging walls: Intersecting walls are not merged automatically by the software. To merge them, click the icon and then on the wall section. If the message "Merging not possible" appears, magnify the area and try to click on the overlapping area of the two walls. If this does not work, try modifying the end points themselves and then retry.

8.1.3 Unmerge walls



Unmerge intersecting walls with this icon. Click on the icon, then on the intersection point and the walls are unmerged. Thus they can once again be moved as separate walls.


8.1.4 Remove sections of a wall




Remove wall section: Click on the icon, then select two points on the wall, defining the part of the wall that is to be removed.

If another wall extends from a selected wall section, it is treated by the software as a separate wall. Thus, it is not possible to remove a wall section to which another wall is connected, as this would mean removing parts of two walls simultaneously.

8.1.5 Modifying and deleting walls

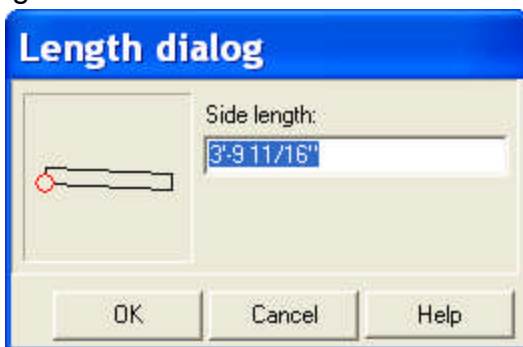
First, select the element to be modified or deleted by clicking first the  icon, then on the wall itself. Open the wall's dialogue box by double-clicking on the wall, or choosing **Properties** from the right-click menu. Move the selected wall by holding down the left mouse button and dragging it along with the cursor.

The wall or other building element can also be moved by:

- pressing X,Y after selecting the element and entering the values to shift it along the two axes
- clicking the  icon and moving the element manually using the arrow buttons

If you wish to modify the parameters of the wall's end only, move the cursor to the end. Click on the wall when a black pipe appears alongside the drawing pen, thus selecting the end point only.

Change between multiple superimposed elements by pressing **Space** or **Ctrl+N**, or right-click and select from the list of elements.



Change the length of a wall directly by selecting it and pressing **L**. It is also possible to define a reference point from which to measure the length of the wall in the dialog box.


Note that walls merged with a main wall are moved together with the main wall.

Unmerge walls by clicking .

The item may be deselected by clicking on any other part of the floor plan. You may remove a wall by pressing **Del** after selecting it.

Note: The last step in a designing process can always be withdrawn by **Edit/Undo**. If you wish to reimplement the withdrawn step choose **Edit/Redo**.

8.2 Columns

To enter columns, click the  icon from the upper icon line. Icons for various kinds of columns appear on the left side. Indoor and outdoor columns are entered in the same way. Set column parameters in their dialog box.

The column icons are:



Column parameters dialog box



Rectangular columns



Circular columns




Polygonal columns


Columns are entered and displayed on the floor plan in top view.

They can be rotated with the **+/- buttons** or  **icons**. Alter the degree of rotation by pressing **Shift+F3** or by changing the degree value at the bottom of the screen.

8.2.1 Rectangular columns

Place the column in the desired position. Rotate it by pressing **+/-** or with the  icons. Alter the degree of rotation by pressing **Shift+F3** or by changing the degree value at the bottom of the screen.

8.2.2 Circular columns

Place the column in the desired position. Alter its parameters in the dialog box opened by clicking .


8.2.3 Polygonal columns

First, draw the top-view shape of the column. You do not need to return to the starting point, simply double-click on the final point to automatically close the shape.



To introduce curves to the polygon, click on the icon, then define the curve's end points and the measurements of its arch.

8.2.4 Removing and modifying the columns


First select the column by clicking , then on the column itself. Open the column's dialog box by double-clicking on it, or by right-clicking and choosing **Properties** from the menu.

Change the number of corner points for polygonal or rectangular columns by first selecting the column, then right-clicking and choosing **Point operations/Insert point**.


Reposition a corner point by first clicking on it (a black pipe indicates when the cursor is over a corner point), then reposition it by dragging with the cursor or by entering new X and Y.

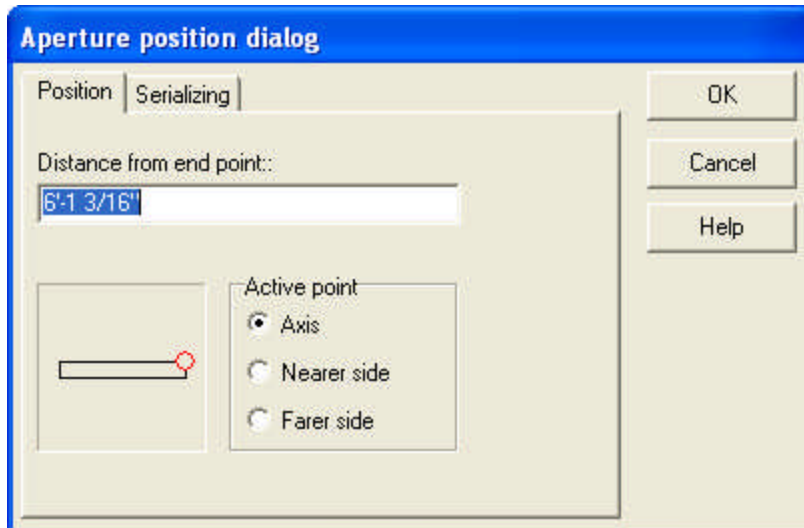
Group settings: Adjust the properties of several elements simultaneously by selecting an element type. Select multiple elements and view a list of them by double-clicking on the relevant area.

8.3 Windows

Add windows to your project by first clicking on the  icon. The icons used to draw windows appear on the left-hand side. Choose windows from the library, then specify their 2D and 3D parameters in the dialog. Select the wall onto which the windows will be added, then insert them onto the plan. A rectangle appears on the wall, which can

be moved to indicate the window's position. Move the window either with the mouse or using the arrow keys.

Interior and exterior windows are entered in the same way. If it is difficult to position the window accurately, use the **Division mode determination**  option. Insert division points into the walls with this feature to assist in positioning the window. Alternatively, enter the window position numerically by pressing X or Y and specifying exact coordinates. This is done in the **Aperture position dialog**.



Graphical window: Define the end point from which the distance of the window is measured by clicking on the desired corner. The small red circle is relocated to the new position.

Distance from end point: Set the distance of the window from the specified end point.

Active point: Axis/Near side/Far side: Set the reference point from which the distance of the end point is measured.

Serializing: Insert several windows simultaneously. The distance between them must be defined.

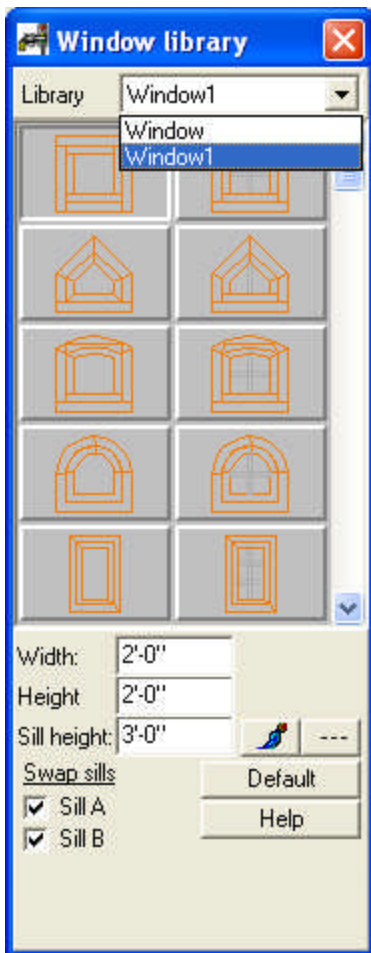
Note: Note that snapping points are available along the axis, on corner points and on the axis dimensioning lines of apertures. The easiest way to select axis dimensioning lines is on its axis, outside the aperture.


8.3.1 Using window libraries

Windows are displayed in frontal view in the dialog box of the window library. Move the cursor over the windows to see their properties (name, width, height).

- **LIBRARY:** Clicking on the downward facing arrow next to "Library" opens the scroll-down list of window libraries. Click on to open any library.
- **Width, Height:** Modify the default height and the width of windows. Press Enter after entering new values
- **Sill height:** Set sill height of the window here. The default setting is 90 cm. Press Enter after entering new values.
- **Sill A, B:** Assign sills to the window. Adjust their properties in *Advanced*.
- **Swap sills:** Swap sills on the two sides of the window may be swapped.
- **Bearer:** Set whether you want the bearer to be displayed on 2D or sectional views. Properties of the bearer may be set in *Advanced*.







8.3.1.1 Window libraries



Windows are grouped into the following libraries: Window, Window1. The side seen on the graphical representation of the window library will be on the A side of the wall when inserted (Space). It can be turned to the other side by clicking the  icon (after the window has already been inserted onto the wall).

8.3.2 Floor plan and sectional properties of windows

SHAPE: Modify the window's shape by clicking on the left-hand icons or selecting features from the dialog box.

-  **Reveal on the left side of the wall side**
-  **Reveal on the right side**
-  **Window situated on the slot's left end right end**
-  **Window situated on right end**
-  **Window situated in the middle**
-  **Slot** (when this icon is selected the software only inserts a slot corresponding to the window's shape into the wall, not the window itself)

 **Invert the window in 3D along its axis:** This feature is useful primarily in the case of asymmetrical apertures.

 **Invert the window in 3D along the wall's axis:** Reverse the orientation of the window.

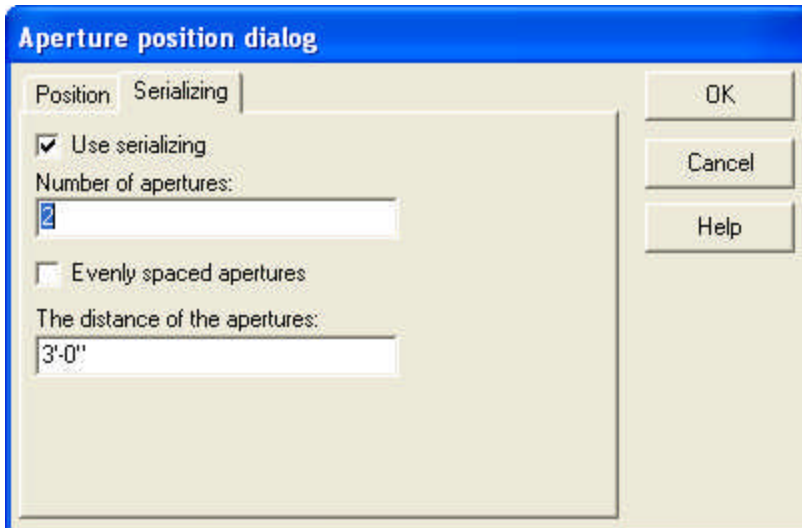


Invert the axle: This icon inverts the axle and its captions. If axis dimensioning is switched on, this is inverted as well.



Window designer **MODELLER** module for adding new items to the window library.

8.3.3 Serializing



Use the **SERIALIZING** dialog to insert several apertures simultaneously into the wall. First, define their distance from each other. Clicking *Use serializing* opens the fields where you can adjust the following parameters:

Number of apertures: Adjust the number of apertures.

Distance of apertures: Define the distance between apertures. The starting point is defined in the previous dialog (*Position*). The entered values must be positive.

Evenly spaced apertures: Request an even distribution for the apertures. The software calculates their distance, you need only define their number.

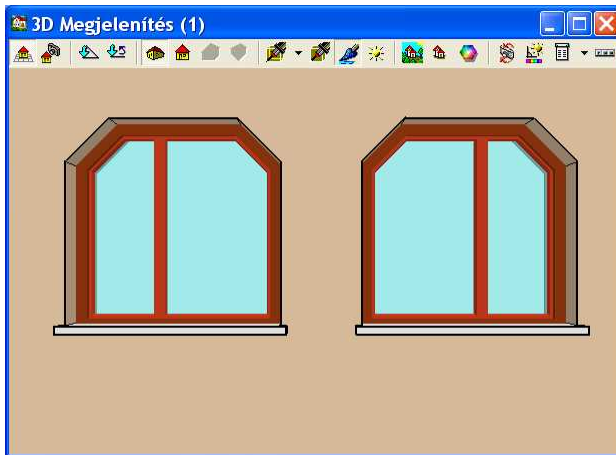
Note: Open the dialog box by pressing X or Y while positioning the window along the wall.


8.3.4 Inverting windows in 3D

The results of this feature can only be seen in the case of asymmetrical windows, on their 3D image.



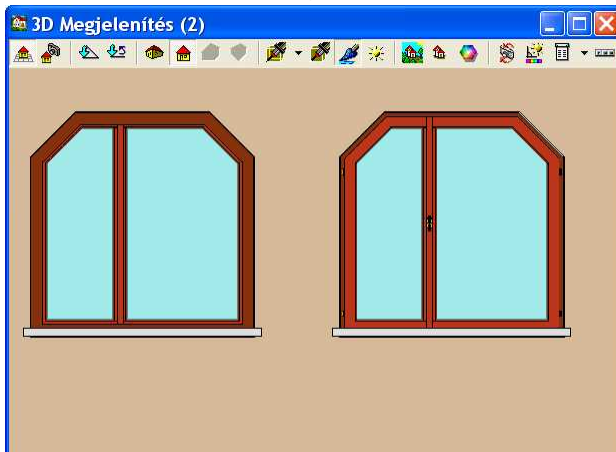
Invert the window along its own axis: First, click on the icon itself, then on the window. The change is only visible in 3D mode.



Inverting a window with the  icon



Invert the window along the wall's axis: First, click on the icon itself, then on the window. The change is only visible in 3D mode.




8.3.5 Modifying or removing the window

First, select the building element, then alter its properties by double-clicking (or clicking on the small notebook icon on the left-hand side) and modifying the properties in the dialog box. It is possible to replace one window with another type by selecting the current window then clicking on another item in the library. To introduce an item from another sub-library, first delete the existing window and then introduce the new one.


Modify several elements (of the same kind) simultaneously by first selecting the entire area containing the structures.


8.4 Doors

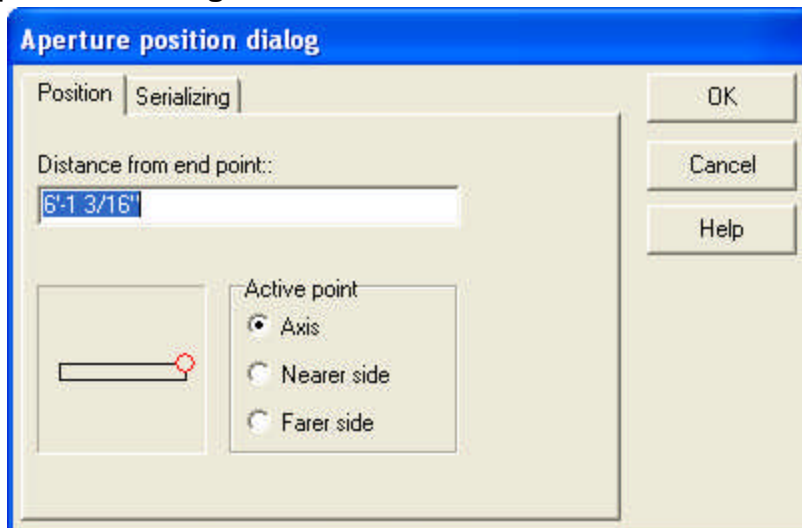
To add doors to your project, first click on the  icon. The door icons appear on the left-hand side. Designing and entering doors is a process very similar to that of windows.

Introduce doors onto the floor plan by choosing them from the library, specifying their 2D and 3D parameters and finally inserting them onto walls.

Interior doors are entered in the same way as exterior doors. Door properties are adjusted in graphical dialogs. This dialog box appears automatically after clicking on

the  icon. After specifying the properties of the door, choose the wall to insert the door onto. A rectangle appears on the wall, which can be moved along the wall to define the position of the door. Move the door either with the mouse or with the arrow buttons.

If it proves difficult to position the door accurately, use the **Division mode determination**  feature. Insert division points onto the walls to assist in positioning the door. Alternatively, enter the position of the door numerically by pressing the letter X or Y and specifying the exact coordinates in the **Aperture position dialog**.



Graphical window: Define the end point from which the distance of the door is to be measured by simply clicking on the respective corner. The relocation of the small red circle shows the position of the selected point.

Distance from end point: Set the distance of the door from the specified end point.

Active point: Axis/Nearer side/Farer side: Set the reference point of the door, from which the distance of the end point should be understood.

Serializing: Insert several doors at the same time. You must define the distance between them.


Note: Note that snapping points are available along the axis, on corner points and on the axis dimensioning lines of apertures. The easiest way to select axis dimensioning lines is on its axis, outside the aperture.

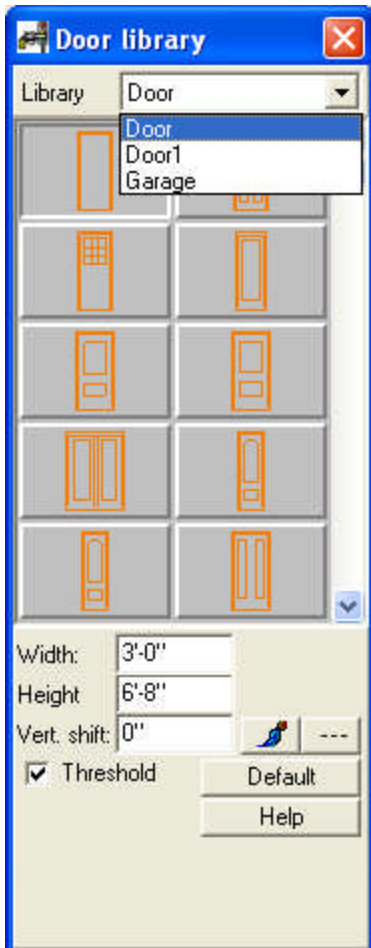
8.4.1 Using the door libraries

Doors are displayed in frontal view in the dialog box of the window library. Move the cursor over the doors to see their properties (name, width, height).

- **LIBRARY:** Clicking on the downward facing arrow next to "Library" opens the scroll-down list of door libraries. Click on to open any library.
- **Width, Height:** Modify the default height and the width of doors. Press Enter after entering new values.
- **Vertical shift:** Vertical shift of the door. The default height is 90 centimeters. Press Enter to apply the changes.
- **Threshold:** The floor plan display of the threshold can be switched on/off.

8.4.1.1 Door libraries

Doors are grouped into the following libraries: **Door, Door1, Garage**. The side seen on the graphical representation of the door library will be on the A side of the wall when Turn this to the other side by clicking the  icon (after the door has been inserted onto the wall).



8.4.2 Floor plan and sectional properties of doors


Introduce doors onto the floor plan by choosing them from the library, specifying their 2D and 3D parameters and inserting them into walls. The properties of doors may be further modified using the icons in the left hand column of icons:

Wings:



Relative position of the door (within the wall):



 **Slot** (the software only inserts a slot corresponding to the door's shape into the wall, not the door itself)

 **Invert the door in 3D along its axis:** This feature is useful primarily in the case of asymmetrical apertures.

 **Invert the window in 3D along the wall's axis:** Reverse the orientation of the door.

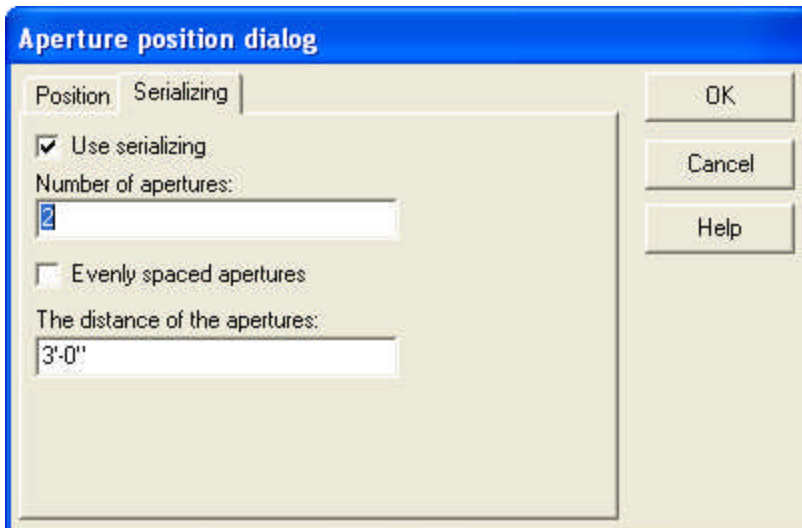


Invert the axle: This icon turns inverts the axle and its captions. If axis dimensioning is switched on, this is inverted as well.



Modify the direction the door opens

8.4.3 Serializing doors



Use the **SERIALIZING** dialog to insert several apertures simultaneously into the wall. First, define their distance from each other. Clicking *Use serializing* opens the fields where you can adjust the following parameters:

Number of apertures: Adjust the number of apertures.

Distance of apertures: Define the distance between apertures. The starting point is defined in the previous dialog (*Position*). The entered values must be positive.

Evenly spaced apertures: Request an even distribution for the apertures. The software calculates their distance, you need only define their number.

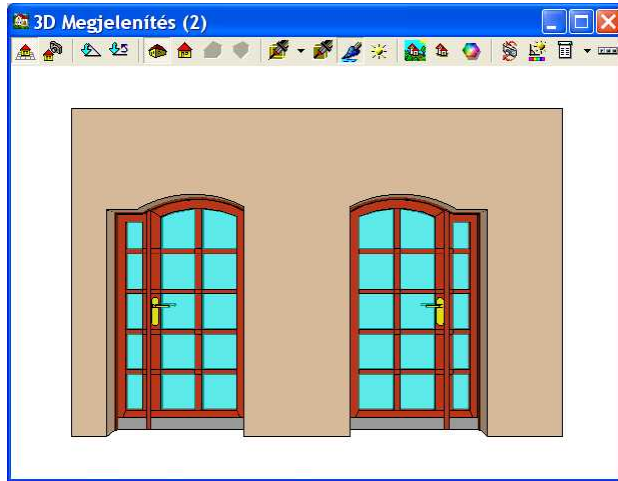
Note: Open the dialog box by pressing X or Y while positioning the window along the wall.


8.4.4 Inverting doors in 3D

The results of this feature are only visible for asymmetrical windows, on their 3D image.



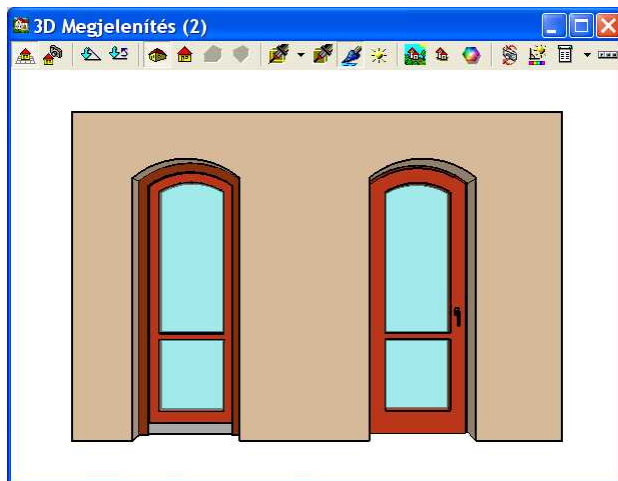
Invert the window along its own axis: First, click on the icon itself, then on the door. The change is only visible in 3D mode.



Inverting a door with the  icon



Invert the door along the wall's axis: First, click on the icon itself, then on the door. The swapping of the external and internal sides of the door) is only visible in 3D mode.




8.4.5 Modifying or removing the window

First, select the building element, then alter its properties by double-clicking (or clicking on the small notebook icon on the left-hand side) and modifying the properties in the dialog box. It is possible to replace one window with another type by selecting the current window then clicking on another item in the library. To introduce an item from another sub-library, first delete the existing window and then introduce the new one.

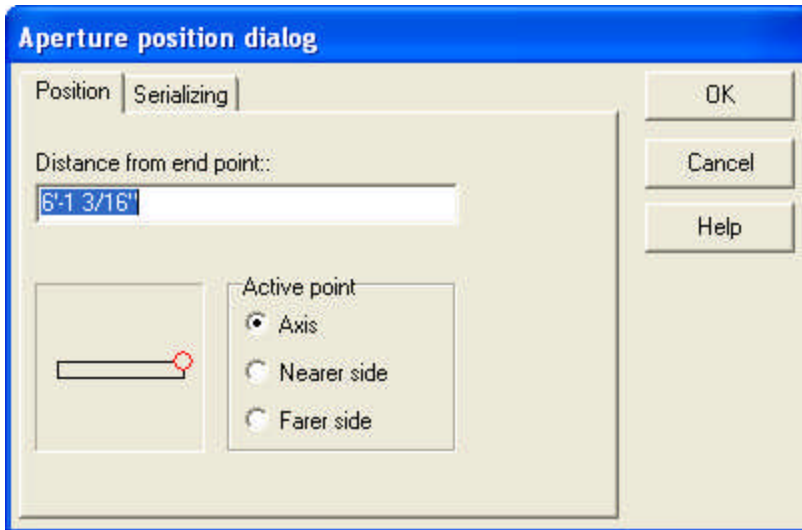
Modify several elements (of the same kind) simultaneously by first selecting the entire area containing the structures.

8.5 Positioning apertures along walls

After selecting an aperture, choose which wall to insert it onto. A rectangle appears on the wall, which can be moved along the length of the wall to define the position of the window. Move the aperture either with the mouse or with the arrow buttons.

If it is difficult to position the aperture accurately, use the **Division mode determination**  feature. Insert division points onto the walls to assist in precise

positioning. Alternatively, enter the position of the aperture numerically by pressing the letter X or Y and specifying the exact coordinates in the **Aperture position dialog**.



Graphical window: Define the end point from which the distance of the aperture is to be measured by simply clicking on the respective corner. The relocation of the small red circle shows the position of the selected point.

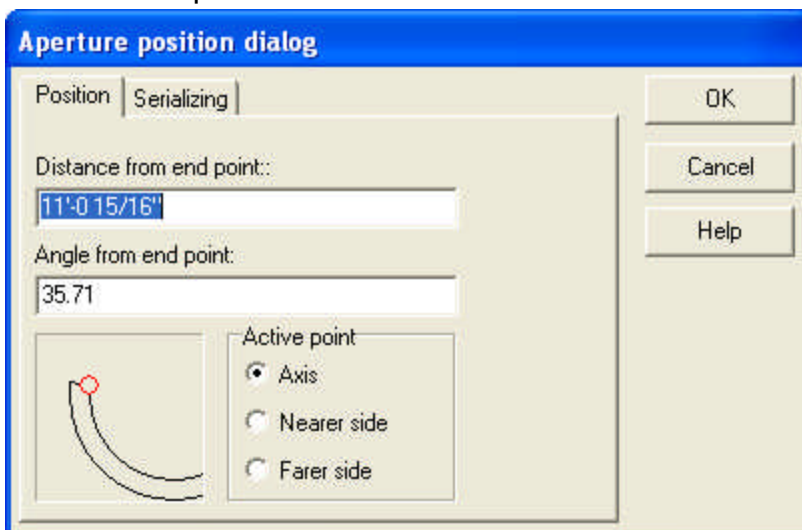
Distance from end point: Set the distance of the aperture from the specified end point.

Active point: Axis/Near side/Far side: Set the reference point of the aperture, from which the distance of the end point should be understood.

Serializing: Insert several apertures at the same time. You must define the distance separating them.

8.6 Positioning apertures along curved walls

Enter the position of the aperture numerically by pressing the letter X or Y and specifying the exact position on curved walls. Set the distance of the aperture (of its axis or of its end point) from the end of the wall, or set the angle of the aperture with the wall's end point.



Alternatively, select a given slab and choose **Regenerate area** from the right-click menu. It is also possible to use the command *Determine reference point*. In this case you must provide a reference point from which the new slab is generated.

Note: *If the outer shape of a building is modified by rearranging its walls, the automatically generated slabs should be rearranged as well. To do this, select the slab and right-click on it, then click **Regenerate area** in the menu that appears.*

8.7.2 Rectangular slabs



Drawing upright (vertical) rectangular slabs:

Width: Size of the slab along the **x** axis.

Height: Size of the slab along the **y** axis.

After setting the first point of the rectangle, enter its dimensions with the cursor or the arrow buttons. Click again to set the second diagonal point of the rectangle, thus defining its overall shape.



Drawing rectangular slabs of any orientation: To create rectangular slabs in any orientation, first set two points for one side of the rectangle, then enter a third point to define the other side.


8.7.3 Polygonal and curved slabs



Creating polygonal and curved slabs


All corner points must be defined one by one. After setting the first point, a rubber line assists facilitates designing the polygon. Close the structure at the last point by double-clicking, or by reconnecting the last point to the first.



It is possible to introduce curves into a polygonal slab. Click on the  icon while drawing the polygon, and create a curve simply by setting its two points, an intermediate point and an end point.

8.7.3.1 Number of arches




To introduce curves into a polygonal slab, click on the  icon while drawing the polygon. Create the curve simply by entering its two points, an intermediate point and an end point.

8.7.4 Regular polygons and circular slabs



Drawing circular or regular polygonal slabs

After selecting one of the icons above click on the  icon, and the dialog box opens. Here you may set the number of arches or the radius of the circle. After having done that, proceed to draw the slab.



Circular or (regular) polygonal slabs specified by their radius: Here you may define the size (and shape) of the slab by setting its radius and center point.



Circular slabs specified by defining three points of the slab: define the circle by 3 points. After defining the circle, a polygon appears within, which may be

rotated. The polygon may also be magnified to be outside the circle by pressing Space.


8.7.5 Removing parts of a slab



Removing parts of a slab: Removing parts of a slab is necessary when creating staircases, chimneys, etc.

The shape of the hole cut into the slab may be edited, modified or deleted. The layers connected to the slab are also automatically cut through. Deleting the slab entails the removal of the cut-out as well.



To remove a part of a slab: Click on the  icon, then select the slab. Draw the shape of the part to be removed. The shape is determined by the icon chosen from the above list. The cut-out may be in the shape of a rectangle, polygon or circle, or may be automatically generated.





Rearrange slabs and automatically generated cut-outs by clicking this icon (if the corresponding building was modified), or by selecting the command **Regenerate area** from the right click menu.

Note: *It is possible to remove several parts of a slab. It is practical to put one slab on a single building. The removed portion may be at the edge of a slab as well.*

8.7.6 Rearranging automatically generated slabs




Click the  icon to reconfigure automatically generated slabs. This should be done, for instance, in the case of moving the walls of a building, if the slab is not automatically modified as well. In this case, click the  icon and the slab is regenerated.


Alternatively, select a given slab and choose **Regenerate area** from the right-click menu. It is also possible to use the command *Determine reference point*. In this case you must provide a reference point from which the new slab is generated.

8.7.7 Build pavements from slabs

Build pavements or ledges around a building from automatically generated slabs.



1. Draw a slab by clicking  and then clicking next to one of the building's walls. Beforehand you should switch off **Use corner points of supporting structures**, so that the slab is created along the outer side of the wall.

2. Select and then right-click the slab and switch off the option **Room or building shaped** in the menu.
3. Select and right-click the slab, then select **Shift parallel slab sides** from the menu.
4. After clicking on the slab, a "rubber frame" (parallel to the edges of the slab) appears. Expand this frame to the desired shape. Thus the slab is elongated.
5. The internal slab should be removed. Click on the  icon, select the slab of the pavement and then click on an arbitrary point along the outer edges of the walls. Thus the internal part of the slab is removed, leaving only the slab of the pavement.


8.8 Removing parts of slabs



Removing parts of a slab: Removing parts of a slab is necessary when creating staircases, chimneys, etc.

The shape of the hole cut into the slab may be edited, modified or deleted. The layers connected to the slab are also automatically cut through. Deleting the slab entails the removal of the cut-out as well.



To remove a part of a slab: Click on the  icon, then select the slab. Draw the shape of the part to be removed. The shape is determined by the icon chosen from the above list. The cut-out may be in the shape of a rectangle, polygon or circle, or may be automatically generated.



Rearrange slabs and automatically generated cut-outs by clicking this icon (if the corresponding building was modified), or by selecting the command **Regenerate area** from the right click menu.

Note: *It is possible to remove several parts of a slab. It is practical to put one slab on a single building. The removed portion may be at the edge of a slab as well.*

8.9 Roof



Automatic roof designer:

Click on the icon, then draw the polygonal structure of the roof. Select from the right click menu whether you want to draw the shape of the roof or have it automatically generated (along the external edges of the building) by providing a reference point.

You can also switch on the feature **Room or building shaped** (also found in the right click menu). When this feature is activated you need only click on an outer wall of a building, and the room is automatically created along the walls.

Switching on the feature **Use corner points of the supporting structure** results in a shape along the wall structure, without taking into account the thickness of the wall's layers.

If you switch off **Room or building shaped** you need to draw the shape of the roof yourself.

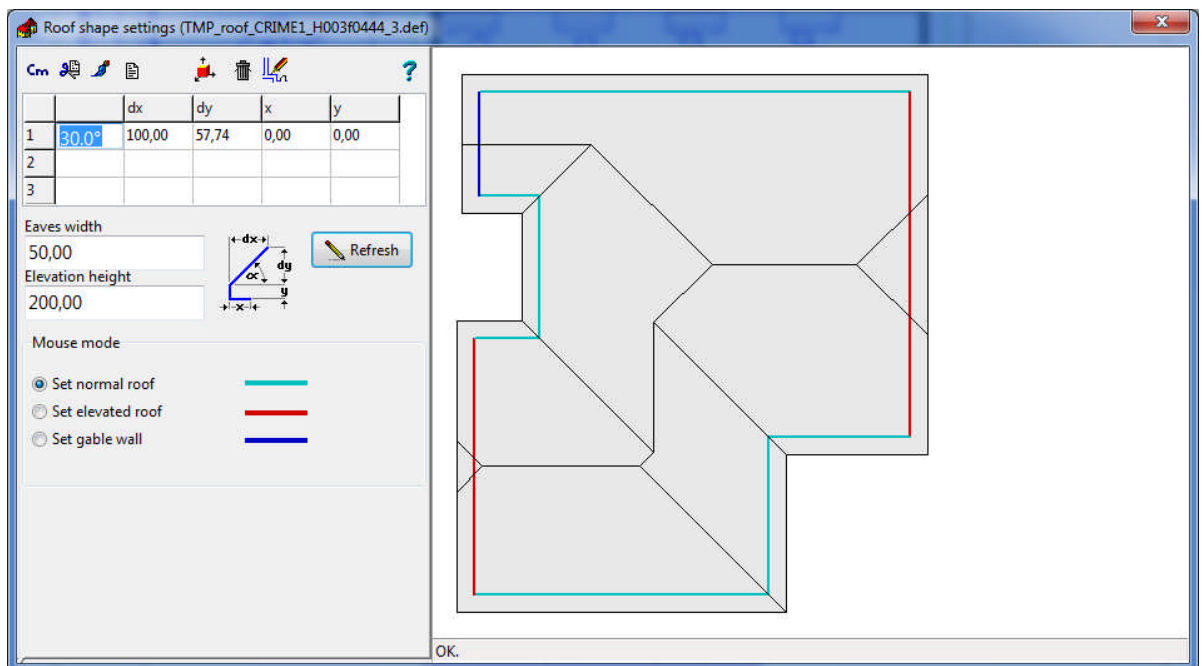
When *Snapping* is turned on, drawing the roof is facilitated by the appearance of black pipes.

After designing the polygonal shape of the roof, the **Automatic roof designer** appears.


Set the roof pitch and choose from various roof types: (normal, hip roof, with gable, etc).


The roof pitch is the same all along the roof. However, along the edges of the roof, additional parts of a different orientation can be attached.

8.9.1 Designer window




 **Cm/Inch icon:** Select a unit of measurement


 Click on this icon to erase the values entered in the fields 1,2 and 3

 Visualize the roof in 3D mode

 Set other properties of the roof

 Set properties of the valley, ridge and eaves

 Visualize the roof in color 3D mode

 Delete the roof and return to the 2D designer



Transfer the roof to the plan and return to 2D mode



Help

1,2,3: Set the values of the roof pitch filling in the fields **dx**, **dy** or by specifying the angle, and then pressing Enter. The program automatically calculates the third value when two are entered.

dx or **dy:** If there is a break in the roof pitch, then set the position in the **dx** and **dy** fields, **dx** determining its position in the top view and **dy** its height.

Width of the eaves: Set the width of the eaves. This entails expansion of the roof's contour by the entered value and the rearrangement of its overall structure.

Elevation height of hip roofs: Set the height at which the hip begins. A negative value can be entered; this results in a roof plane extending downwards.

Mouse function: Normal roof/Hip roofs/Set gable wall: After selecting the roof type, click on an edge of the wall, and the roof is reconfigured accordingly. The result is then displayed in the visual field.

8.10 Roof library

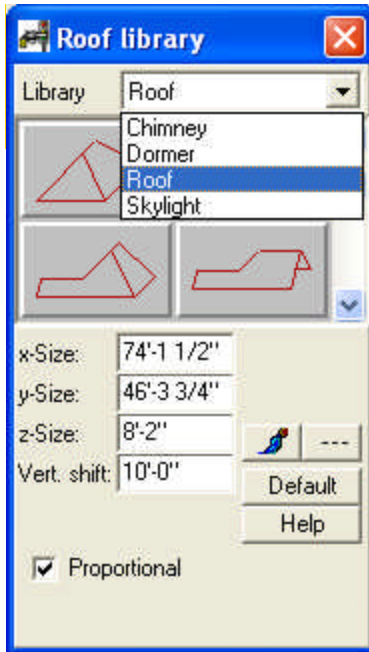
- Elements from the library of roofs, dormers, skylights, chimneys are stored in the **3DMODELS.LIB** file. Graphic symbols of the elements are grouped into **BT2**, **BT3** files. The list of these libraries can be found in the **RoofLibs.DAT** file. **BT2** files comprise the top view of symbols, whereas **BT3** files contain the three-dimensional axonometric view. 3D symbols are stored in the **3DMODELS.LIB** file. In the case of 3D visualizations, the 3D symbol is automatically loaded and inserted in the appropriate position and orientation from this library. You can create your own elements using the **3D MODELER**, which also enables you to group them into libraries. These elements are then stored in the **MODELER.LIB** library file, while their entries are stored in **RoofLibs.DAT**. Their new **BT2**, **BT3** files will be created as well.

Roof.bt2 bt3: library for roofs.

Chimney.bt2 bt3: Library for chimneys. You must use the file name **CHIMNEYn** when you add new elements.

Skylight.bt2 bt3: Skylights. You must use the filename **SKYn** for newly added elements!

Dormer.bt2 bt3: Dormers. You must use the filename **DORMERn** for newly added elements.




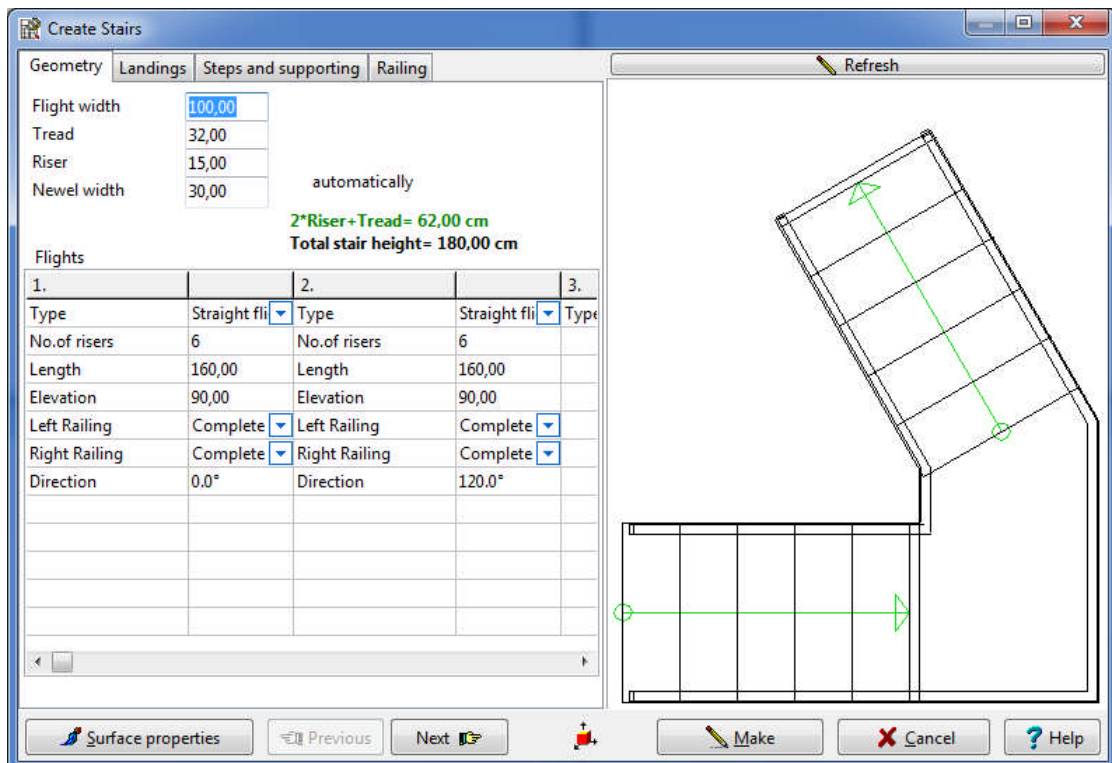
Note: The software automatically locates skylights, chimneys etc. on the roof. Pay attention to creating your own library names, because the names determine how the program positions new objects on the roof!

8.11 Designing stairs with winders



Designing winders individually: The program also enables you to design stairs individually.

Designing stairs by designing its constituent winders one-by-one: The stair designer is opened with the  icon. In this window you may specify the type of the stairs:





Straight flight, Winding flight, Curved flight. Then set the properties of the winder. This is a multi-window dialog, therefore you can also make adjustments to a




supporting structure, a landing for the winder, or set the number of steps, the parameters of steps, etc.

As you fill in the parameters of the stairs, a sketch of the corresponding structure (from a bird's eye view) is continuously shown in the graphical window on the right. You can correct and overwrite the values previously entered.

8.12 Symbols

Additional 3-D building elements (symbols) are available to complement your project. These symbols are grouped into libraries by their functions. To introduce symbols into



the plan, click on the  or  icon. The icons for the various sub-libraries appear on the left, as well as a dialog box displaying the symbols. Select from the libraries by clicking on the icons on the right, or by selecting from the scroll-down menu in the dialog box. The library Template is displayed when the dialog box appears, as this contains the most frequently used symbols.

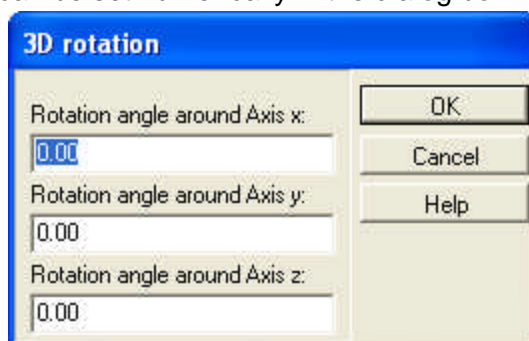
Note: The selected  symbol can be rotated on the floor plan with the +/- buttons, or by clicking the icons  . Pressing **Shift+F3** readjusts the value of rotation steps, changing between a lower and a higher value. (Displayed in the row of coordinates.)



List of symbol libraries

8.12.1 Rotating symbols in 3 dimensions

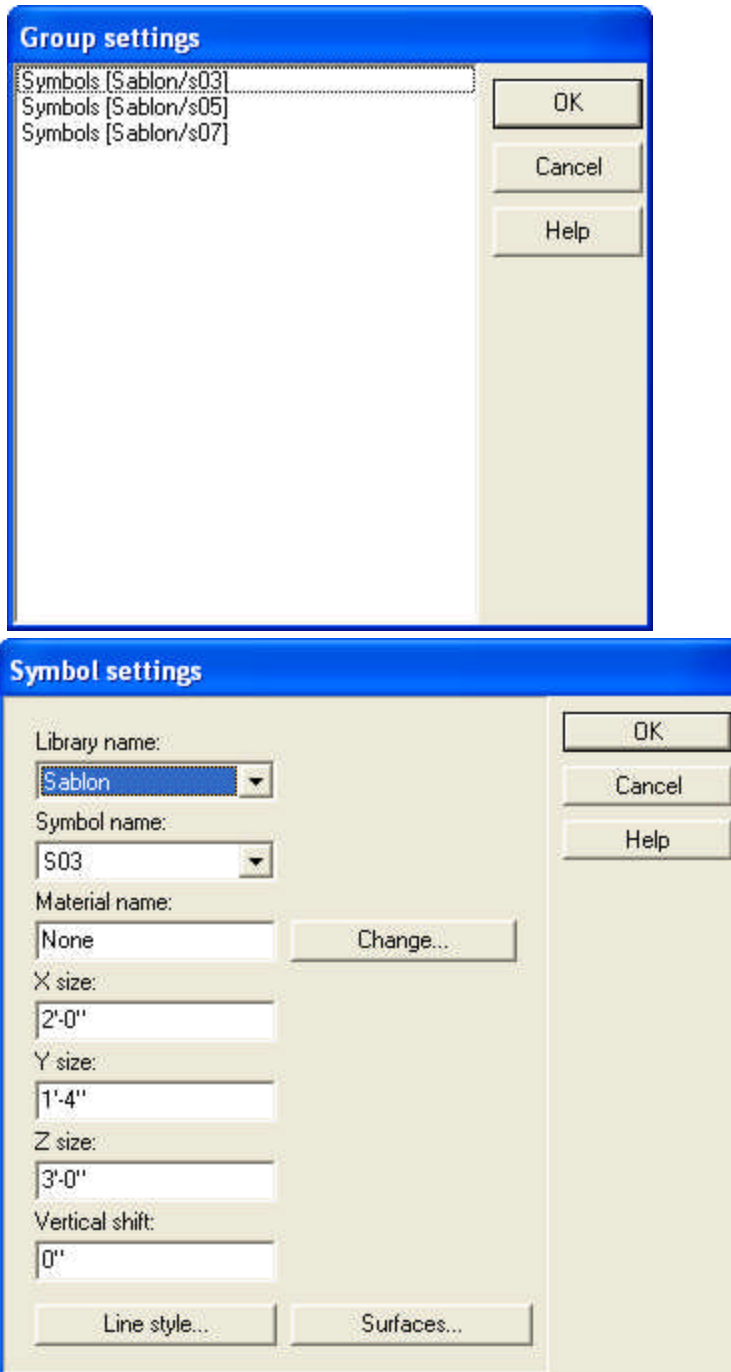
Once inserted onto the floor plan, the symbols can still be rotated. Select them and pressing the +/- buttons or click the   icons. This entails rotation around the Y axis. After selecting the symbol you can also open the *3D rotation menu* by right-clicking on it. Using this feature you can rotate the element along any of the 3 axes. The value of rotation can be set numerically in the dialog box.



8.12.2 Modifying or removing groups of symbols

First, select the building element. Then double-click on it (or click on the small notebook icon on the left) and modify its properties in the dialog box. You can also replace one window with another by selecting it and then clicking on another item from the library. To introduce an item from another sub-library, first delete the existing window and then introduce the new one.

You can also modify several elements (of the same kind) at the same time. First select the entire area containing the structures.



In the **Group settings** window a list of the elements in the area appears, sorted into categories. Double clicking on a group opens its dialog box, where you can modify the properties of all the objects belonging to that group. *Here you can also replace one object with another from a different sub-library, simply by choosing from the list of libraries and elements.*

Select all elements at the same time by pressing **Ctrl+A**. Selecting apertures whilst holding down **Shift** enables you to select the windows from wall only.

Remove an element (or elements) by pressing **Del** after selecting it.

8.12.3 Creating animations

Creating animation models of traffic accidents and crime scenes is easy with **3D EyeWitness**. First, enter the relevant information about the event: the individuals involved, vehicles, speed and direction of movement, etc. From this data **3D**



EyeWitness creates an animation, which can be viewed from a variety of perspectives. The camera may either be static or move along a path you specify. Set the camera inside a car, for instance, to gain new insight on a traffic accident. Who could see the accident unfold and to what extent? **3D EyeWitness** offers you the tools to investigate these questions and more. Try it once and you'll agree - **3D EyeWitness** is an indispensable tool for today's emergency management and law enforcement professionals.

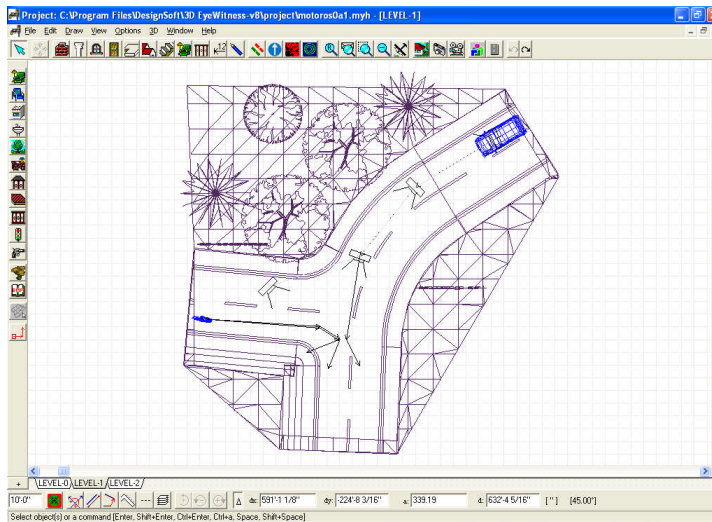
The objects to be used in the animation can be taken from the symbol library. These symbols (cars, people, weapons, etc.) may be resized, given colors and patterns, and otherwise modified. It is also possible to animate these symbols moving along a path. To do so, the path must be determined on the floor plan.

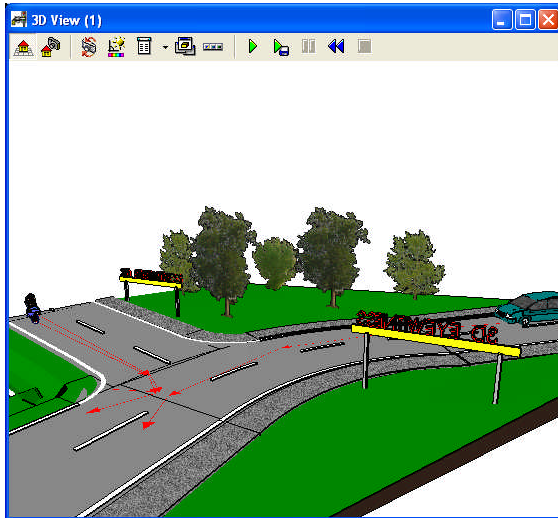
8.12.3.1 Creating 3D Animations


Two kinds of animation are possible in 3DEyewitness: static camera and dynamic camera.


8.12.3.1.1 Static camera animation

To generate an animation planned on a 2D drawing, first open the 3D mode by clicking the  icon. The point of view for the animation can then be adjusted on the 3D image by rotating and moving the 3D image. Clicking the  icon will generate the animation.

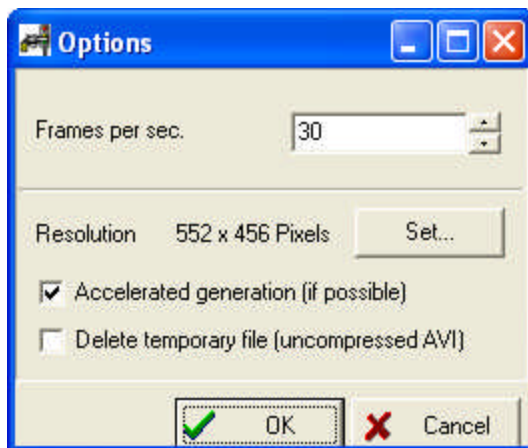




We run the animation by clicking the  icon. Here we can check that the data and motion path have been set correctly. If the event runs correctly, then we click the

 to generate the final film.

In the **Settings** dialogue box the following parameters can be modified:



- The number of frames per second. A suitably high number of frames per second ensures that the animation appears continuous, not jumpy.
- The size of the image. (**Resolution: pixels**) The size of the image can also be altered by changing the size of the 3D window.
- 3D parameters.
- Accelerated generation of the animation [where possible].
- Deletion of temporary files.

In the **Film Compression Settings** dialogue the following parameters can be modified:

- Movie type: **AVI**, **FLV**, **SWF** or **MOV**.
- Compressed **AVI**
- For Flash videos: **FLV** (self-supporting like **AVI**, but requires an **FLV** player) or **SWF** (direct to the web, can be played without a player). The quality (in kbit/s) can also be set.
- For Quick Time **MOV**, the quality (in kbit/s) can be specified.

See:

Program Files/DesignSoft/3D EyeWitness v9/PROJECT / **motorist1.avi**, **light.avi**
and
Document and Settings / / PROJECT / **MOTORORISTS.MYH**

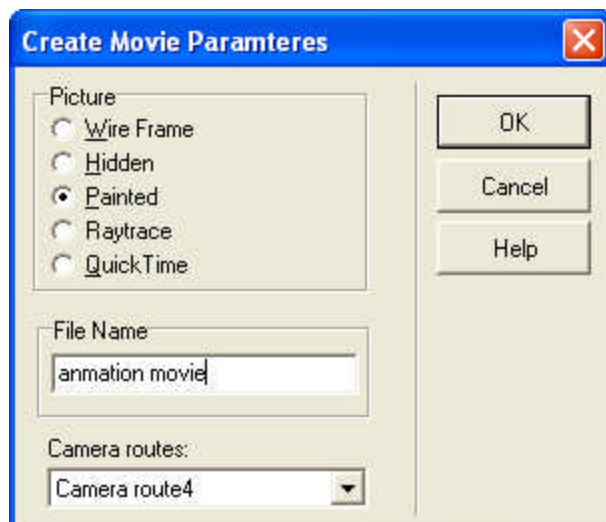
8.12.3.1.2 Dynamic camera animation

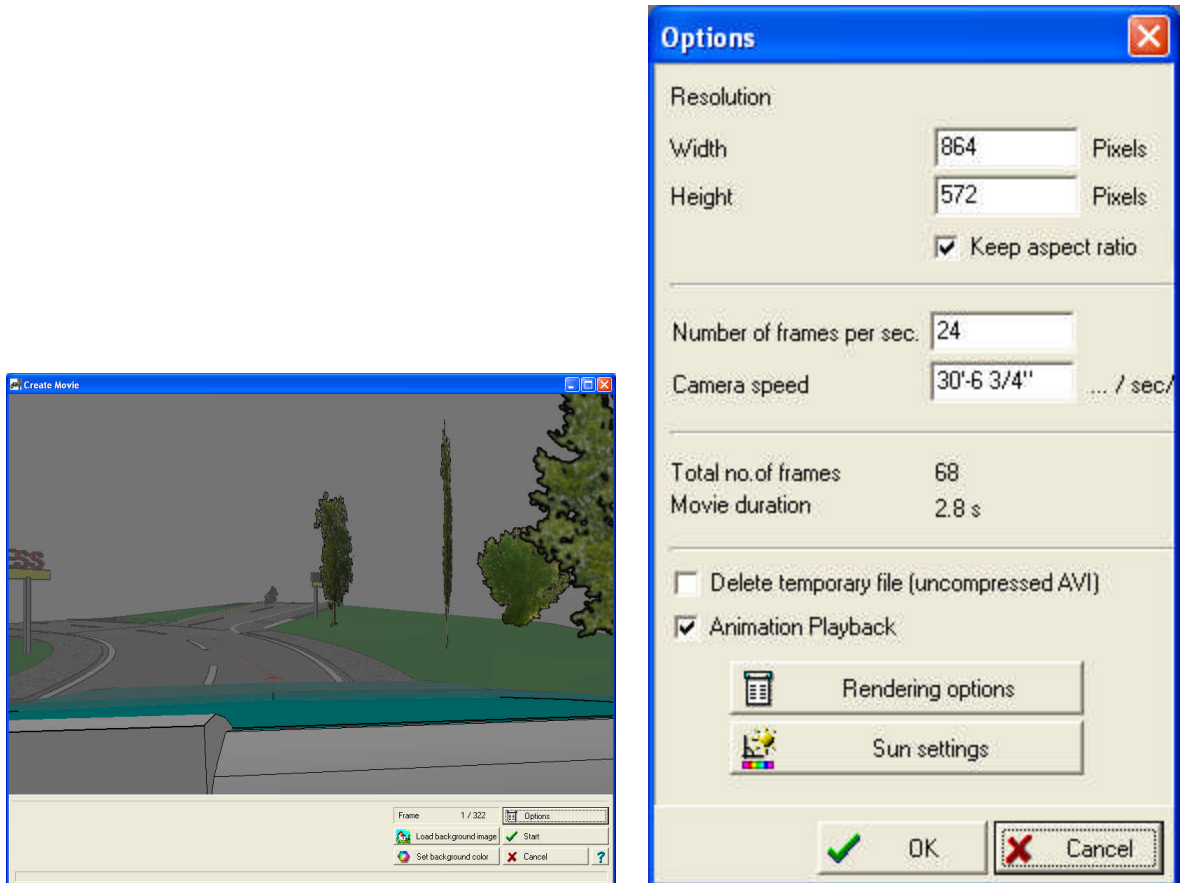
To create an animation with a dynamic camera, first cameras are placed on the 2D floorplan along the intended path. If we wish the camera to travel along the path of a road for instance, we may place the first camera inside the car and then give it a speed equal to the car's. In this way the animation will record action as it appears from the moving car.

In the **Create Movie / Options** dialogue we may set **Animation Playback**. Without this feature the camera moves along the path, without moving the specified symbols. Here the screen size may be set (**Resolution: Width, Height**).

See:

Program Files/DesignSoft/3D EyeWitness v9/PROJECT / **motorist2.avi** and
Document and Settings / / PROJECT / **MOTORORISTS.MYH**





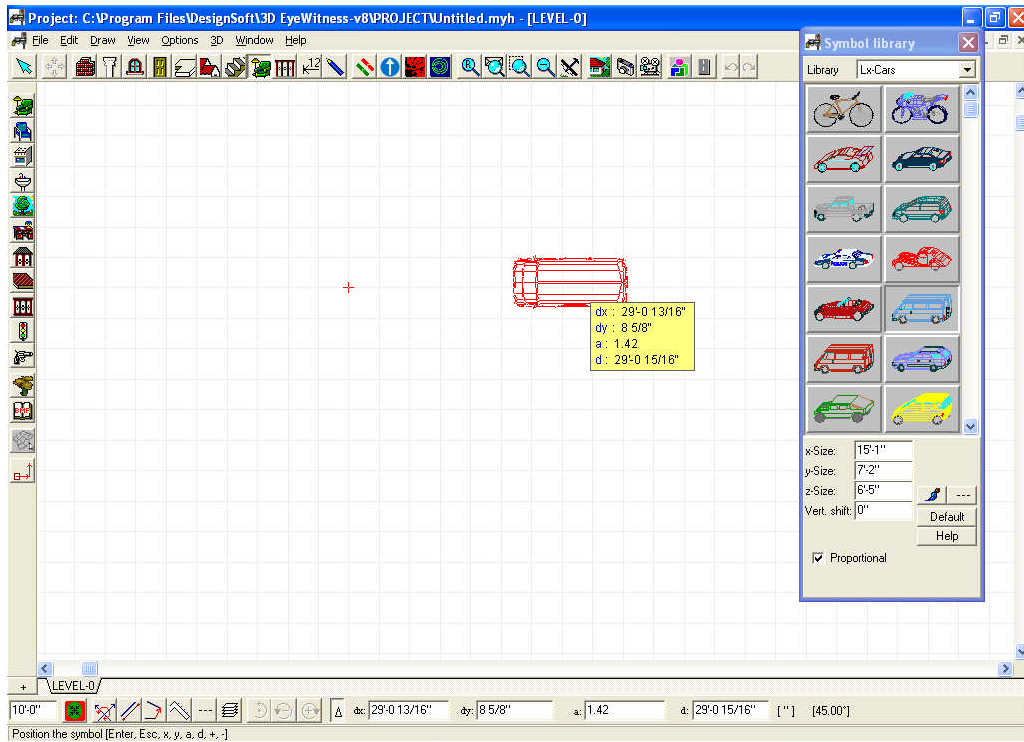
By modifying the **number of frames per second** and the **camera speed** settings we can synchronize the camera movement with the events in the animation. The number of frames in the film and its length, **Movie duration** in seconds, is also visible. Here the movie type must be specified, as described above in the case of static camera animation.


Note: Switch off **Show this dialog automatically** parameter in Raytrace mode.

8.12.3.2 Creating animations example

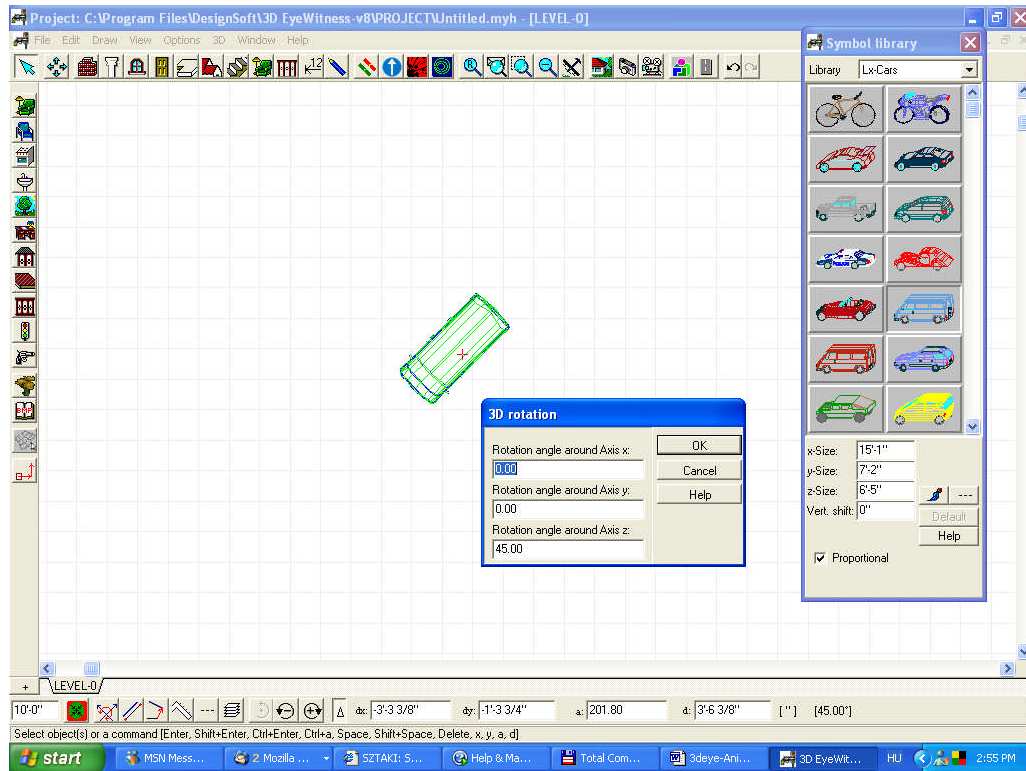
The following example illustrates the steps needed to set a path for an animated symbol.

1. **Choose** a symbol from the library

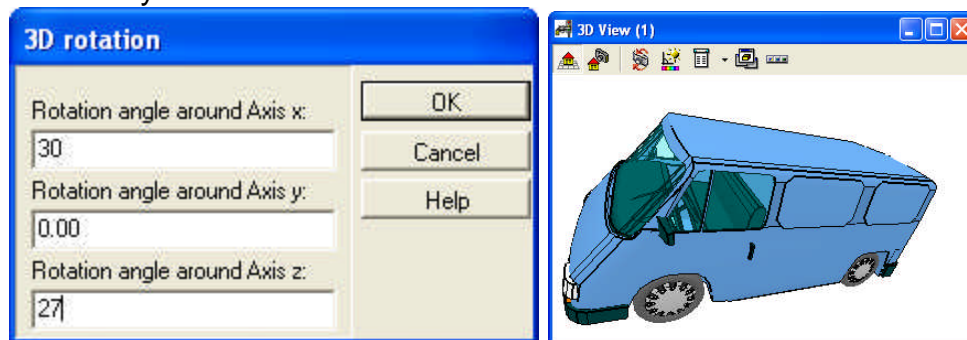


2. **Specify the dimensions** of the object (x-size, y-size, z-size), its position (**Vert.shift**) and color (using the  icon). The symbol may be rotated using the rotation icon, or the + and – keys. The angle of rotation applied appears at the bottom right of the screen. The default value is 45°, but by clicking on the [45°] this value may be modified. The symbol is placed on the plan by left clicking on the mouse.

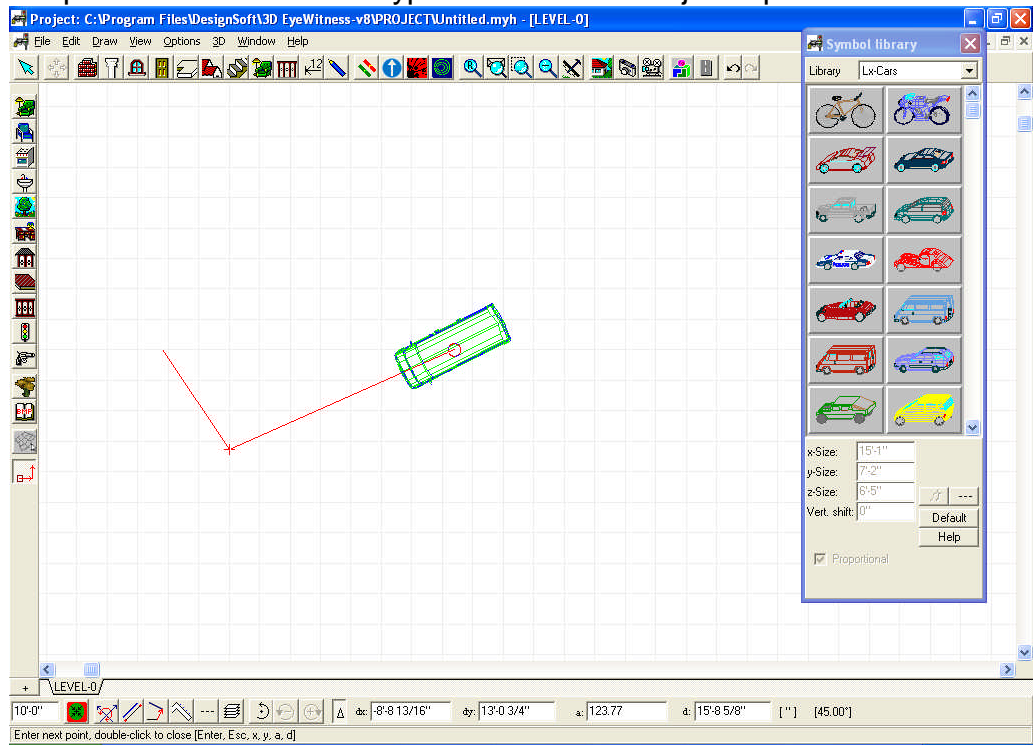
3. **Rotating in 3D space:** The symbol may be rotated not only on the 2D plan, but also in 3D space. To do this, first select the symbol and then select the 3D rotation menu from the right-click menu. From here it is possible to specify the angle of the symbol's rotation.



4. The **Axis z** value describes the symbol's degree of rotation along the z-axis. The Axis x value describes the rotation around the x-axis. Here we set this value to 30°. The alteration is perceptible in the symbol's 2D rendering, and the 3D image is also tilted by 30°.



- The motion of the object is set by first clicking on it, then drawing lines using the same technique used to draw other types of lines. The object's path is drawn on the



2D plan.

- In this dialogue box the symbol's movement along the path may be defined in more detail. To view this dialogue, select the path, then double click to open the Symbol Route Settings dialogue box.

| Symbol route settings | | | | | | | | | | |
|------------------------|----------|--------------|-------|----------------------|----------|-----------|---------|---|-------|--------------------|
| [Points] Route Arrow | | | | | | | | | | |
| index | Position | | | Use route directions | | | Speed | Wait | Time | Mirroring interval |
| | x ['] | y ['] | z ['] | alpha ['] | beta ['] | gamma ['] | v [mph] | tw [s] | t [s] | tm [s] |
| 001. | 937'-10" | 932'-3" | 0" | 0.00 | 0.00 | -156.17 | 10.00 | 0.00 | 0.00 | 0.00 |
| | | | | | | | | <input checked="" type="checkbox"/> Visible | 0.00 | |
| 002. | 968'-3" | 1005'-3 3/4" | 0" | 0.00 | 0.00 | -76.61 | 10.00 | 0.00 | 2.21 | 0.00 |
| | Average | | | Average | | | Average | | | |
| 003. | 952'-3" | 984'-3" | 0" | 0.00 | 0.00 | 0.00 | 10.00 | 0.00 | 4.01 | |
| | | | | | | | | <input checked="" type="checkbox"/> Visible | | |

In the first **Points** window of the dialogue box the following information may be viewed and altered:

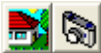

- In the position field** the path data is specified. Here the dialogue takes the X and Y values from the symbol's position on the plan. The path's elevation or slope can be specified as the Z value. By selecting the Average function, the program will automatically calculate a Z value from the given X and Y values.
- In the alpha, beta and gamma fields** the symbol's angles during movement may be specified. If you wish the symbol to alter its angular values in order to follow the direction of the path, select the Use Route direction parameter. The sliding control can be used to specify when the object begins to turn in order to follow a change in path direction. If this is set to minimum, then the object begins to turn in the direction of a new segment already at the beginning of the previous segment. If this control is set to maximum, then the object will change

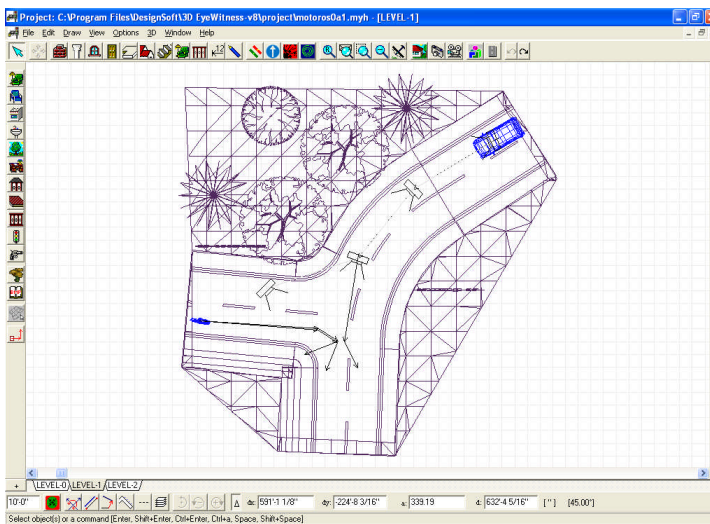
orientation only at the intersection point of the two line segments. If the Use Direction parameter is switched off, then the changes in the symbol's angular orientation may be written in individually. Here too automatic calculations may be requested by switching on the Average function.

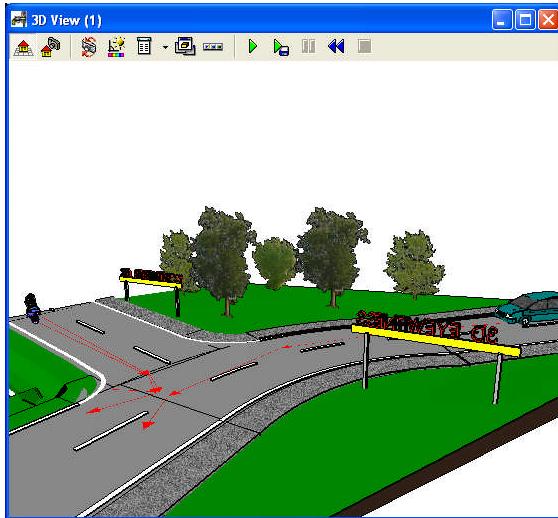
- **Speed:** The symbol's speed may be set for each path segment. The Average option will calculate an average speed if given starting and ending speed values.
- **Delay:** The symbol may be made to stop for a defined time at segment endpoints. Also one may specify whether the symbol is to be visible before or after these delays.
- **Duration:** In the duration field specify the amount of time needed for each path segment. In the case of multiple animated symbols this function is very useful in a determining the delay values for each.
- **Mirroring:** It is possible to reflect a symbol about its own axis at with a given frequency. This is the easiest way in which to, for example, depict a walking figure.


Path: The path may be designated as visible or invisible. If visible, the color may also be specified.


Arrow: Directional arrows may be placed for each path segment. The size, color, and placement of these arrows may be specified in the dialogue box.

To generate an animation planned on a 2D drawing, first open the 3D mode by clicking the  icon. The point of view for the animation can then be adjusted on the 3D image by rotating and moving the 3D image. Clicking the  icon will generate the animation.

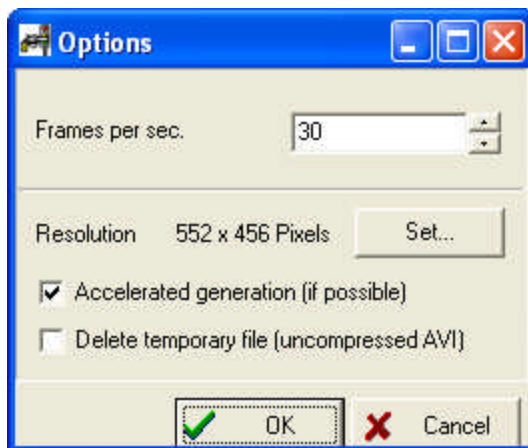




We run the animation by clicking the  icon. Here we can check that the data and motion path have been set correctly. If the event runs correctly, then we click the

 to generate the final film.

In the **Settings** dialogue box the following parameters can be modified:



- The number of frames per second. A suitably high number of frames per second ensures that the animation appears continuous, not jumpy.
- The size of the image. (**Resolution: pixels**) The size of the image can also be altered by changing the size of the 3D window.
- 3D parameters.
- Accelerated generation of the animation [where possible].
- Deletion of temporary files.

In the **Film Compression Settings** dialogue the following parameters can be modified:

- Movie type: **AVI**, **FLV**, **SWF** or **MOV**.
- Compressed **AVI**
- For Flash videos: **FLV** (self-supporting like **AVI**, but requires an **FLV** player) or **SWF** (direct to the web, can be played without a player). The quality (in kbit/s) can also be set.
- For Quick Time **MOV**, the quality (in kbit/s) can be specified.

See:

Program Files/DesignSoft/3D EyeWitness v9/PROJECT / **motorist1.avi, light.avi**
and

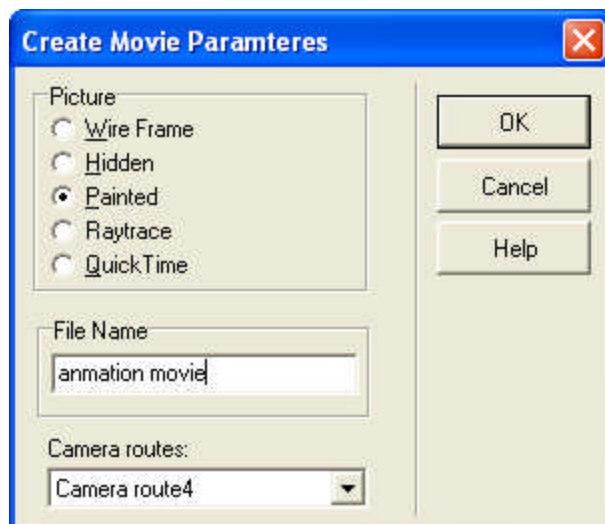
Document and Settings / / PROJECT / **MOTORORISTS.MYH**

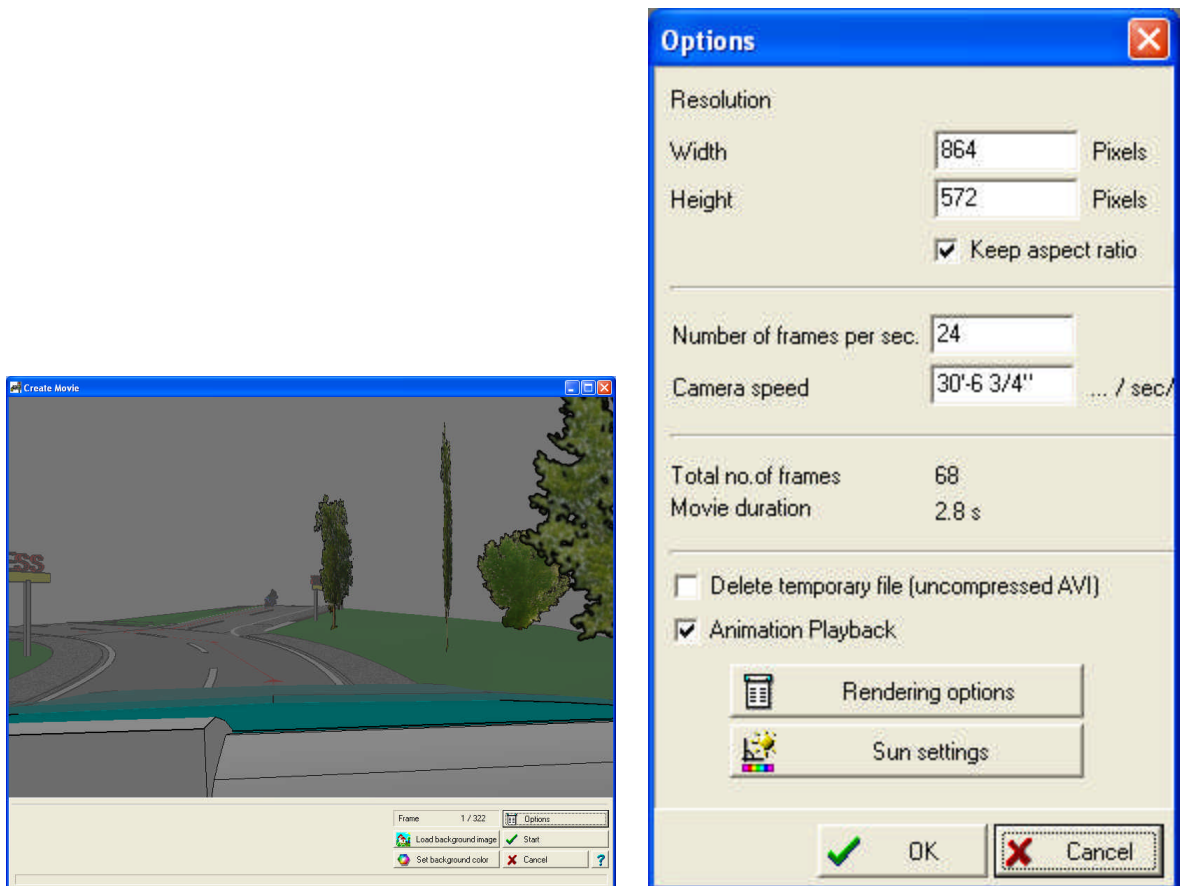
To create an animation with a dynamic camera, first cameras are placed on the 2D floorplan along the intended path. If we wish the camera to travel along the path of a road for instance, we may place the first camera inside the car and then give it a speed equal to the car's. In this way the animation will record action as it appears from the moving car.

In the **Create Movie / Options** dialogue we may set **Animation Playback**. Without this feature the camera moves along the path, without moving the specified symbols. Here the screen size may be set (**Resolution: Width, Height**).

See:

Program Files/DesignSoft/3D EyeWitness v9/PROJECT / **motorist2.avi** and
Document and Settings / / PROJECT / **MOTORORISTS.MYH**





By modifying the **number of frames per second** and the **camera speed** settings we can synchronize the camera movement with the events in the animation. The number of frames in the film and its length, **Movie duration** in seconds, is also visible. Here the movie type must be specified, as described above in the case of static camera animation.

Note: Switch off **Show this dialog automatically** parameter in Raytrace mode.

8.13 Photo symbols

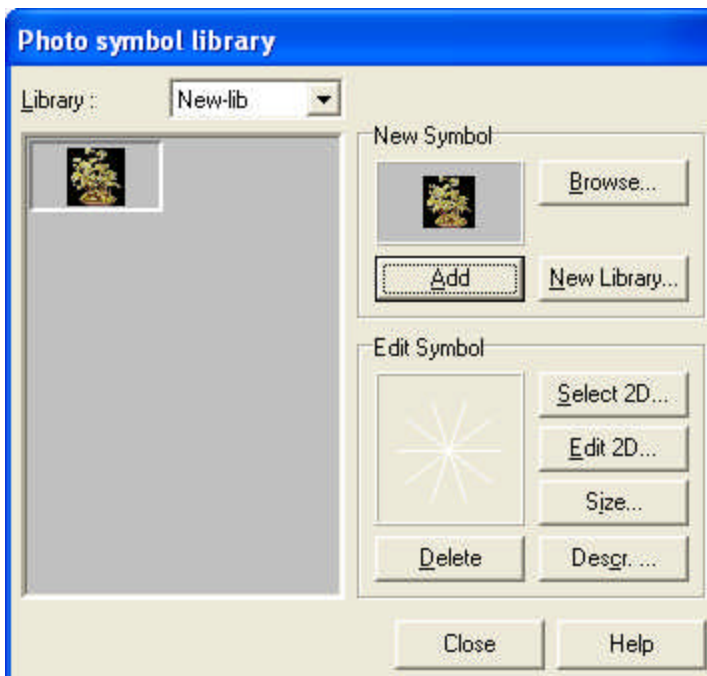
The software includes a rich collection of photographic images. Images are grouped into the following libraries: **ANIMALS, BALCONIES, BUSHES, FLOWERS, PHOTOS, PHOTOS1, PEOPLE, TREES**. Libraries can be expanded by adding your own pictures. Libraries are coded in **PSL** files.

FotoLibs.dat: the list of libraries can be found here: **Photos, Photos1, Photos2, Photos3, Photos4, Photos5, Photos6, Photos7**



Expanding photo libraries

8.13.1 Adding new elements to photo libraries

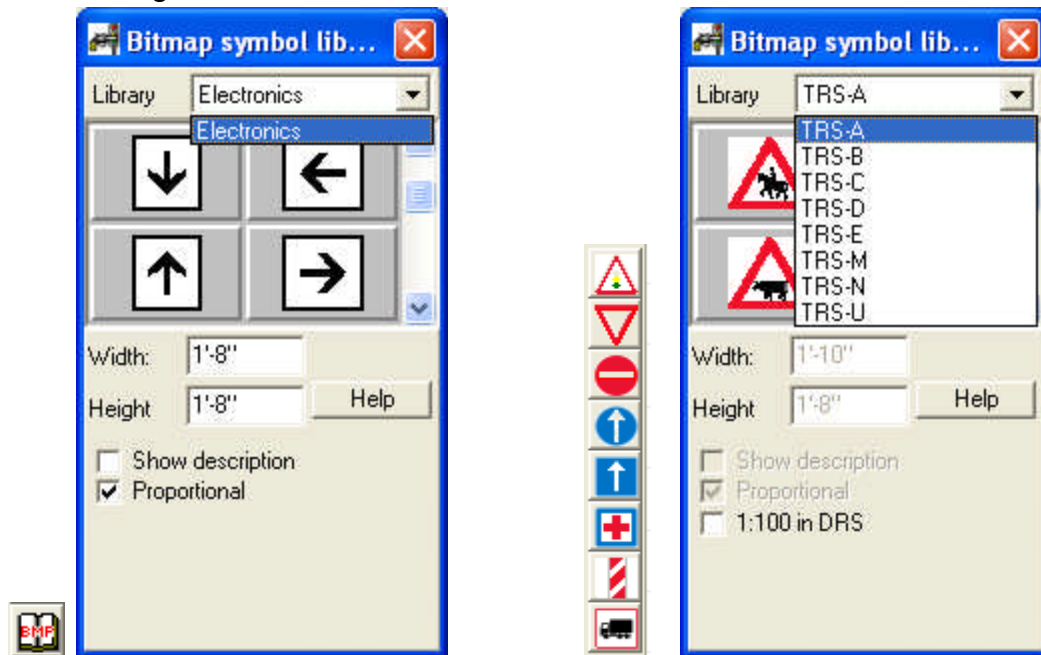


Add photos of plants and other garden elements to the library by going to **Options/Default values/Photo symbols**. First select a library, choose Browse and find the BMP file you wish to add. Then go to **Edit Symbol/Select 2D** and choose a floor plan symbol for it. This symbol can be rotated freely in the drawing window.

Note that plants placed on the floor plan are displayed in 2D on the 3D image; no wire frame image is made for them.


8.14 BMP libraries

BMP/WMF libraries: You can import BMP files directly or from libraries into your scene. These libraries can be found among libraries of different symbols. The **BMP** electrical library contains different electrical objects with modifiable parameters, such as their height, width, etc..




Proportional resizing: When one of an element's properties is altered, the program automatically resizes the element to maintain its original proportions.

Show description: The information assigned to an element when it is added to a library is displayed next to it on the floor plan.

Note: *BMP* and *WMF* files may be inserted directly, by clicking the  icon and then the *BMP-WMF* icon on the left side.

8.15 Railings

Click on the  icon to create railings. The different subtypes of railings may be selected from a graphical library. Railings are introduced by drawing their shape linearly. The software multiplies the selected element along the drawn lines. Before drawing the railing, you may specify its parameters. After putting down the first point, a rubber line appears which helps you in putting down the others.

In the symbol library, you may find many railings for whom you may modify their size, color, vertical shifting etc.

Note: The railing is created by multiplying its basic element along the drawn lines. Thus, any element may be used to be the basic constituent for a railing.

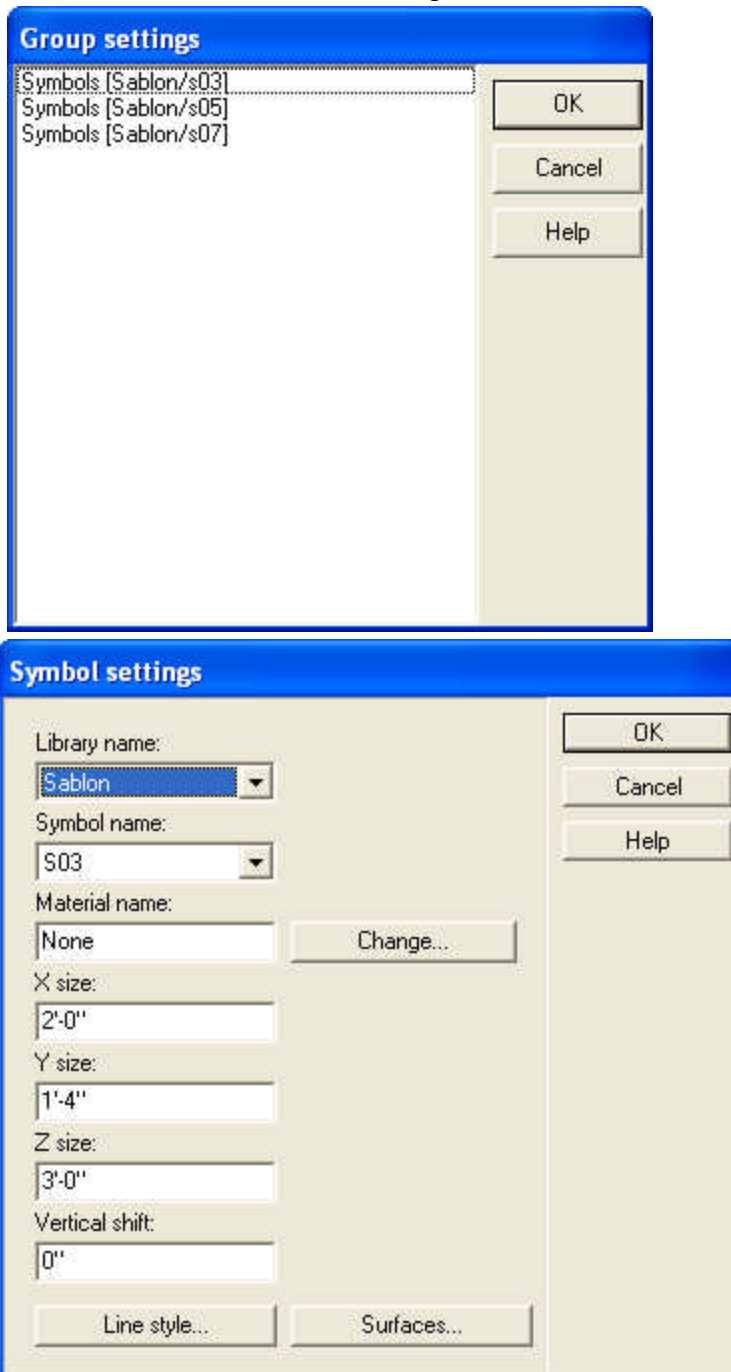
Note: Several kinds of railings are automatically generated with the Stair designer module. These are automatically designed in a way, so as to fit the height of the stairs.

8.15.1 Modifying multiple railings at the same time

You may modify several railings at the same time.

First, select the building element. Then double-click on it (or click on the small notebook icon on the left) and modify its properties in the dialog box. You can also replace one window with another by selecting it and then clicking on another item from the library. To introduce an item from another sub-library, first delete the existing window and then introduce the new one.

You can also modify several elements (of the same kind) at the same time. First select the entire area containing the structures.



In the **Group settings** window a list of the elements in the area appears, sorted into categories. Double clicking on a group opens its dialog box, where you can modify the properties of all the objects belonging to that group. *Here you can also replace one object with another from a different sub-library, simply by choosing from the list of libraries and*

elements.

Select all elements at the same time by pressing **Ctrl+A**. Selecting apertures whilst holding down **Shift** enables you to select the windows from wall only.

Remove an element (or elements) by pressing **Del** after selecting it.

8.16 Dimensioning

Associative scaling is bound to elements. Therefore modifying an element entails modification of its scaling as well. For example, when a wall is deleted the scaling (division lines) are deleted as well. The *Sizing toolbar* appear on the left hand side.

When new wall sections or apertures are added to walls that have associated dimensioning lines, dimensioning lines are automatically created for these new elements as well. Their division lines are automatically displayed.

8.16.1 Dimensioning icons

You may choose from the following dimensioning icons:

Associative dimensioning:



Global dimensioning lines



Wall/pillar corner dimensioning lines



Aperture size dimensioning lines



Aperture axis dimensioning lines



Wall/pillar intersection dimensioning lines



Show/hide dimensioning of arched sections (radius)



Automatic dimensioning

Non-associative dimensioning:



Diameter dimensioning



Manual dimensioning of horizontal lines



Manual dimensioning of vertical lines



Manual dimensioning of lines (arbitrarily oriented)



Draw area labels/measuring areas

8.16.2 Associative dimensioning of walls, columns, apertures



Global dimensioning lines, marginal division lines: These dimensioning lines display the total (maximal) length of wall sections or columns as defined by the end point, or, in the case of columns, the axis points. Division lines will only be at the end points.



Dimensioning corner points/wall width: The displayed length (on the dimensioning lines) refers to the thickness of the selected walls, or axis. Division lines are positioned not only at the end points but at points parallel to the inner side of the wall thickness. Thus the

dimensioning lines indicate the wall's thickness as well. If a dimensioning line spans multiple columns, then division points are located not only at the end point, but also at the inner side of columns, indicating their thickness.



Dimensioning lines for apertures: With this feature dimensioning lines have division points indicating the end points of walls/columns, their thickness and also the width of apertures.



Dimensioning lines for the axis of apertures: Dimensioning lines have division points showing the end points of walls/columns, their thickness and also the axis length of apertures.

To use these functions, first click on an icon, then select one or several walls. Create dimensioning line by setting its two end points. The end points should be defined so that they are outside the selected walls. Depending on the feature selected, the software automatically projects the appropriate points onto the dimensioning line.



Intersecting dimensioning lines: Create dimensioning lines cutting through several wall sections (or columns) with this feature. Simply set the two end points of the dimensioning line. The program then creates the line and displays the values between intersection points.

Modifications to the floor plan automatically result in corresponding adjustments of the dimensioning.

8.16.3 Manual dimensioning between two selected points

This feature is used for distance measurement between any two points. Select two points on the floor plan. A rubber line appears, and it is now possible to determine the position of the dimensioning line as well. The distance between the points is displayed on the line. With the **Projection** function, the projection lines connecting the end points of the dimensioning line and the two (originally selected) points are displayed. Thus, the points of measurement are connected to the end points of the dimensioning line.

There are three ways to measure distance between two points:



Horizontal dimensioning: Measures the horizontal distance between two points (along the x axis).



Vertical dimensioning: Measures the vertical distance between two points (along the y axis).




Direct distance measurement between two points: The dimensioning line is simply the line directly connecting the two points, and the distance displayed is the length of this line.

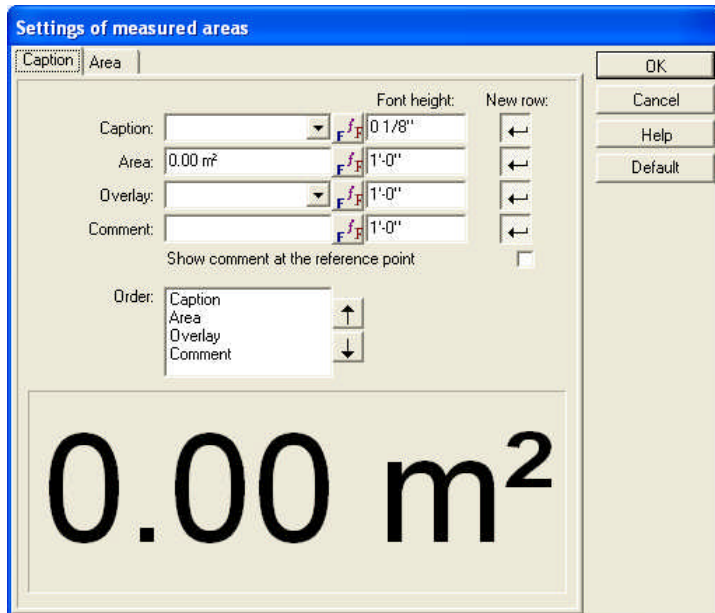
Note: *These dimensioning lines are not associative, that is, moving the building elements does not relocate the lines automatically. Dimensioning lines may be repositioned manually, but only parallel to their original orientation.*

8.16.4 Area measurement

Areas defined by walls or selected manually can be measured and the results displayed on the floor plan. Assign further information to the measured area in the

Settings of measured areas dialog box. To access this dialog, click on the  icon, then on the small notebook icon at the top of the icon row).

Set the font style, size and order of lines here as well. Change the order with the small arrows on the right of the *Order* caption. Specify the various parameters of the area in the fields **Caption** (see the list in the LIB/ROOMS.DAT file), **Area**, **Overlay** (see the list in the LIB/OVERLAY.DAT file), **Comment**. The area of the selected part of the floor plan is displayed in the field **Area**.



Note: Select the **SCRIPT / WESTERN** in the **Font** dialog box, to see the **m2**

8.16.4.1 Automatic measurement of area

Areas that are surrounded by walls can be measured automatically. After clicking on the icon, move the cursor into the area to be measured and click on it, defining a point of reference. This enables the software to calculate the area defined by the walls.

A dialog box appears with information about the area. The calculated value is displayed in the field **Area**. Add your own comments as well; the label is inserted at the site of the reference point, but it can be repositioned anywhere, even outside the area.

Note: This option works for areas surrounded by arched walls as well.

Note: To measure the gross area including the walls themselves, click on one of the external, surrounding walls of the area.


Note: The measurement of the area can be done by selecting the label and right clicking on it, then clicking on **Determine reference point** in the Right-click. Set the reference point again. Moving the walls modifies the area of the room, but it is sometimes necessary to refresh the reference point and thus the displayed area manually.

8.16.4.2 Measuring areas manually



Measuring rectangular areas: It is possible to measure upright rectangular areas by defining the end points of a diagonal. To create rectangular areas which are not upright, first define the two points of the first edge, then set a third point to determine the opposite side.



Polygonal areas: To create polygonal areas first click on the  icon, then set the corners of the polygon by clicking on the floor plan. A rubber line assists with this process. The last point is introduced by double clicking the desired location. Enter the contents of the area's label in the dialog box. The label appears at the center of the area.



Circular or regular polygonal areas: Define the circle by setting its center point and determining its radius with the cursor, or by providing three points for it. After defining the circle, you can rotate the polygon which appears within it. Press *Space* to extend the polygon to encompass the circle. After right-clicking (and thus setting the polygon), the dialog box appears, with the area displayed in the relevant field.

8.16.4.3 Modifying dimensioning

Modifying and removing dimensioning structures

Dimensioning structures change correspondingly to changes in the building structures themselves.


For example, modifying a wall section's length, or introducing a new section or aperture entails the reorganization of the division lines and labels of the dimensioning lines. The label displaying the area of a room is similarly readjusted. If a wall is removed, its automatically generated dimensioning line is removed as well.

Dimensioning lines can also be moved from their original position. First, click on the selection arrow icon in the upper left corner of the window, then click on the dimensioning line to select it. The selected dimensioning line is now highlighted. Move the line by dragging it with the mouse (keeping the left side button pressed down), or by entering values into the X and Y fields. During repositioning the dimensioning line retains its original orientation. Press *Del* to remove the highlighted dimensioning line. If a division line is removed, the relevant values are added together, and the dimension line is readjusted corresponding to the changes.

In the case of **Measuring areas**, if the shape of the area is changed, the displayed values in the label may be readjusted by selecting the label, going to **Determine reference point** from the right-click menu and setting a new reference point.

Note: *If the value displayed in the label of an area is not automatically adjusted according to the modifications, readjust the values in the label by selecting the label, clicking on **Determine reference point** from the right-click menu and setting a new reference point within the walls or by clicking on one of them.*

8.17 Drawing Primitives

Introduce lines, circles, arches, labels, etc. into the floor plan, sectional or facade views with the  icon or with the **Drawing primitives** option from the **Draw** menu.

Structures drawn this way are not displayed in 3D mode.

Assign line styles and colors to the drawn structure in **Options/Line style editor**.

Note: *Walls may be imposed onto the lines or arches drawn this way, as discussed previously in the chapter on wall design.*

8.17.1 Drawing lines



Freehand drawing: Set the first point, then draw freely with the cursor. Finish the shape by left clicking once more.



Drawing lines: Click to set the line's two end points.



Continuous multi-line drawings: Add as many points as desired with single left clicks.



Drawing rectangles: Create rectangles by defining their diagonal.

8.17.2 Bezier curve



We can draw a Bézier curve by supplying at least 3 points out of which the program will create the curve. The entry of the points can be closed by a double click, which results in the generation of the curve. There is a polygon drawn by the points, which serves as an auxiliary line. This can be turned off within the layer. These lines are used to mark out the Bézier curve. The polygon is automatically placed on the **Auxiliary lines** layer and the curve on the **Graphic elements** layer.

The curve can be edited using two types of algorithms. In both cases, a minimum of three points must be supplied.





A curve fitting close to the straight lines drawn by the points is created



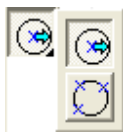
A curve running through the points supplied is generated

Note: The shape of the curve can be modified afterwards by shifting the reference points.

We can draw an **Arc**  and **Bézier curves** into the sections of polygon-shaped elements

using the  icon or the **Right button/Edge type** function. These too can be modified by simply clicking and dragging the reference points of the arc or the curve.

8.17.3 Drawing circles



Drawing a circle by defining its center and radius: Click on the first icon shown above. Place the center of the circle. The circle increases in diameter as the cursor is moved away from this center. Left click once when the desired size is attained. The radius can also be defined by pressing X and entering a value numerically.

Drawing a circle by defining three points of the arc: Click on the second icon to select this option. You can also draw a circle by defining three point of the arc. First, define a chord for the circle by putting down its two end points. Then, set a third point of the arc by moving the cursor, and choosing an appropriate size for the circle.



Use these icons to insert arcs onto the floor plan.

Drawing an arc by defining the center and two points of the arc: The first point set is the center of the circle. The second point defines the radius of the arc, while the third sets the end point of the arc.

Drawing an arc by defining three points: First, define a chord for the arc by setting its two points. Then, define the overall structure of the arc by moving the mouse and left-clicking when the desired size is displayed by the rubber line. This point will also be the end point of the arc.

8.17.4 Hatched, filled areas



Click to select a hatching pattern from the given set of patterns. Each building element comes with a pre-set group of the most often used patterns.

Hatching patterns assigned to building elements may be displayed on the floor plan, or on sectional views. Decide for each element which pattern appears on floor plan and the same appears on the sectional view as well.

8.17.4.1 Creating hatched areas

Choose a hatching pattern, then select the area it is applied to. Choose from the icons on the left to draw certain kinds of shapes. Some basic shapes have their own icons, eg. rectangles, polygons, circles, regular polygons inserted into circles, etc.

To modify a hatched area, move your cursor to the edge of it and double-click to open a dialog box.

Corner points can be repositioned. You can also introduce new points along the edges by right-clicking and selecting **Point operations/Insert point** from the right-click menu. Remove existing points the same way, by choosing **Point operations/Remove point**.

Note: *Patterns are created from an external point of reference, and so even if an empty area is left between two areas, the hatching patterns always match.*

8.17.4.2 Removing parts of hatched area



To remove part of a hatched area, first select the area, then draw the shape of the portion to be removed. Various of shapes can be drawn with the icons above, eg. rectangular, polygonal, circular, regular polygonal defined by a circle.

The corner points can be repositioned. Introduce new points along the edges by right-clicking and selecting **Point operations/Insert point** from the right-click menu. Remove existing points by selecting **Point operations/Remove point**.

8.17.5 Filled areas

Filled area may also be introduced to the floor plan. The hatching pattern may be chosen from the given set of patterns, by clicking on one of them. You may find a pre-fixed set of patterns for each building element, consisting of the ones most prevalently used.

8.17.5.1 Filled-in areas



By the feature **Fill in** you may introduce colored areas into the project. Colored area may also be hatched too.

The hatching pattern, the background color and the color of the hatching lines may all be set in these dialog boxes.

The following kinds of area may be filled in: areas encircled by walls, polygonal or circular areas defined by drawn boundaries.

Note: Filling in can be used for linear facades, though using **BMP** patterns for this purpose is more fitting, as this latter feature generates patterns for **3D** representation, with shadows etc.

8.17.6 Arrows and boxes



Drawing arrows: Choose from various arrow types from the list above. Set two points to define the arrow's length.

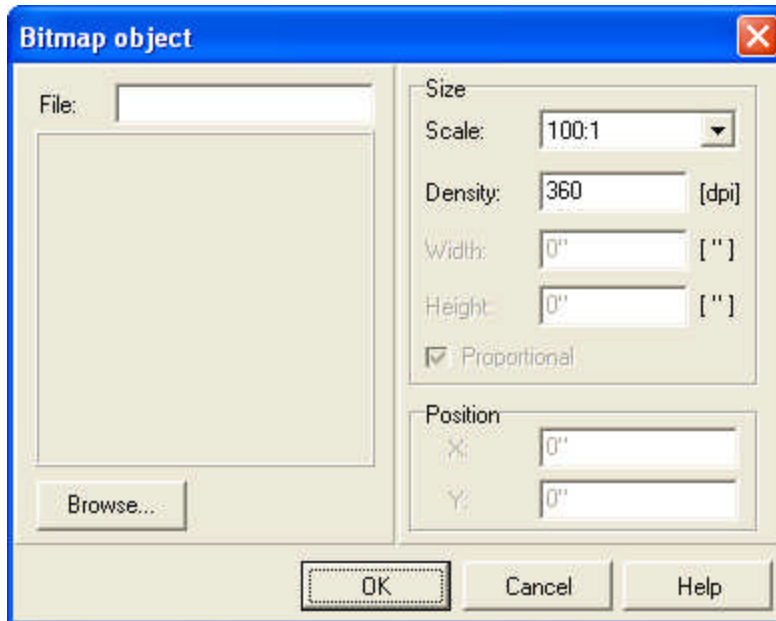
Set the arrow's width, height and notch in the dialog box. A box can be attached to the base of the arrow. The box can be divided into two parts, its position specified, a caption added, etc. Set the font size, style, and the text itself in the caption dialog box.

8.17.7 Texts

To add text or labels to your project, click the icon, then enter the text in the dialog box. Set the font size and style here as well. After closing the dialog box, determine the position of the text box.

8.17.8 Adding BMP and WMF images

Loading bitmap pictures: BMP, JPG, ICO, EMF or WMF files can be inserted into the project after clicking the icon. Adjust the size and proportions of the picture in the dialog box. Terrains can be imposed onto the floor plan as foils.



Scale: The scale of the image.

Density: In the case of a scanned image is loaded, the same DPI values should be used as in the original.

Width, Height: Dimensions of the image.

Proportional: When this feature is on, the image retains its original proportions when its size is modified.

Position: Position of the image on the floor plan.

The magnification of WMF pictures result in decreased quality when printed.

Note: *The size of the image can be set in the dialog box by adjusting its scale, height, width or DPI density. The dialog box is reopened by double-clicking on the image once it is placed on the floor plan.*

8.17.9 Draw rescue route



Draw rescue route (in 3D too)



Draw a line: In the drawing window, click to anchor one endpoint and move the cursor to where you want the line to end. Click to anchor the second endpoint.



Draw a polyline: Click to anchor the endpoint of the first segment, move the cursor and click again to anchor the second endpoint. Move the cursor in a new direction and click to anchor the next endpoint. Continue as long as you need to. Click the right mouse button to escape this drawing process.

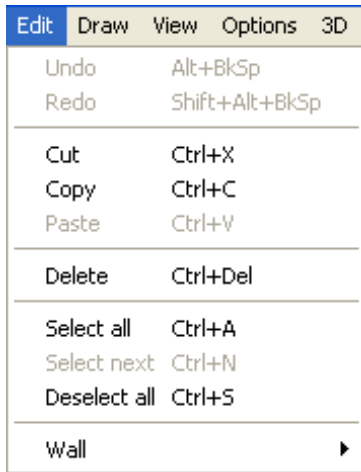
Part

IX



9 Edit

In the **Edit** menu you find the default commands normally found in all Windows programs.



These are:

Undo/Redo

Clipboard operations: Cut/Copy/Paste

Delete

Select: Select all/Select next/Deselect all

9.1 Undo/Redo

Undo - Alt + BackSpace: Erases the last change made to the project, reverting to the previous state. The name of the action to be undone appears next to the *Undo* sign. Only changes made in a single session may be undone - i.e., if you exit the program and reopen it, you will not be able to undo actions made in the previous session.

Redo - Alt + Shift + BackSpace: Reverses an undo, returning the project to a more recent state.

The number of **Undo/Redo** steps depends only on the memory capacities of your system.

These two commands may be accessed by clicking the  icons.

9.2 Clipboard operations

First select the elements to be cut, copied or pasted.

- **Cut - Ctrl+X:** The selected elements are transferred to the clipboard and removed from the floor plan at the same time.

- **Copy - Ctrl+C:** The selected elements are transferred to the clipboard while remaining on the floor plan.

- **Paste - Ctrl+V:** Elements from the clipboard are pasted onto the floor plan. If the mouse is not moved after pressing *Ctrl+V*, then the element can be pasted to its original position by pressing *Enter*. If the mouse is moved, then the rubber line frame around the element moves together with the cursor.

The cursor can be placed at a corner or at the center of the square rubber line frame. Change between the five cursor positions by pressing *Space*.

Insert an element by left clicking once. Only then will the element be displayed on the floor plan.

9.3 Delete

Delete: Elements can only be deleted after selecting them. When deleting certain elements, the adjoining structures are also erased. For example, associative dimensioning lines are removed if their corresponding wall section is deleted. Layers connected to slabs are also removed when the layer is removed.

9.4 Selecting elements

Select all - Ctrl+A: All elements within the drawing window are selected.

Select next - Ctrl+N: Use this command to select among elements arranged on top of each other on the floor plan. Click on the command, then press **Ctrl+N** or **Space** to choose between the stacked elements. Alternatively, right click and select the desired element from **Selectable elements**. Modify the properties of the selected element by double clicking and entering the new values in the dialog box, or by choosing **Properties** in the right-click menu. If there are various element types in the selected area, the **Group settings** window appears. Here you may alter properties according to element type.

Deselect - Ctrl S: Selected elements are highlighted. Deselect elements by clicking on this command in the menu, by pressing **Ctrl+S** or by left-clicking on any empty point in the drawing screen. Once an element is deselected it is no longer highlighted.



Selection: Click the arrow icon to enter selection mode. Select individual elements by moving the cursor over them and left clicking or pressing *Enter*.

To select multiple elements simultaneously, select an area which contains them all. Left click and set the first corner of the square selection region. Use the mouse to stretch the region to the desired dimensions, then release the mouse button to complete the square.

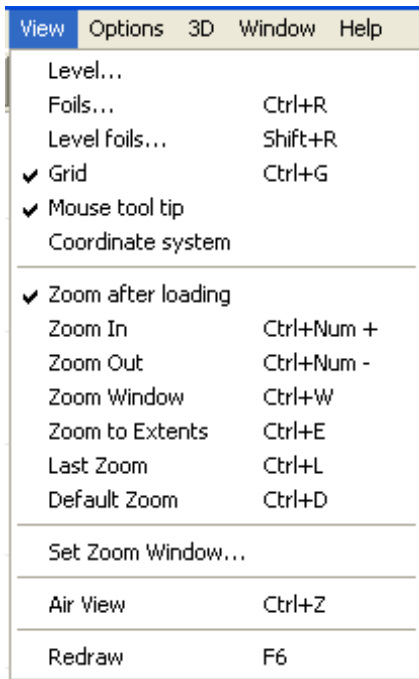
Dispersed elements may also be selected together - press **Ctrl** or **Shift** and click on the elements one by one. Once an element is selected it is highlighted in blue.

Part

X



10 View



+ **Level:** Level settings

 **Foils, level foils:** Add elements to foils.

Grid: The drawing sheet is based on a grid. Switch the visibility of the grid on/off here, or by pressing Ctrl+G.

Coordinate system: Coordinate system information is displayed in the lower left corner of the editing screen. Switch this feature on/off here.

Zoom after loading: Projects are sized to fit the drawing window when this option is switched on. If it is switched off the project appears with its most recent level of zoom.

 **Zoom in:** Ctrl ++,  **Zoom out:** Ctrl +-

 **Zoom window:** Ctrl+W

 **Zoom to extents:** Ctrl+E

 **Last zoom:** Ctrl+L

 **Default zoom:** Ctrl+D


 **Set zoom window**

 **Top view or Air View:** Ctrl+Z



 **Redraw:** F6

10.1 Level manager

The project is divided into levels, each of which have their own window.


Create new levels by the clicking the  icon or by selecting **View / + Level**.

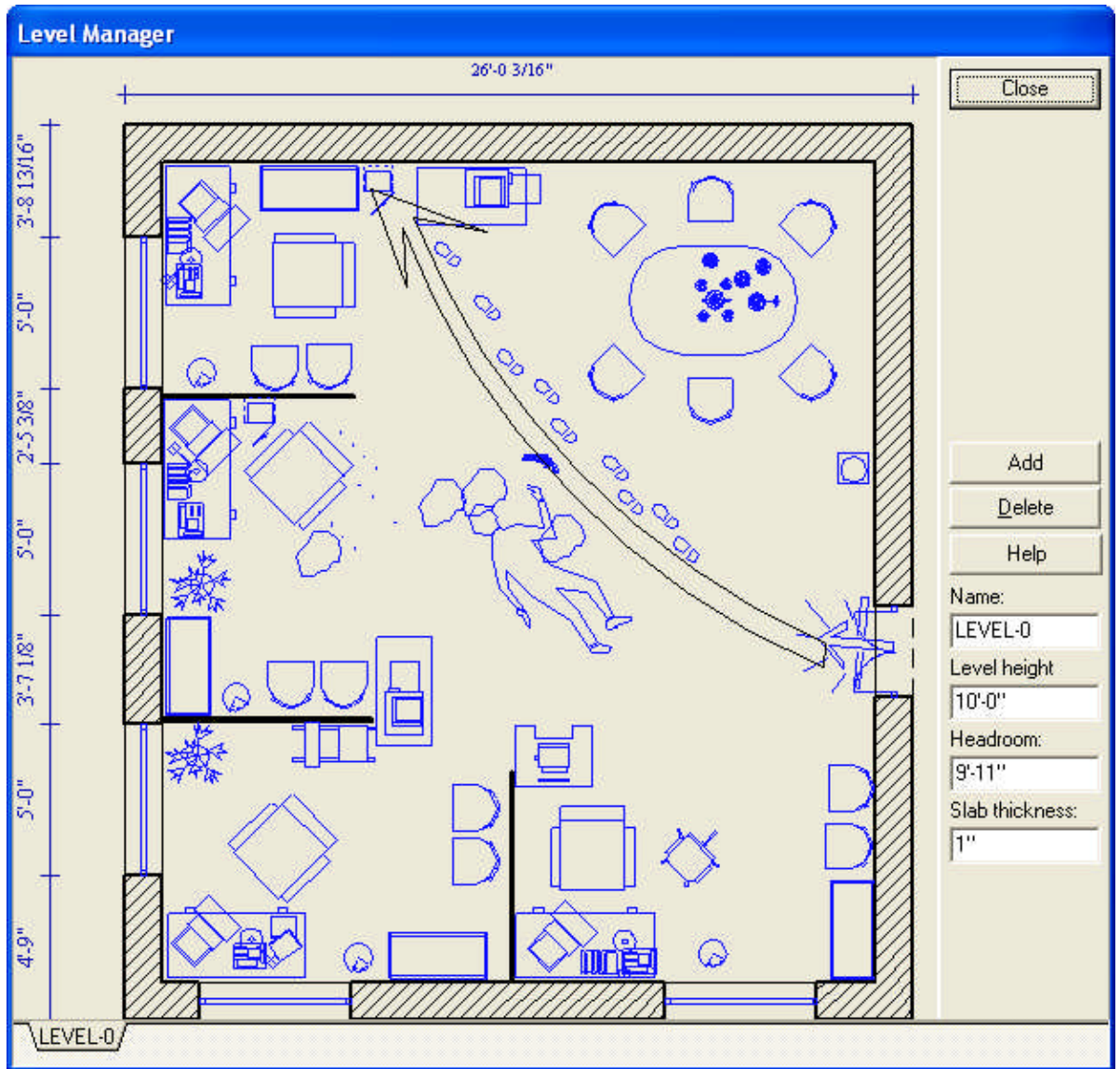
Levels are managed in various ways:

1. Go to **View/Level** in the menu bar and set the level's properties in the dialog box.
2. Click the  icon in the lower left corner of the screen. Set the properties in the dialog box. Note that this is the same dialog accessed by going to **View/Level**.
3. Go to **File/New** and click on the  icon to create a new level.

Height values are assigned to each level of a building, and 3D images are generated according to these heights. The height is taken into account when inserting elements into a level. Certain elements may extend between multiple levels. A level may have a height of zero, with its elements extending into other levels. Levels are numbered in the order they are created, but can be renamed. The level tabs at bottom of the window are organized in the order of their spatial relation. Move between level windows by selecting from the **Window** menu, pressing **PgDn/PgUp**, or by clicking on the tabs at the bottom of the window.

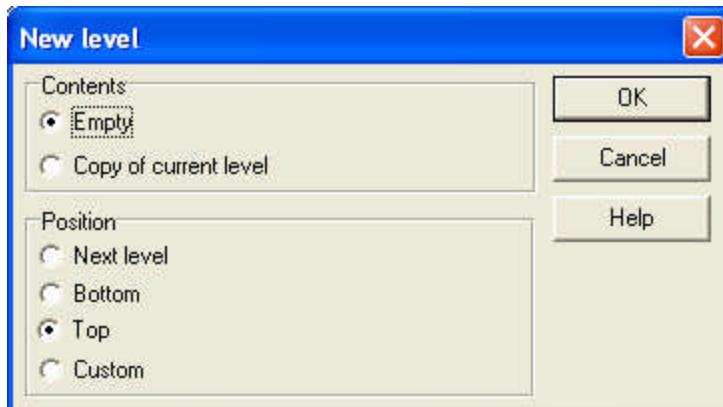
10.1.1 Creating new levels

Click the  icon at lower left corner of the screen to open the levels property dialog box.

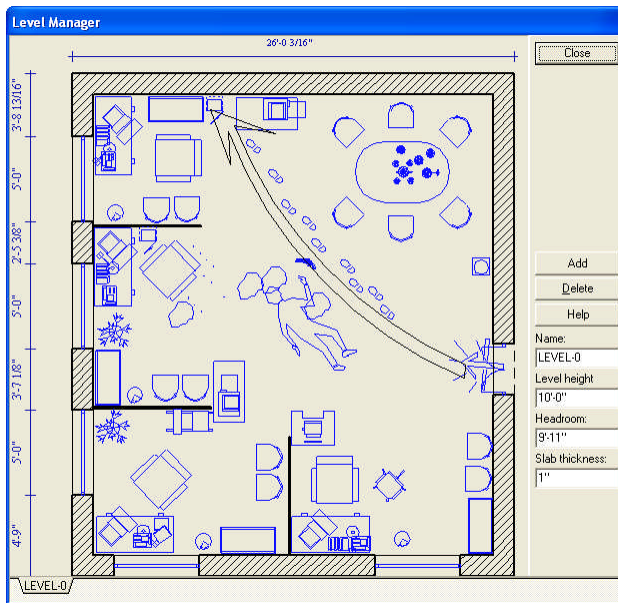


Add: Create a new level and specify whether it is to be placed above, below or between the existing levels. The new level may be defined as empty, or the previous level's elements may be copied in.

Delete: Delete an existing level. The level currently displayed in the drawing window cannot be deleted. To delete it, switch to another level and then delete the previous one.



10.1.2 Properties of levels



Name: Level's name.

Level height: Height of the level. The value is applied to the currently active level and can be modified during editing without opening a dialog box by entering the new value in the field under the **+** icon.

Ceiling height: Ceiling height of current level.

Slab thickness: Thickness of the connecting slab. (This is the difference between the level height and ceiling height.)

These three properties are interrelated. Changes to any one of them automatically results in changes to the

other two. Press Enter to see the new values.

10.1.3 Renaming levels

New levels automatically receive the name **LEVEL-n**, which is shown in the field **Name**.

Name: Levels are identified by their default name (LEVEL-ordinal number) or by a custom name. The names appear on the tabs at the bottom of the screen. Levels may be renamed an unlimited number of times.

Note: Press Enter after entering a new name to apply it.

10.1.4 Level operations

Add: Add a new level.

Delete: Delete an existing level. The current active level cannot be deleted.

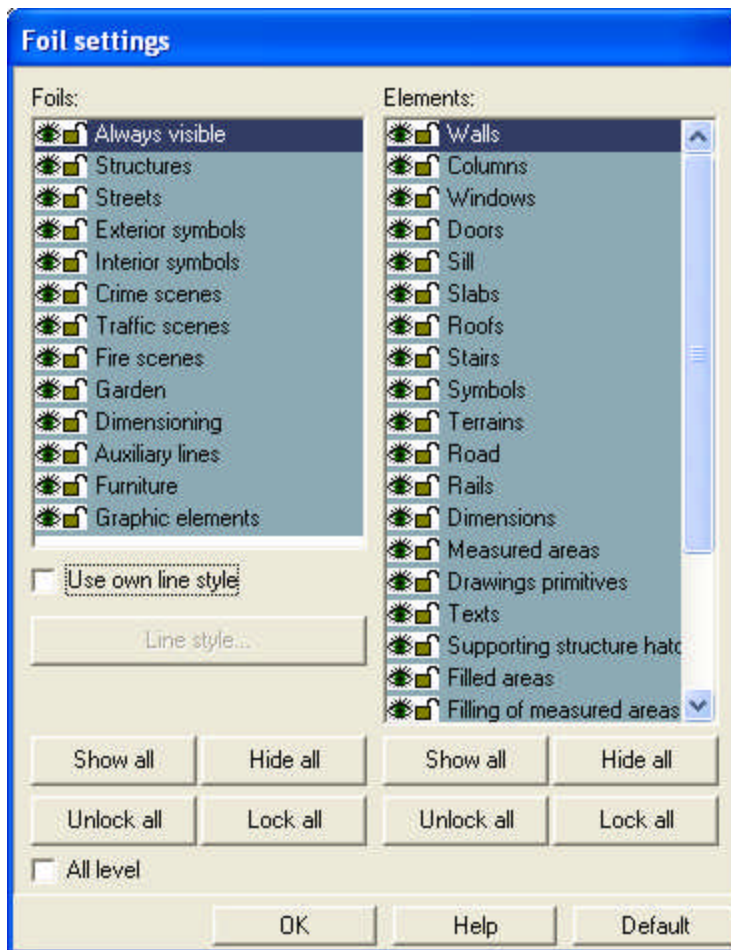
Transferred elements from one level to another by:

- selecting the desired element (press *Ctrl+A* to select all),
- copying the selected element to the clipboard: *Ctrl+C*,
- opening the target level and transferring the element by pressing *Ctrl+V*.

Note: You can also transfer an element by selecting it, right clicking and choosing Copy to level from the right-click menu. Then specify to which level the element is to be pasted to.

Note: Select **Options/Boundary** before copying an element to ensure that the grid points of the element and the floor plan line up when pasted. To transfer the element to the same position as in the original level, do not move it after pasting and instead press Enter. The cursor can be located at the center or at a corner of the square rubber line frame. Toggle between the five cursor positions by pressing Space.

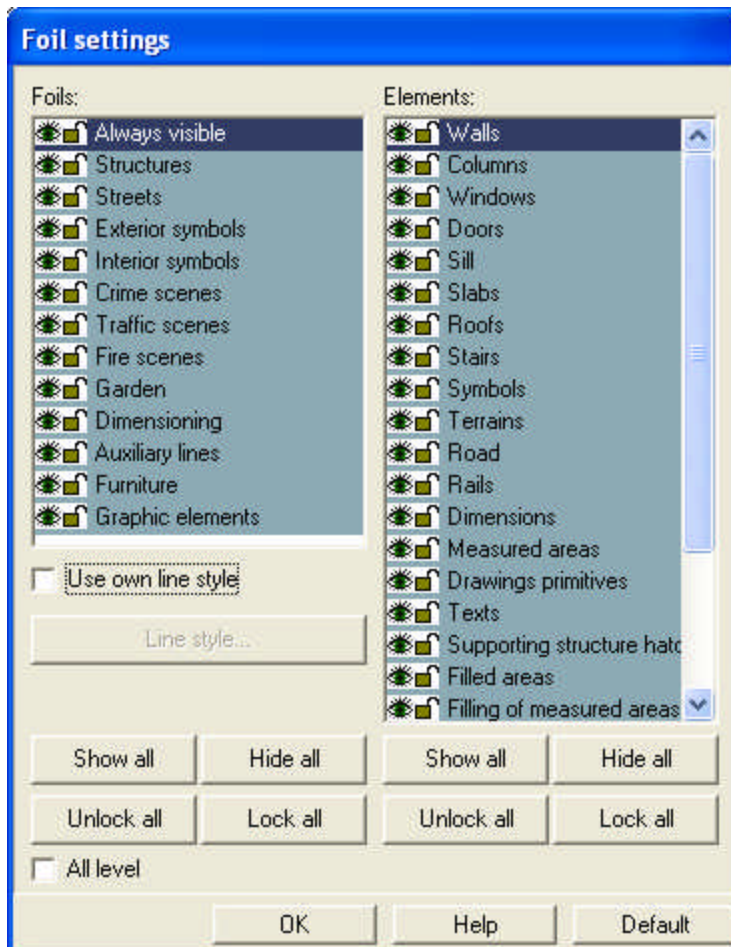
10.2 Foils





Building elements can be inserted onto various foils, which can be rendered visible or invisible, movable or fixed.

The program includes a number of foils, which can be further expanded. Design additional foils to meet your needs. Modify default or custom foils in **Options/Foil assignments**. Cancel adjustments by clicking **Lock current foil** in the **Options** menu.

10.2.1 Properties of foils



Click **Show all/Hide all** to select or deselect all foils, or all elements within a selected foil. Elements such as structures, partitions, etc, can be inserted onto the selected foil. Structural elements on foils, such as doors, windows or walls, can be individually turned on/off, or alternatively, all elements of the foil can be displayed by pressing **Show all**. To lock elements in place, click on the lock icon  in the Foil Settings window. Apply this command to an entire foil by clicking **Lock all/Unlock all**.

Make all foils or individual elements visible and mobile by clicking the eye icon . Make them invisible and immobile by clicking the lock. The appearance of the lock or eye icon next to the name of an element shows indicates its current visibility/mobility status.

Change between foils by clicking on the down arrow icon and choosing the desired foil from the menu.

Click **All** to switch on/off all layers, or elements on the selected foil.

The visibility of a layer identified as **Always visible** cannot be switched off. Elements may be assigned to the various foils according to your preferences.

Within a given foil you can switch on/off structural elements such as walls, doors, windows, etc. Select **Show all** to display all elements.

Show all: Under **Foins**, this command applies to all foils. Under **Elements**, it refers to elements on the selected foil.

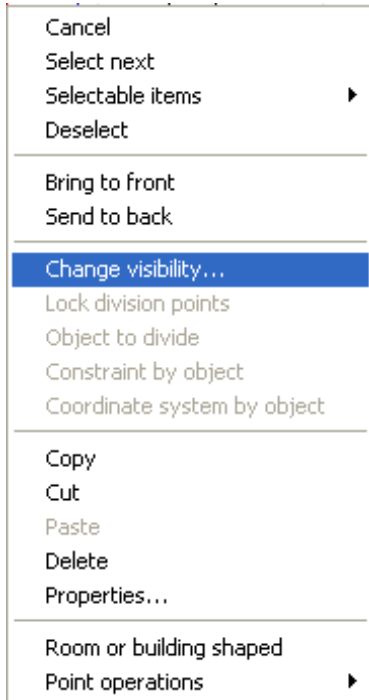
Hide all: Under **Foins**, this command applies to all foils. Under **Elements**, it refers to elements on the selected foil.

Unlock all: Unlocking foils and elements makes them moveable. Under **Foins**, this command applies to all foils. Under **Elements**, it refers to elements on the selected foil.

Lock all: Locking foils and elements makes them immobile. Under **Foils**, this command applies to all foils. Under **Elements**, it refers to elements on the selected foil. Locked elements may be selected and their properties modified in the dialog box but may not be moved on the floor plan.

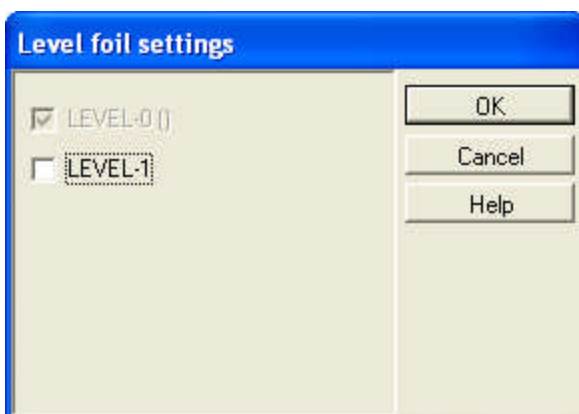
10.2.2 Transfer between foils

Transfer an element from one foil to another by right-clicking on it and selecting **Change visibility** from the menu.



Remove the element from one foil by clicking on the eye icon in the dialog box. Then transfer it by clicking on the eye icon next to the desired foil. An element must be displayed at least on one foil.

10.2.3 Level foils



Level foil settings

Level foils ensure the visibility of levels not being edited momentarily. Using this feature you can render the other levels visible within the currently active window. Using foils within levels can be done with the help of the **Level foil settings** dialog, which can be started in **View/Level foil...**, by pressing **Shift+R** or with the icon. The currently active level is displayed in grey. A level can be visualized by clicking on its

name.

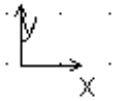
10.3 Removing the grid

Grid: Switch the grid on/off normally displayed in the background by pressing **Ctrl+G**.

Grid unit size

10.4 Coordinate system

The small coordinate system found in the lower left corner of the drawing screen may be switched on/off by clicking on the following command in the **View** menu.




If the coordinate system is rotated, then the coordinate system symbol is also readjusted accordingly.




10.5 Cursor coordinates





To see the real-time dX, DY, a and d values of the cursor's position, switch on the coordinate-box in the **View** menu and select the option **Mouse tool tip**.

10.6 Zoom

In 2D mode you can work on your project in various rates of magnification. Modify the magnification using the  icons or with the **Zoom** commands in the **View** menu.

- **Zoom in (Ctrl +):** Increase magnification. The small red cross indicates the center of magnification.*
- **Zoom out (Ctrl -):** Decrease magnification.
-  **Zoom window (Ctrl+W):** Magnify a selected section of the drawing window. Define the area to be magnified by drawing a frame with the mouse.
-  **Zoom to extents (Ctrl+E):** Structures are magnified to fill the drawing window completely.
-  **Last zoom (Ctrl+L):** Return to the most recently used rate of magnification.
- **Default Zoom (Ctrl+D):** View the plan in the the standard rate of magnification. This is defined in *Set zoom window*.
- **Set zoom window (Ctrl+W):** Set the default size of the drawing window.

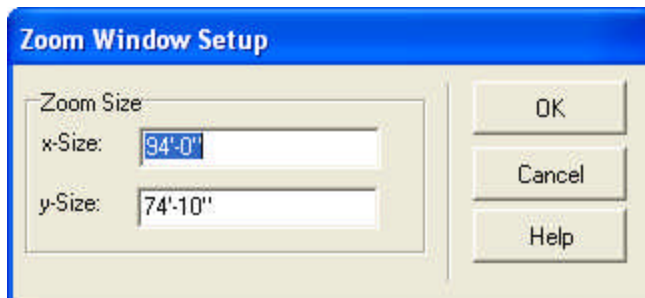
-  **Aerial view (Ctrl+Z):** View both the entire drawing window and the current window in the dialog box. A red border indicates the boundaries of the current window, which can be adjusted.

-  **Redraw (F6):** Refresh the screen.

Zoom after loading: When this feature is selected, projects are loaded zoomed to fit the drawing window. When it is switched off the project appears in the most recently used level of zoom.

Note: *If you have a scroll-wheel on your mouse, you can use it to zoom in and out on the floor plan or in 3D mode using the cursor as the center point.*

10.6.1 Defining the window of magnification



The dimensions of the current drawing window appear in the dialog box. The x-Size and y-Size values can be modified.

Part

XI



11 3D representation

3D EyeWitness enables you to visualize your project in 3D. All elements set to be displayed in the Foils settings are displayed in 3D as well. Initialize a 3D representation in one of several ways.

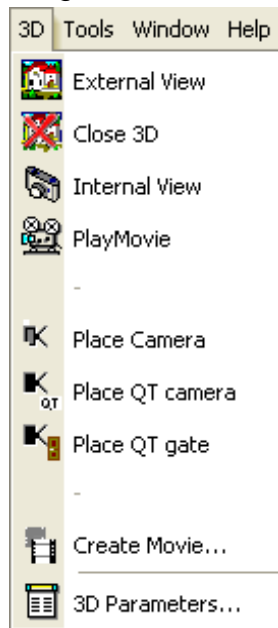


External picture of the building

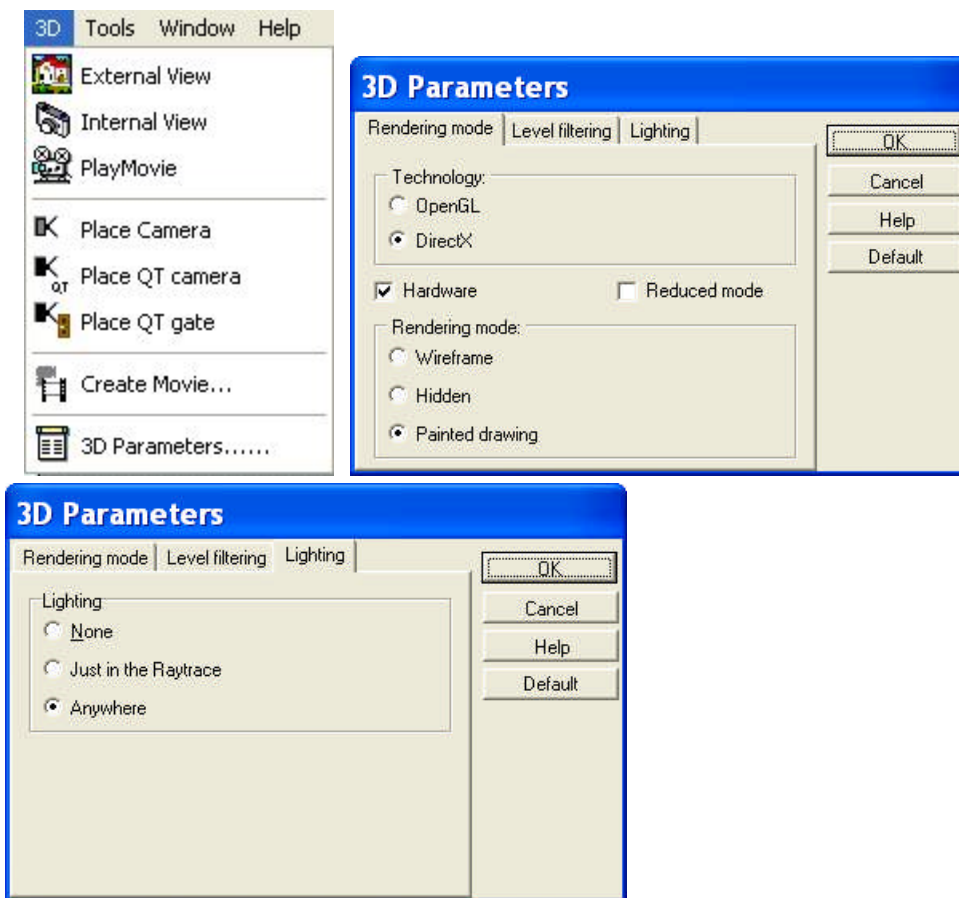


3D picture from a point defined by cameras inserted in the plan

Multiple 3D windows can be opened, and it is possible to have a different 3D image of your project in each one of them (facade, sectional view, perspective). The 3D windows can be kept open continually, as they are automatically refreshed to reflect changes to the floor floor plan.



11.1 Setting 3D parameters in the 2D window



3D parameters dialog:

Open this dialog in the 3D menu. The settings are applied to the new 3D window.

- **Technology:**

OpenGL / DirectX: Adjust graphics card settings.

Hardware: Choose this option if your graphics card can use OpenGL. Using this option will greatly reduce the time required for 3D visualization.

Software: Choose this option if your graphics card is not able to run OpenGL. 3D images will take longer to load with this option.

Note: If your graphics card is not running OpenGL properly errors may occur. For example, in 3D mode the building will not appear, or a black surface appear instead of the project. However, before switching to Software mode check whether you are using the most recent driver for the graphics card. If the driver is outdated, download a newer version from the manufacturer's website and try again in Hardware mode. If the program still does not work, then switch to Software mode.

Rendering mode:

Wireframe: Project is displayed as a wireframe drawing in the initial 3D window.

Painted drawing: Project is displayed as a painted 3D image in the initial 3D window.

Hidden: Project is displayed as a wireframe drawing, but with hidden lines in the initial 3D window.

- **Level filtering:** Set the numbers assigned to levels.

- **Lighting:**

None: Lighting settings from 2D mode are not displayed in 3D painted mode.

Only in Ray Trace mode: Lighting settings are displayed in 3D painted mode only for images generated in Ray Trace mode.

Everywhere: Lighting settings are displayed for all 3D representations.

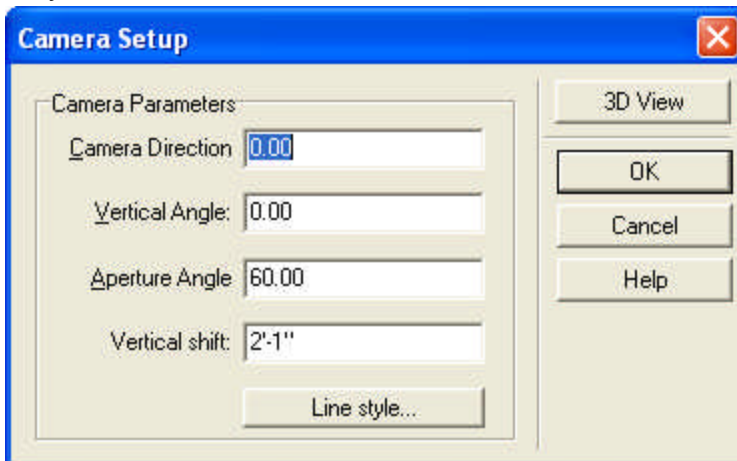
-

11.2 External view

An exterior image of the project is created from a point of view automatically defined by the program.

11.3 Internal view

Interior or exterior 3D image generated from a user-defined camera position: Image is generated from a perspective defined by a camera placed on the plan. Rotate the camera on the floor plan with the +/- buttons, or using the rotating icon. They can also be moved with the mouse.



Camera direction: Orientation of the camera on the floor plan, defined in degrees.

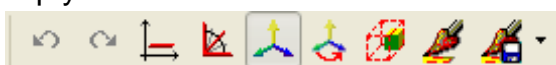
Vertical angle: Vertical angle of the camera. A horizontal orientation is defined as 0 degrees; negative values indicate downward-tilting cameras.


Aperture angle: Aperture of the camera in degrees.



Height: Height of the camera, relative to its level.








11.4 Editing in 3D, following in 2D

2D-3D parallel editing makes it possible to edit your project in one window while following changes in the other as well. In this mode changes done to your plan in the 2D window automatically appear in the 3D window and vice versa. It is thus possible to make changes to your plan in 3D mode as well. The following icons are there to help you do this:




-  **Ortho (Ctrl+O):** Use this icon to move objects. The x and y axes appear and you can move objects along these two only. It is possible to rotate the coordinate

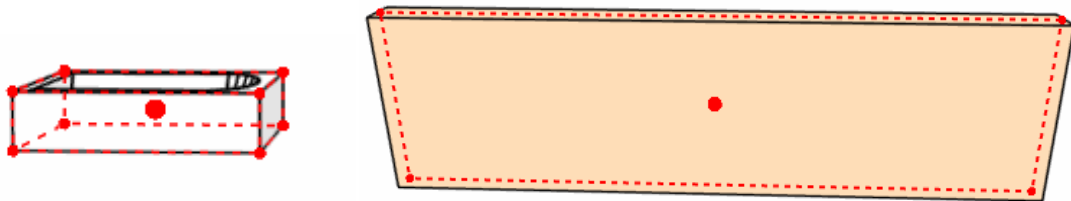
system by the  icon, redefining the orthogonal axis. With the  icon the axes of the coordinate system become visible in 3D.

-  **F3:** assign a minimal step for rotating and shifting objects (1 cm/m (or inch) feet for moving objects, 45 or 1 degree for rotating). You can adjust these values in **Settings/Editing**.
-  **F4: Coordinate system visibility.**
-  **Reorienting the coordinate system:** Redefine the default orientation of the coordinate system in 3D.
-  **Keep ratio:** switch this option on and manual resizing will be done by keeping the proportions of objects unchanged.
-  **Change colors, patterns in 3D.**
-  Save current colors and patterns.
-  Remove objects.


11.4.1 Selecting and modifying elements in 3D

It is now possible to edit your project in 3D Paint Mode  as well. All changes made to your plan are automatically applied in 2D as well. Move the mouse over an element and its properties can be seen in the info-line at the bottom of the screen. When a small pipe appears next to the cursor the element can be changed and edited. Click on the object to start editing it. You can select multiple elements by holding down **Shift** and selecting them. Select all elements by hitting **Ctrl+A**.

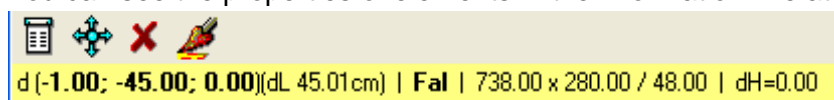
When an object is selected in 3D, a red selection frames appears around it and red points show the element's hot spots. Amongst these are the points of reference for moving or rotating the object.



Some elements cannot be moved, these ones do not have a point of reference for moving them, logically.

You can rotate some elements (for example symbols) by moving the mouse over the selection frame and rotating the object along its axis. The  icon should appear.

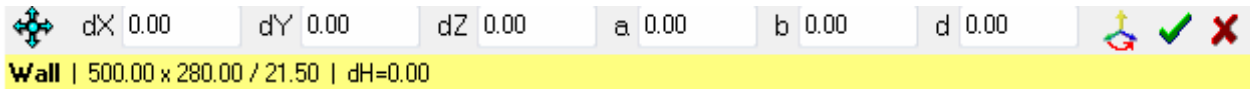
You can see the properties of elements in the information line at the bottom of the screen.



11.4.2 Data entry mode

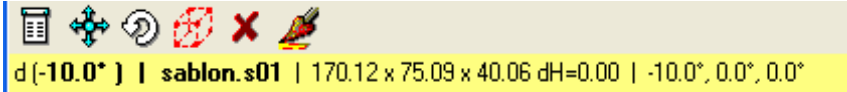


Data entry mode:

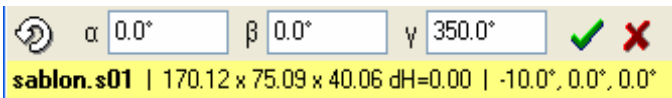


- When moving an element you can see the scale of the shifting in the x, y and z direction in the first 3 fields of the info-line.


When rotating an element, you can see the scale of rotation in these fields:



 **Data entry mode:**



This way you can rotate an object by exactly 90 degrees or move an object along (the corner points of) a grid.


Press **F3** or click on the  icon to change the minimal step for rotation/moving of elements.

Note: Any number of changes made to your plan in 3D mode can be undone by the Undo icon.

11.4.3 Making changes by overwriting data

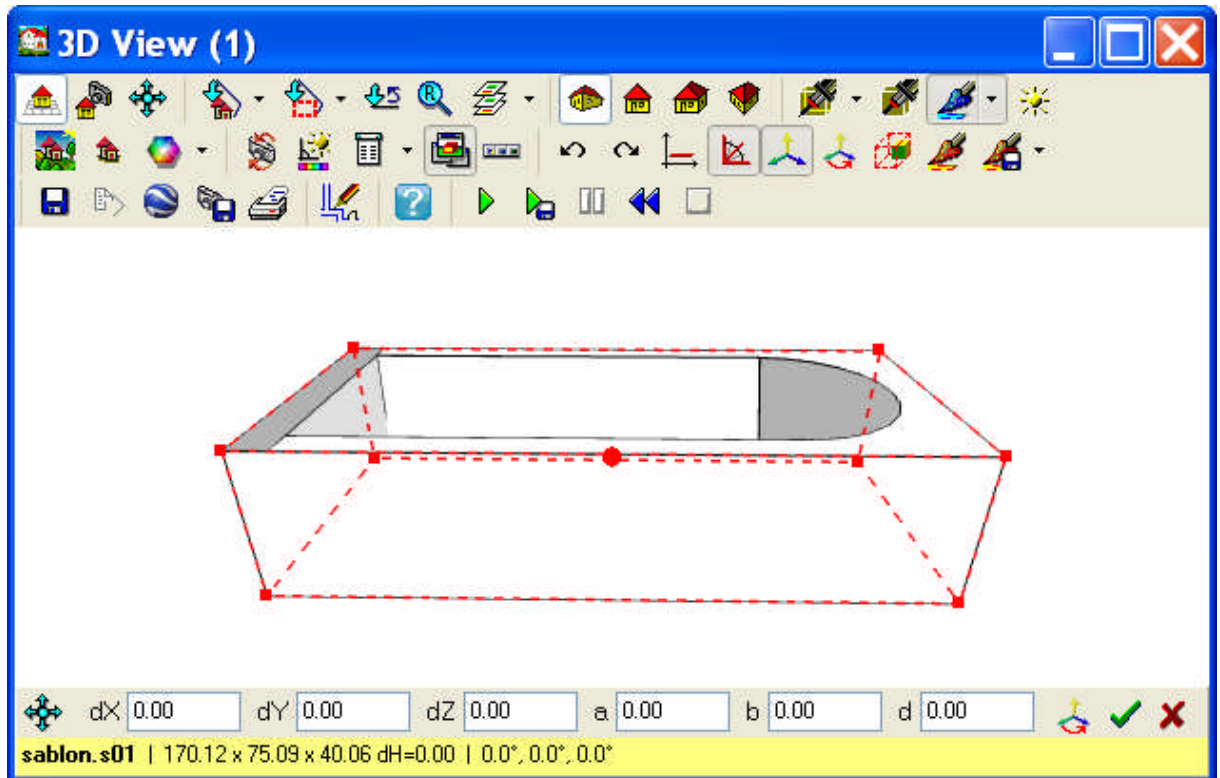
It is also possible to make changes to your project by the icons seen at the bottom of the 3D window.







-  With this icon you can open the 2D dialog of the selected object. You can also open this dialog simply by double clicking on an object. Within this dialog parameter values of the object can be overwritten. This can also be done in the case of selecting a group of objects together.

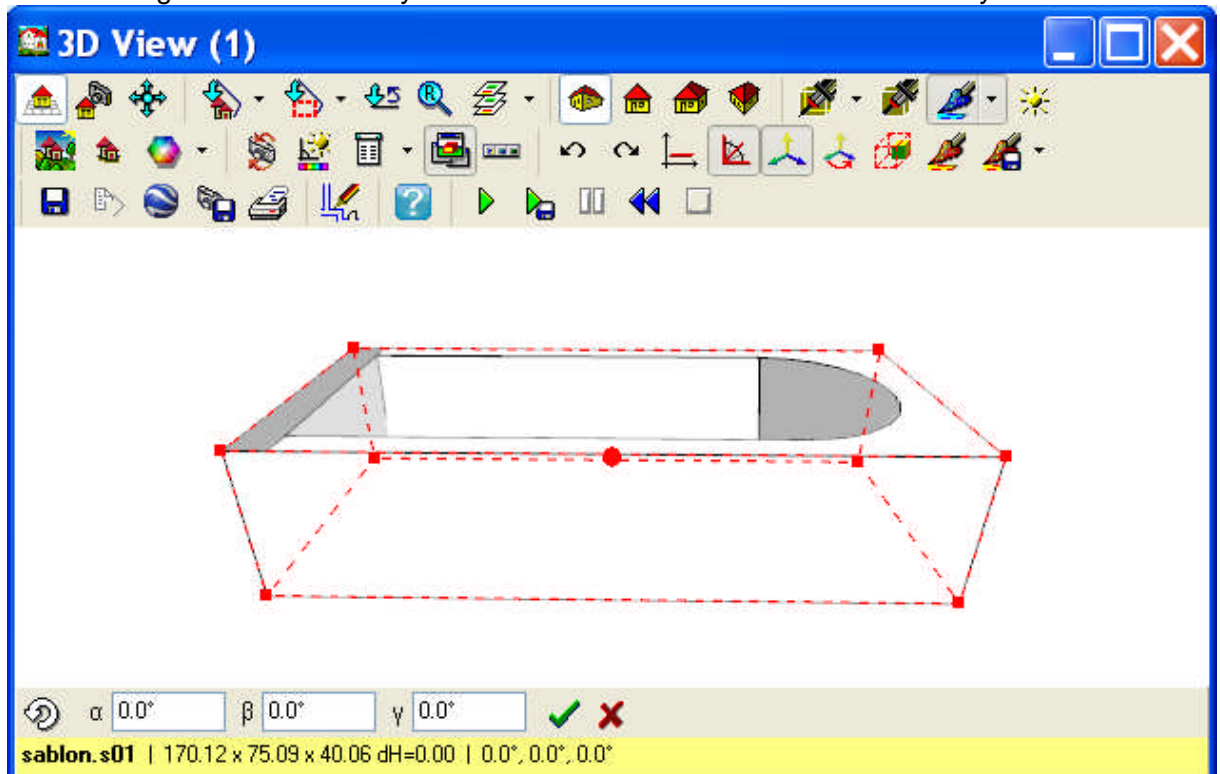


Click on the arrow cross and move the selected object by entering numerically the scale of shifting. Click on the small green pipe to the right to apply the entered values.

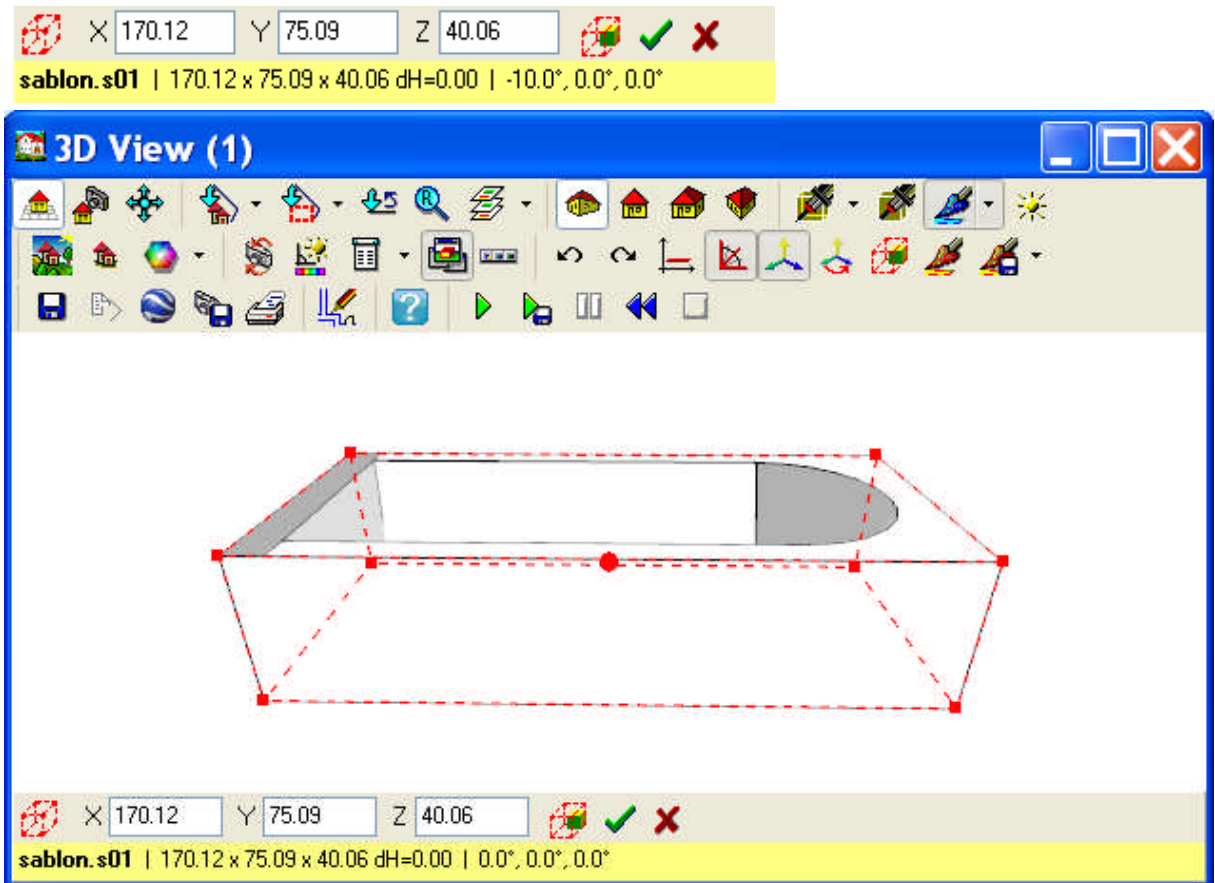


- **Rotation:**  α β γ  



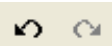
After clicking on the  icon you can enter the scale of rotation numerically.




- **Size:**
Changing the size of objects.



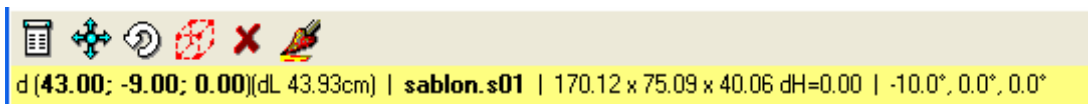
Define/modify the size of objects by entering values into the fields X, Y, Z.

-  Apply the data you entered.
-  Remove the selected object.
-  Undo/Redo

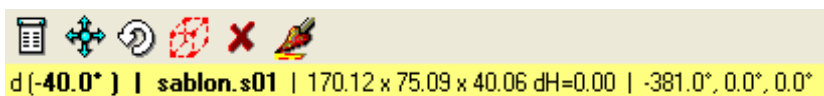
11.4.4 Using the mouse to modify objects



Move the mouse over an object and left click to move it (hold the mouse button down to drag it along). You can move around objects freely, or along the axes of the coordinate system if you click on the  icon. Holding down **Shift** (X, Y axis) or **Ctrl** (Z axis) has the same effect.


You can see the properties of the selected object and how much you moved it (etc) in the info-line at the bottom of the screen.



If you move the element the scale of shift can be see (along the X, Y and Z axes), whereas if you rotate it, the degree of rotation.



If you move the mouse along the selection frame the   icons may appear. Click on these and move the selected corner of the object to resize it.

 **Keep ratio:** switch this option on and manual resizing will be done by keeping the proportions of objects unchanged.

11.4.5 Rotating objects manually

Rotation: the rotation axis is the axis of the object. Rotate the object by moving the cursor to an **edge** of the object, press down the left button of the mouse and moving it in the desired direction.

- for example, the vertical edge makes it possible to rotate the object along the Z axis, that is *in* the X-Y plane. In this case the axis of rotation is the Z axis inserted into the big axis point.

11.5 Animation

Two kinds of animation are possible in 3DEyewitness: static camera and dynamic camera animation.



Static camera animation

Dynamic camera animation

11.5.1 Creating animations

Creating animation models of traffic accidents and crime scenes is easy with 3D EyeWitness. First, enter the relevant information about the event: the individuals involved, vehicles, speed and direction of movement, etc. From this data 3D EyeWitness creates an animation, which can be viewed from a variety of perspectives. The camera may either be static or move along a path you specify. Set the camera inside a car, for instance, to gain new insight on a traffic accident. Who could see the accident unfold and to what extent? 3D EyeWitness offers you the tools to investigate these questions and more. Try it once and you'll agree - 3D EyeWitness is an indispensable tool for today's emergency management and law enforcement professionals.

The objects to be used in the animation can be taken from the symbol library. These symbols (cars, people, weapons, etc.) may be resized, given colors and patterns, and otherwise modified. It is also possible to animate these symbols moving along a path. To do so, the path must be determined on the floor plan. The following example illustrates the steps needed to set a path for an animated symbol.


1. Choose a symbol from the library
2. Specify the dimensions of the object (**x-size, y-size, z-size**), its position (**Vert.shift.**) and color (using the  icon). The symbol may be rotated using the rotation icon, or the + and – keys. The angle of rotation applied appears at the bottom right of the screen. The default value is 45, but by clicking on the [45] this value may be modified. The symbol is placed on the plan by left clicking on the mouse.
3. **Rotating in space:** The symbol may be rotated not only on the 2D plan, but also in 3D space. To do this, first select the symbol and then select the 3D rotation menu from the right-click menu. From here it is possible to specify the angle of the symbol's rotation. The Axis z value describes the symbol's degree of rotation along the z-axis. The Axis x value describes the rotation around the x-axis.
4. Click on the  icon. The motion of the object is set by first clicking on the symbol, then drawing lines using the same technique used to draw other types of lines. The object's path is drawn on the 2D plan. In this dialogue box the symbol's movement along the path may be defined in more detail. To view this dialogue, select the path, then double click to open the Symbol Route Settings dialogue box.


| Symbol route settings (sablon.s01) | | | | | | | | | | |
|------------------------------------|-----------------|--------------|-------|----------------------------------|------------|------------|---|------------------|----------|------------------------|
| Index | Position & Size | | | Use route directions | | | Speed [mph] | Waiting time [s] | Time [s] | Mirroring interval [s] |
| | x ["] | y ["] | z ["] | Axis x [°] | Axis y [°] | Axis z [°] | | | | |
| 001. | 1024.3" | 974.10.7/16" | 0" | 0.00 | 0.00 | -175.07 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 5.7" | 2.6" | 1.4" | <input type="checkbox"/> Average | | | <input checked="" type="checkbox"/> Visible | | | |
| 002. | 1008.3" | 976.3" | 0" | 0.00 | 0.00 | -45.68 | 10.00 | 0.00 | 2.19 | 0.00 |
| | 5.7" | 2.6" | 1.4" | <input type="checkbox"/> Average | | | <input type="checkbox"/> Visible | | | |
| 003. | 1000.3" | 969.4.5/16" | 0" | 0.00 | 0.00 | 36.79 | 10.00 | 0.00 | 2.91 | 0.00 |
| | 5.7" | 2.6" | 1.4" | <input type="checkbox"/> Average | | | <input type="checkbox"/> Visible | | | |
| 004. | 984.3" | 968.3" | 0" | 0.00 | 0.00 | 0.00 | 10.00 | 0.00 | 4.00 | 0.00 |
| | 5.7" | 2.6" | 1.4" | <input type="checkbox"/> Average | | | <input checked="" type="checkbox"/> Visible | | | |

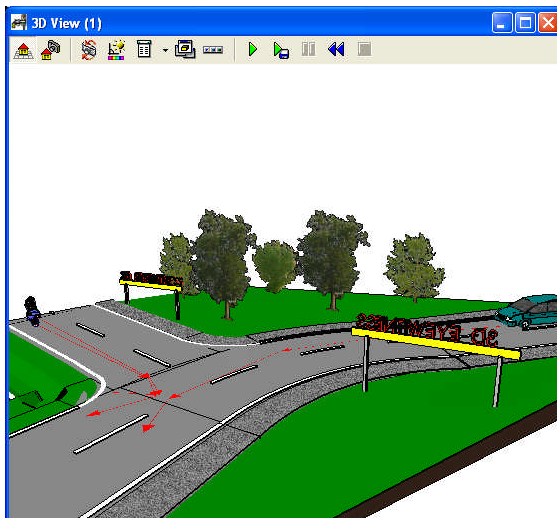
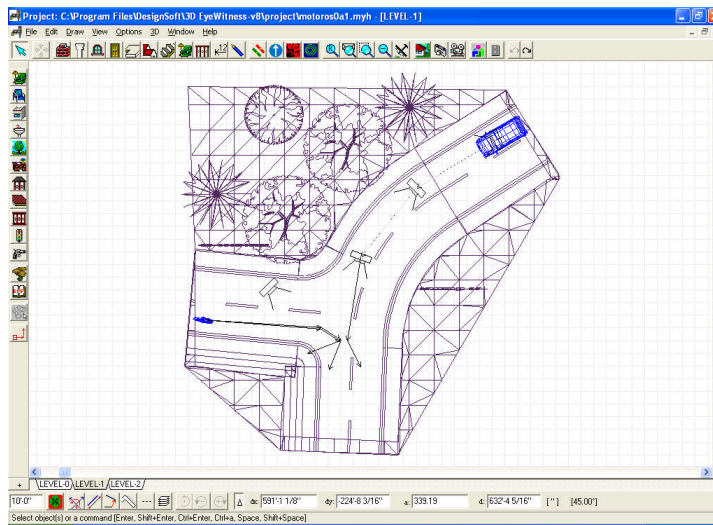
5. In the first window of the dialogue box the following information may be viewed and altered:


- **X,Y,Z:** In the position field the path data is specified. Here the dialogue takes the X and Y values from the symbol's position on the plan. The path's elevation or slope can be specified as the Z value. By selecting the **Average** function, the program will automatically calculate a Z value from the given X and Y values.
 - In the **Axis x**, **Axis y**, **Axis z** fields the symbol's angles during movement may be specified. If you wish the symbol to alter its angular values in order to follow the direction of the path, select the **Use Route direction** parameter. The sliding control can be used to specify when the object begins to turn in order to follow a change in path direction. If this is set to minimum, then the object begins to turn in the direction of a new segment already at the beginning of the previous segment. If this control is set to maximum, then the object will change orientation only at the intersection point of the two line segments. If the Use Direction parameter is switched off, then the changes in the symbol's angular orientation may be written in individually. Here too automatic calculations may be requested by switching on the Average function.
 - **Speed:** The symbol's speed may be set for each path segment. The **Average** option will calculate an average speed if given starting and ending speed values.
 - **Waiting time:** The symbol may be made to stop for a defined time at segment end points. Also one may specify whether the symbol is to be visible before or after these delays.
 - **Time:** In the duration field specify the amount of time needed for each path segment. In the case of multiple animated symbols this function is very useful in a determining the delay values for each.
 - **Mirroring interval:** It is possible to reflect a symbol about its own axis at with a given frequency. This is the easiest way in which to, for example, depict a walking figure.
2. **Path:** The path may be designated as visible or invisible. If visible, the color may also be specified.
 3. **Arrow:** Directional arrows may be placed for each path segment. The size, color, and placement of these arrows may be specified in the dialogue box.


11.5.2 Static camera animation

To generate an animation planned on a 2D drawing, first open the 3D mode by clicking the  icon. The point of view for the animation can then be adjusted on

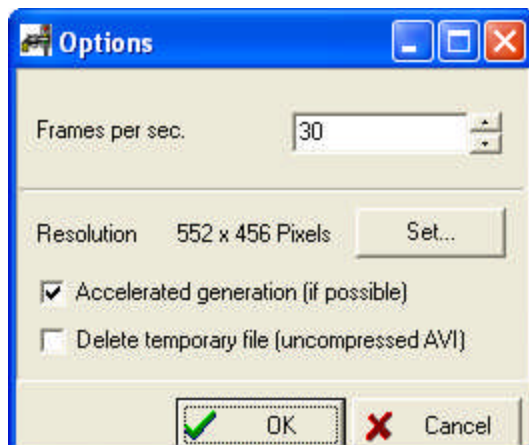
the 3D image by rotating and moving the 3D image. Clicking the  icon will generate the animation.



We run the animation by clicking the  icon. Here we can check that the data and motion path have been set correctly. If the event runs correctly, then we click the

 to generate the final film.

In the **Settings** dialogue box the following parameters can be modified:



- The number of frames per second. A suitably high number of frames per second ensures that the animation appears continuous, not jumpy.
- The size of the image. (**Resolution: pixels**) The size of the image can also be altered by changing the size of the 3D window.
- 3D parameters.
- Accelerated generation of the animation [where possible].
- Deletion of temporary files.

In the **Film Compression Settings** dialogue the following parameters can be modified:

- Movie type: **AVI/ FLV, SWF** or **MOV**.
- Compressed **AVI**
- For Flash videos: **FLV** (self-supporting like **AVI**, but requires an **FLV** player) or **SWF** (direct to the web, can be played without a player). The quality (in kbit/s) can also be set.
- For Quick Time **MOV**, the quality (in kbit/s) can be specified.

See:

Program Files/DesignSoft/3D EyeWitness v9/PROJECT / **motorist1.avi, light.avi**
and

Document and Settings / / PROJECT / **MOTORORISTS.MYH**

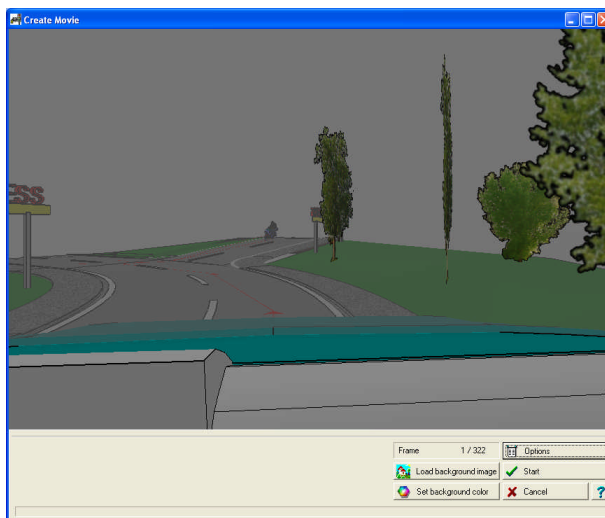
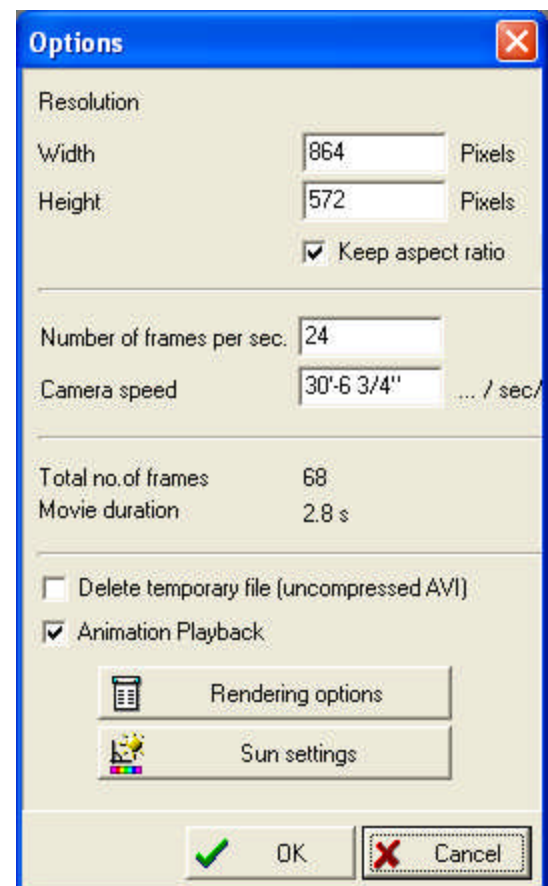
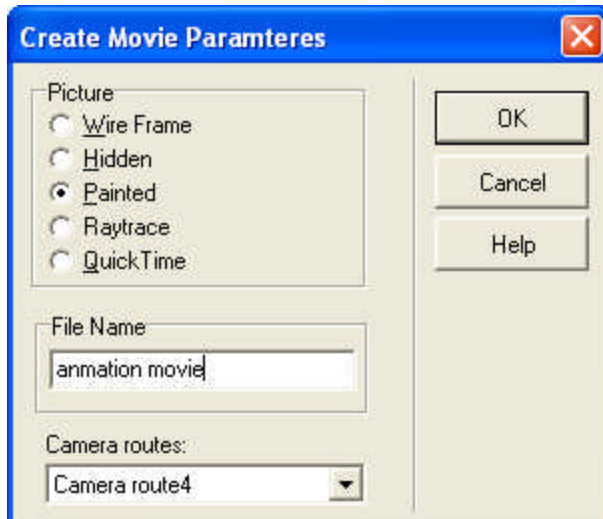
11.5.3 Dynamic camera animation

To create an animation with a dynamic camera, first cameras are placed on the 2D floorplan along the intended path. If we wish the camera to travel along the path of a road for instance, we may place the first camera inside the car and then give it a speed equal to the car's. In this way the animation will record action as it appears from the moving car.

In the **Create Movie / Options** dialogue we may set **Animation Playback**. Without this feature the camera moves along the path, without moving the specified symbols. Here the screen size may be set (**Resolution: Width, Height**).

See:

Program Files/DesignSoft/3D EyeWitness v9/PROJECT / **motorist2.avi** and
Document and Settings / / PROJECT / **MOTORORISTS.MYH**



By modifying the **number of frames per second** and the **camera speed** settings we can synchronize the camera movement with the events in the animation. The number of frames in the film and its length, **Movie duration** in seconds, is also visible. Here the movie type must be specified, as described above in the case of static camera animation.

Note: Switch off **Show this dialog automatically** parameter in Raytrace mode.

11.6 AVATAR

System requirements

Minimum

Windows XP SP2, Windows Vista, Windows 7 or newer
 Microsoft .Net 3.5 or newer
 DirectX 9.0c 2010 June
 OpenGL
 vcredist
 + 500 MB RAM to the Avatar module
 video card: ShaderModel 2.0 support
 processor: 2 GHz or better

11.6.1 How to start the AVATAR

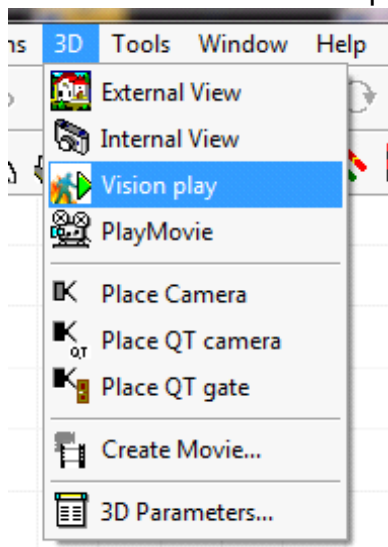
In 3D Eye Witness 2D editor: in the menubar click the Avatar icon.



In 3D Eye Witness 3D editor: in the menubar click the Avatar icon.



In 3D Eye Witness 2D editor: in the main menu click the 3D menu item, and in the submenu click the Avatar play item.



You can start 3D Eye Witness Avatar directly: open My Computer and navigate to the directory where you installed 3D Eye Witness. Navigate to the sub directory Vision, then exe, then Release and start VisionEditorClassic.exe.

[!] If you start Avatar directly it won't load any scene automatically, but you can load a previously saved scene by clicking File main menu then Load sub menu item. If you start Avatar from the 3D or 2D editor it will automatically load the scene presented in the 2D / 3D editor.

11.6.2 Camera handling

Basic camera handling methods:

Left click in the scene: it will select the object under the mouse – or if there's no object under the mouse it will deselect the previously selected object.

Hold pressed the left mouse button + move the mouse: it will rotate the camera around the selected object (or around the center of the scene if no object selected).

Mouse scroll or hold pressed the right button of the mouse + move the mouse up/down: it will move the camera forward/backward.

Hold pressed the middle mouse button or hold pressed the left and right mouse buttons + move the mouse: it will move the camera in the direction you move the mouse (left, right, up, down).

[!] The rotation will be performed around the selected object or around the scene's center if there's no object selected.

[!] If you attach the camera to an object the rotation will be performed relative to the object until you detach the camera.

11.6.3 Settings

Click Options in the main menu then Settings sub menu item.

[!] Settings will be saved automatically when you change a setting.

[!] Many settings can be changed only when a scene is already loaded.

With the tabs in the Settings scene you can change categories of the settings.

The settings, by tabs:

General

Scene debugger: if you turn it on it will present some visual debugging in the scene (will visually show the positions of the objects and their directions).

Show debug overlay: presents some technical information about the scene, in the scene. Information: triangle count of the scene, etc.

Y synchronization time: avatar up/down synchronization time (in seconds). The default will be fine mostly, if you want a more precise up/down synchronization decrement the setting.

Application Path: the location of the program / application in the hard drive.

Project Path: the location of the project directory in the hard drive.

User Path: the location of the User directory in the hard drive.

Graphics

Object fill mode: defines how the objects will be filled. Options: Fill (default, totally filled), Point (only the points of the objects will be drawn), Wire (only the triangles build up the object will be drawn).

Preferred renderer: OpenGL or DirectX. You can set the preferred renderer (almost every time the renderer will be used, except when some error happens), which will manage the drawings of the scene. OpenGL is the default, in most PCs it looks better, but sometimes it has compatibility problems which case you

can switch to DirectX.

[!] DirectX option is only available if you installed DirectX.

User settings

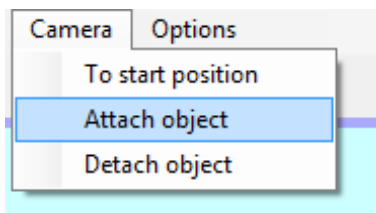
Help message about recording: if you turn it on will present a help message when you start a recording.

Warning at close: if you turn it on it will warn you at close / exit whether you totally sure about or want to save the scene before.

11.6.4 Attaching camera to an object

Attach

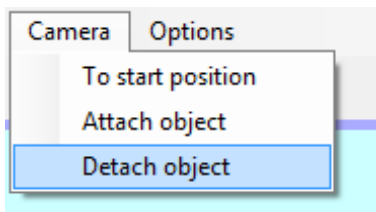
Select (left click with the mouse) an object in the scene (it will indicate you selected it), then click main menu item Camera and click Attach to object menu item in the submenu.



[!] The camera stays attached to the object until you detaches it.

Detach

Click Camera main menu item then click Detach from object sub menu item.



11.6.5 Video Recording

To start a recording session click the Record button (in the bottom of the window).

[!] The recording will stop when you click the Record button again after you started a recording session (the button's text will change to Stop if you started a recording session). This way you can move the camera, select objects, etc. even after the scene animation is ended and these will be also recorded.

When you click the Record button it will present a recording settings window in which you can set some parameters to the recording:

Frames per seconds: this will specify how many frames (pictures or snapshots) will be taken in one second. If you set it higher it will take more snapshots and the video will be smoother but it will take more time to record and convert the taken snapshots to a video. Additionally: most of the people can see only 25-30 frames per seconds so set this setting higher than 25 or 30 frames per seconds won't affect the video's smoothness for most of the people.

Priority: options are speed and quality. Speed is the default. This case the program tries to take the snapshots as fast as it can. If you set quality as priority then the program will try to make a snapshot as detailed as it can. Speed is preferred because it's quality is also sufficient in most of the cases (the video conversion will degrade the image quality anyway) and it's much faster than the quality setting.

To accept the settings click the OK button. If you click the Cancel button the recording won't start.

After you clicked OK in the recording settings window it will optionally (you can turn it off in the settings or by uncheck the checkbox in the warning window) show a warning window about the recording won't stop until you press the Record button again (if you start a recording session the button's text will change to Stop).

To stop the recording click the Record button again (if you start a recording session the button's text will change to Stop). After you clicked the button it will show a video settings window in which you can set the final video's (which will be stored on your hard drive) settings, for example the format of the video (AVI – which means .avi file, Flash video – which means .flv file, ...), the quality of the conversion (kBit/s – which means kilo bits per seconds) and some other options.

After you set these settings click OK to start the video conversion and to save the final video to your hard drive (the exact location will be asked when you click the OK button).

After the conversion you can freely copy, move or delete the video file.

11.7 Icons and commands of the 3D window

Upper row icons in the 3D window

The following icons always appear in the upper row:
These are:



Rotate,



Handy cam,



Camera settings,



Light settings,




Options,




Default/Last setting,

Show/Hide toolbars

Click on the  icon to open the *3D settings* window.

Click on the  icon to return the default (or latest) icon settings.

In addition, the icon row may be customized. To do this, right click on the icon row or left click on the  icon and choose from the icon list. A check mark next to an item indicates that it is active.



11.7.1 Navigation

Navigation: Use these icons to move around the project, rotate the cameras, zoom in or out on the building, etc.



Note: You may also move the image using the mouse, by holding down the left button and dragging.





 **Rotate 90 degrees counterclockwise**

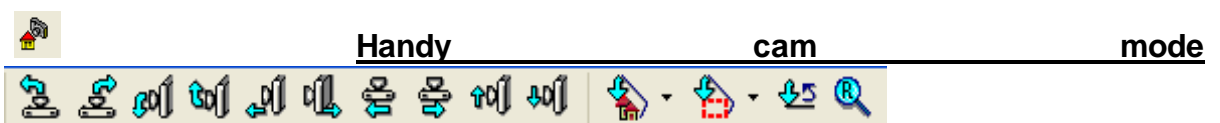
-  **Rotate counterclockwise**,  **Rotate clockwise** Alternatively, rotate the project by holding down the left mouse button and moving the cursor in the desired direction.

 **Rotate by 90 degrees clockwise**

 **Rotate up**,  **Rotate down** This may be done using the mouse as well.

 **Step forward**,  **Step back** Use these functions to zoom in/out on your project. This may also be done using the scroll wheel of the mouse, or by moving the mouse forward/back while holding down the right button.

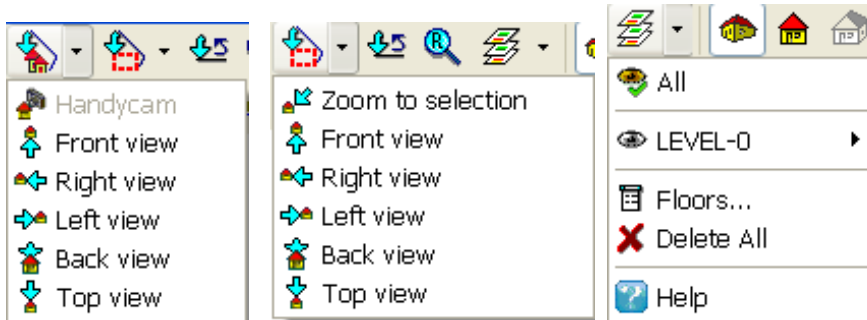
 **Restore previous view (BkSp)**



In Handy Cam mode you can move the camera as displayed on the icons. The camera can also be moved left/right or up/down by holding down the left button. Push the camera forward/back by holding down the right button and moving the mouse, or using the scroll wheel.

11.7.2 Reorientation

 **Latest:** Returns the project to its latest orientation.



11.7.3 Projection mode

Choose one of four projection modes for your building. **Perspective / Front view:** Cannot be used in Handy cam mode.

Axonometric: Only in wireframe mode.

Isometric: Only in wireframe mode.

Projection modes unavailable in the current mode appear in grey.



11.7.4 Rendering mode, Wireframe Drawing



3D Drawing mode:



Wireframe: OpenGL/Software When the 3D image is displayed in wireframe mode the planes defined by the building elements are simply defined by lines. The

planes and lines are transparent. Alter this last characteristic by clicking on the  or  icons. If the building is displayed in the painted format, then it retains this feature even when rotated. The wireframe picture may be rotated as well.



Hidden line: Lines which would not be visible in reality (because they are covered by others) are hidden. Transferring from wireframe to this mode may take some time depending on the complexity of the project. Send the hidden lines drawing

to the graphical window by clicking the  icon.



Painted: Click on this icon to switch to the painted image of your project. The rendering of the painted image may be accelerated by using an OpenGL system and corresponding visual card. The building is depicted in full color even when moved or rotated.




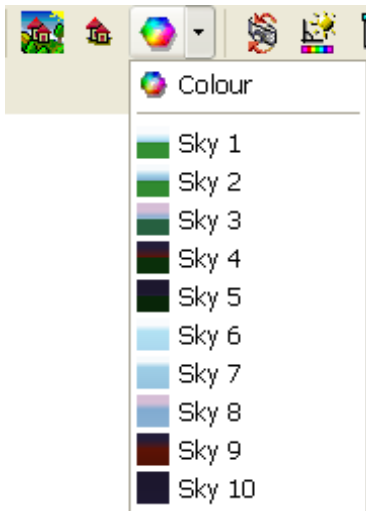
Ray trace: Use this feature to create a photo realistic image of the plan. This is more time consuming than generating painted or wireframe pictures due to the addition of shadows, reflections, transparencies, etc.


11.7.5 Backgrounds

Set 3D backgrounds using photographs as backgrounds

3D backgrounds can be set as a single color, or made from BMP, JPG, EMF, WMF files.

 Select a single color or sky for the background from the color palette.



 Opens a browsing window from which to select and load files for backgrounds

Note: *Put your project into a realistic environment by loading photographs as backgrounds. Move the building relative to the background to the desired location.*

 **Delete background** Removes the current background.

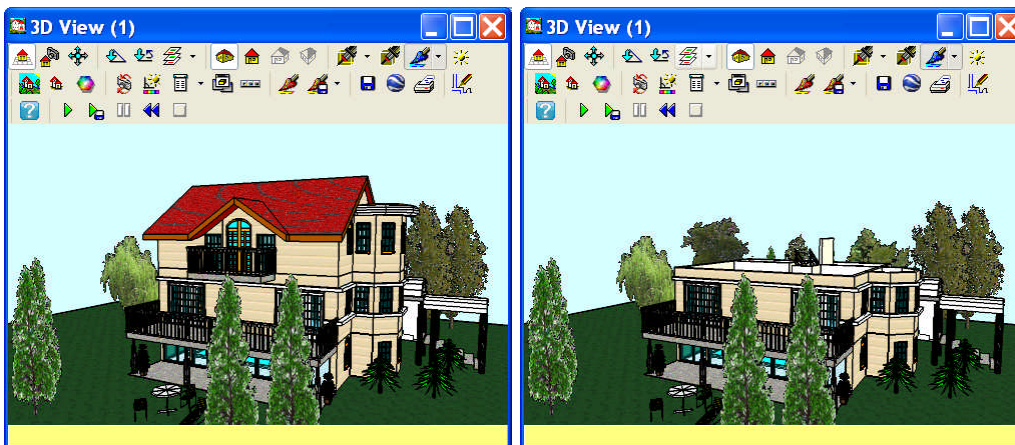
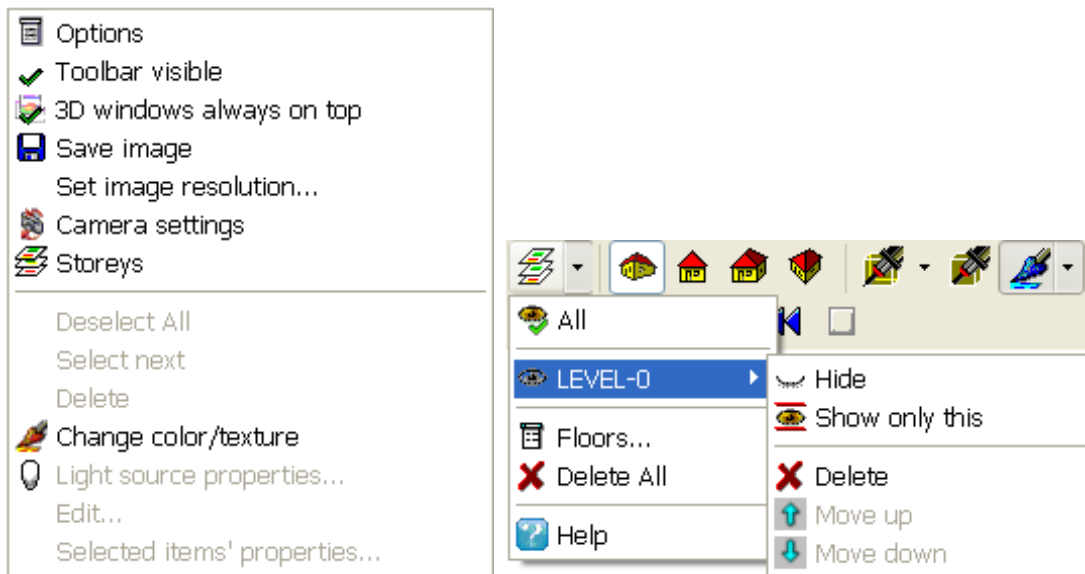
11.7.6 Editing

2D-3D parallel editing makes it possible to edit your project in one window while following changes in the other as well. In this mode changes done to your plan in the 2D window automatically appear in the 3D window and vice versa. It is thus possible to make changes to your plan in 3D mode as well. The following icons are there to help you do this:




11.7.7 3D Level Manager

You may turn on/off the visibility of the individual levels within 3D mode, without having to return to 2D mode. The following menu appears by right-clicking:




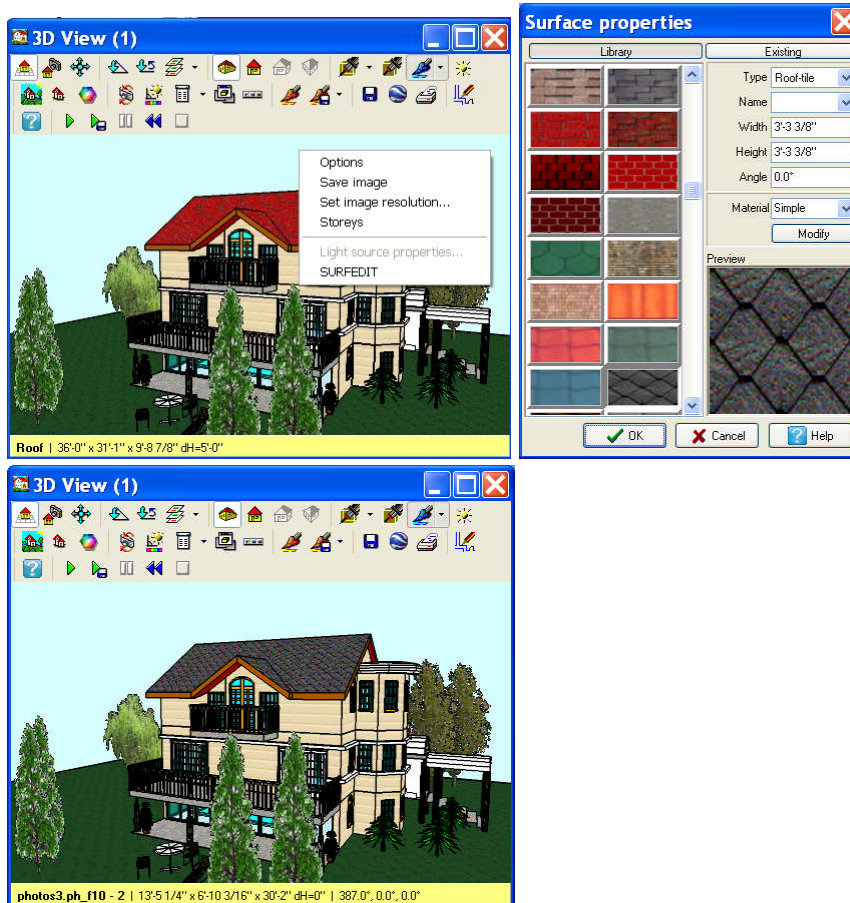
Click on Storeys to turn off/on the visibility of particular levels.


With the  icon you may open the roll-down list of levels, where you may also turn off/on their visibility.

11.7.8 Changing colors/textures in the 3D window

It is possible to change colors or textures on the 3D painted image without returning to

2D mode. In the 3D window you may switch into selection mode by the  icon. Textures can then be selected simply by clicking on them. Alternatively, you may select textures by moving the mouse above, right-click and select **Change color/texture**. The software automatically identifies the texture and locates it in the relevant group of textures, thereby facilitating the choice of the new texture to be inserted. However, you may access another group of textures and select a different one to be inserted. After clicking OK, the software automatically replaces all items of the selected texture.



You may save the textures used in a particular plan as a group of textures to be used later on with the  icon.

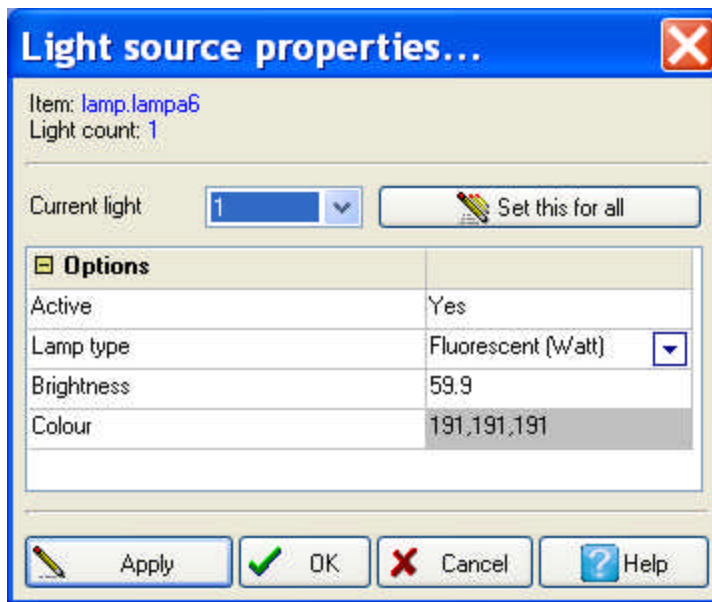
These saved groups of textures can then be loaded by clicking on the small arrow next to the icon and selecting the given group. When loading one of these groups, you may choose to add them to the textures and colors already present in the ongoing project. This can be done by clicking on **Yes**, when the question **Continue from current surface changes (yes)\or apply changes from the default state (no)?** comes up.

Note: When selecting the surface/texture to be replaced or modified, note that in the yellow-colored information bar at the bottom of the screen you can see which item will be selected (if right-clicking).

11.7.9 Light sources and lamps in 3D


If you have light sources installed in your project, you may switch them off/on, modify their brightness or color (of the light). You may apply the adjusted values to all light sources or only to the one that you selected. You may enter the data in the dialogue seen below


When you move the mouse above a lamp in the 3D window, a small lamp-shaped icon appears. Right-click and select **Light source properties** in the upcoming menu. You may set the parameters of the light source in the dialogue that appears.




11.7.10 Export to Google Earth

To use this option it is necessary to have Google Earth installed on your computer.

With the  icon it is possible to save the 3D building as a Google Earth-readable KMZ file, and you may also locate the building at its prospective position. In order to do so, it is necessary to define the latitude/longitude of the building's prospective location.

You may do this by first going to Google Earth, identify the location  and then

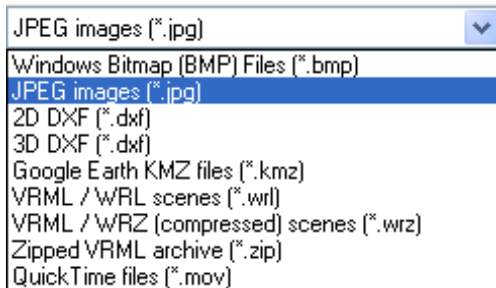
copy/paste  the latitude/longitude values into myHouse. You should also specify **North angle** and **Altitude**. Enter your personal data into **Name**, **Author name** etc.



11.7.11 Save and print



Save: Save the 3D image as a BMP, JPG, WRL, WRZ file.



***.BMP, JPG file:** Save the project simply as the image seen in the window .

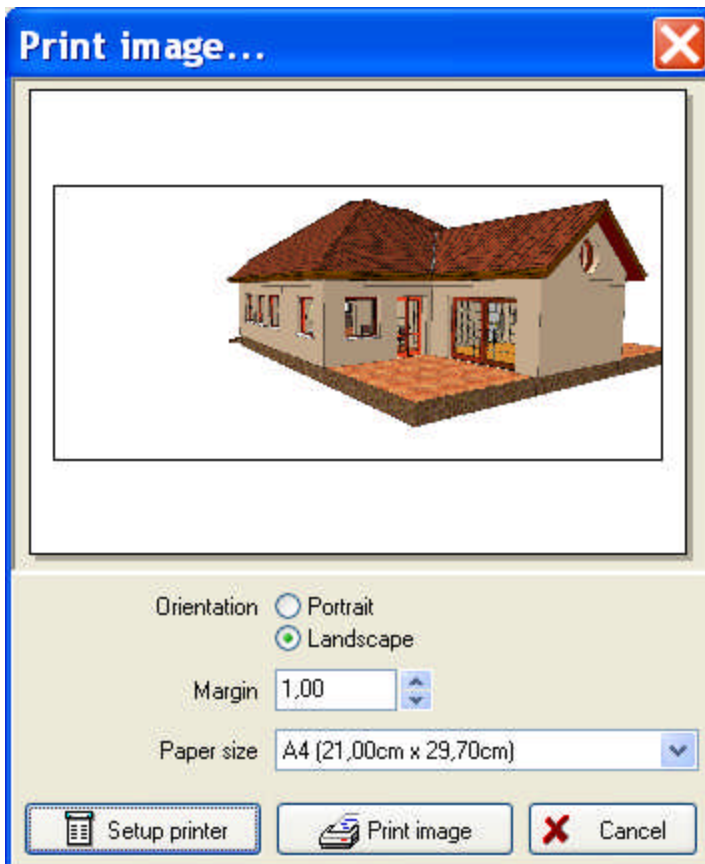
***.WRL, *.WRZ file:** Patterns, lighting adjustments, photo symbols, etc. are also saved. The file can be opened with Windows Explorer, downloadable from the Internet.

***.DXF:** 2D or 3D export to DXF file

***.KMZ:** Google Earth KMZ file



Transfer wireframe images to the graphic window: The wireframe image is sent to the graphical editor, where it may be further edited. This can only be done in wireframe mode.



Print: Print out the images as seen in the 3D window. It is advisable to first save the painted image as a file. Then load it to a drawing sheet or graphical editor and print from there.

Note: *When printing directly from the 3D window it is not possible to edit the proportions of the image. To do this, transfer the 3D (wireframe) image to the graphical editor.*

Then print out the proportionally adjusted picture directly from the graphical editor, or by transferring it to a drawing sheet and printing it from there.


11.7.12 Exit

Exit the 3D window and return to 2D mode. The 3D window remains open in the background and is refreshed to reflect the changes made in the 2D editing window.

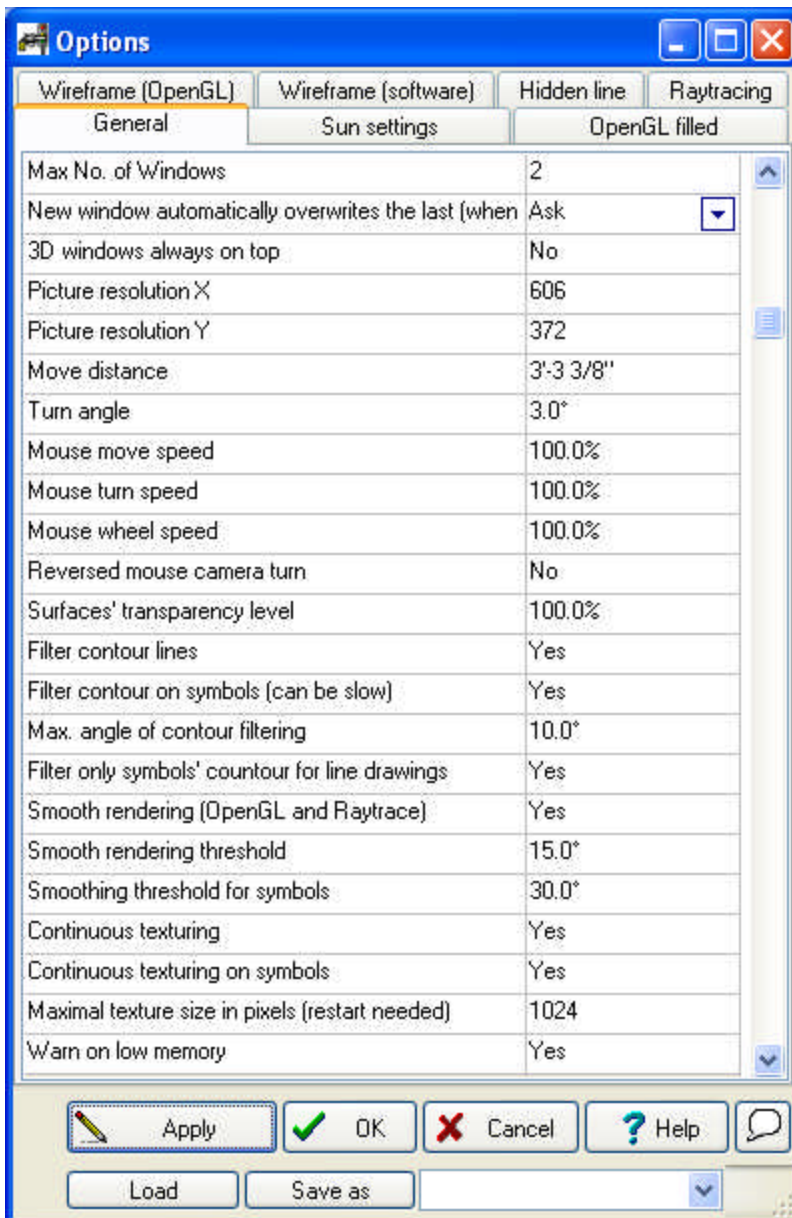
11.7.13 Help

Opens the help files.

11.8 Setting 3D parameters in the 3D window

Open the 3D settings dialog box in the 3D window by clicking the  icon. Adjust the parameters differently for each 3D window.

11.8.1 General parameters



Maximum number of windows: Sets the maximum number of open 3D windows. Until this limit is reached it is possible to open new 3D windows. Once the limit is reached, if new 3D windows are requested either the existing windows will be refreshed or no change will result, depending on your settings (see below).

New window automatically overwrites the last when maximum reached: **Always / Never / Ask:** Set the default for cases in which the window limit has been reached and a new 3D window is requested. If **Always** is selected, then the most recently opened 3D window is refreshed to reflect the latest configuration on the floor plan. If **Never** is selected, the window is not refreshed and no new 3D window is created. If **Ask** is selected, you are prompted each time this occurs.

3D windows always on top: 3D windows will always appear on top of 2D windows, even when returning to the floor plan editor.

Move distance: Set the magnitude of a single step when moving with the icons or the mouse.

Turn angle: Set the magnitude (in degrees) of a single step when rotating the project.

Mouse move speed: Set the mouse's speed when navigating within the project.

Mouse turn speed: Set the speed of rotation.

Rotation with the mouse: Set whether the building is to be rotated in the direction of mouse movement, or in the opposite direction. (Only in handy cam mode.)

Transparency level of surfaces (0-200%): Adjust the transparency of surfaces. 100% is the default value.

Filter contour lines : Yes/No Arched walls and other arched elements are displayed in 3D mode as a series of planes along an arc. This feature determines whether the contour lines of these planes are displayed.

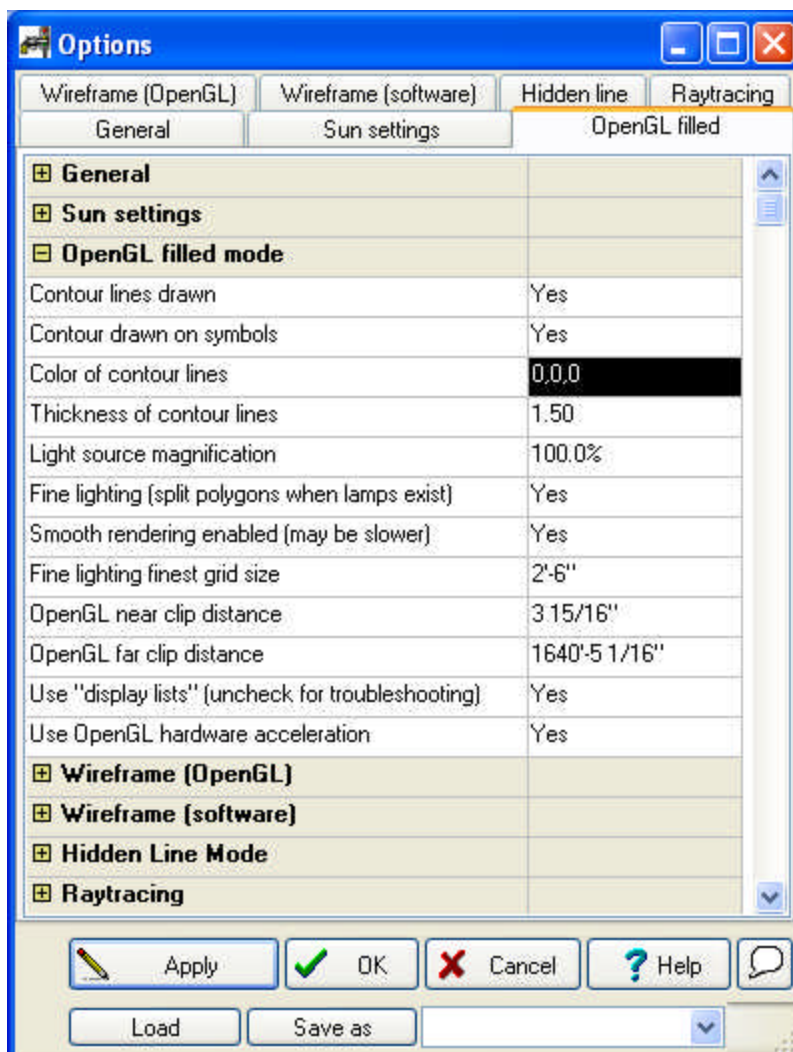
Filter contours on symbols: Yes/No. Contour lines (see above) may be switched on/off on symbols as well. The visualization is accelerated if contour lines are not displayed.

Max. angle of contour filtering (1-60): Set a threshold for angles between the planes of an arc (see above) under which the contour lines may be removed.

Filter contours of symbols only (on line drawings): Yes/No.

Low memory warning: Yes/No. A warning will appear if your system's memory is overburdened by a project and a virtual memory is required. If you receive such a warning, it is advised to close down all other applications. Optimal memory size: 1GByte.

11.8.2 OpenGL painted mode



Contour lines drawn: Yes/No. Switch contour lines of planes on/off. (See previous chapter)

Contour drawn on symbols: Yes/No. Contour lines on symbols can be switched on/off.

Color of contour lines: Select the color of contour lines from the color palette.

Thickness of contour lines (1-10): Set width of contour lines.

Light source magnification (0.01-100%): Set the strength of light sources. This is done on a relative scale, starting from the default value.

Fine lighting (split polygons with lamps): Yes/No.

Smooth rendering enables (may be slower): Yes/No.

Fine lighting finest gride size (10-500): Planes are divided into fine-grained grids when this feature is switched on. Within one grid unit one shade is used. The grid unit size may be set here.

OpenGL near clip distance (cm/inch): Set a minimal distance between planes under which the planes are not visualized.

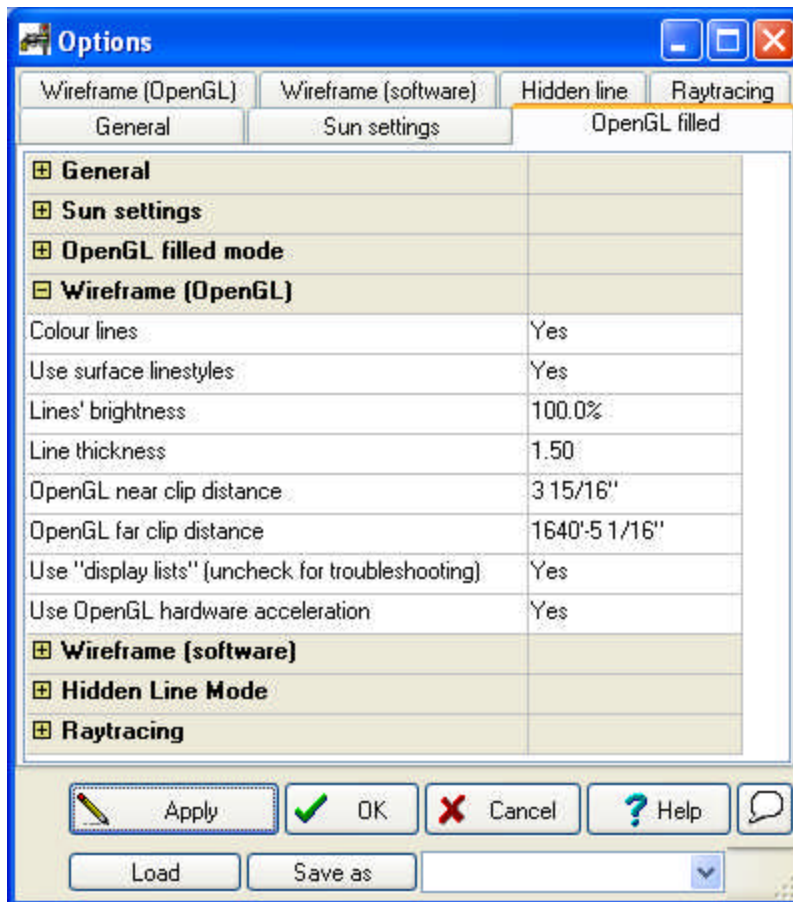
OpenGL far clip distance (cm/inch): Set a maximum distance between planes above which the planes are not visualized.

Use OpenGL hardware acceleration: Yes/No. Set whether program uses hardware acceleration to run OpenGL.

Note: *The value of the last two parameters and their proportion to each other influence the 3D image. If the pattern of overlapping planes show through, or if a given plane's pattern appears in dots on another plane, these problems may be corrected by modifying the Open GL near/far clip distance values. The sensitivity of these features also depend on the Open GL card.*

Hardware acceleration OpenGL: Yes/No. Accelerate visualization with a 3D accelerator card. If the card installed in your system is not compatible with the program, switch off this feature.

11.8.3 Wireframe (OpenGL) parameters



Colored lines: The lines in the wireframe model may be set to the same color as the planes.

Use surface line styles: Planes appear in the color set in 2D floor plan editing.

Lines brightness (0-150%): A contrast parameter may also be assigned to the (already specified) color of lines, thereby making them appear brighter or darker. Values closer to zero appear nearly black.

Line thickness: Set the thickness of lines.

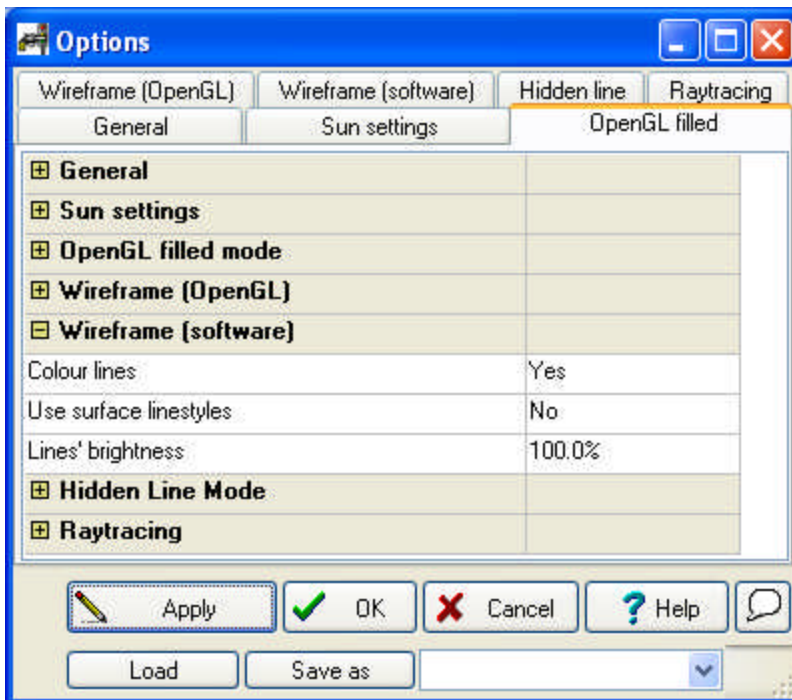
OpenGL near clip distance (cm): Set a minimal distance between planes under which the planes are not visualized.

OpenGL far clip distance (cm): Set a maximum distance between planes above which the planes are not visualized

Note: The value of the last two parameters and their proportion to each other influence the 3D image. If the pattern of overlapping planes show through, or if a given plane's pattern appears in dots on another plane, these faults may be corrected by modifying the Open GL near/far clip distance values. The sensitivity of these features also depend on the Open GL card.

Hardware acceleration of OpenGL: Yes/No. Visualization may be accelerated with a 3D accelerator card. If the card installed in your system is not compatible with the program, switch off this feature.

11.8.4 Wireframe (software) parameters

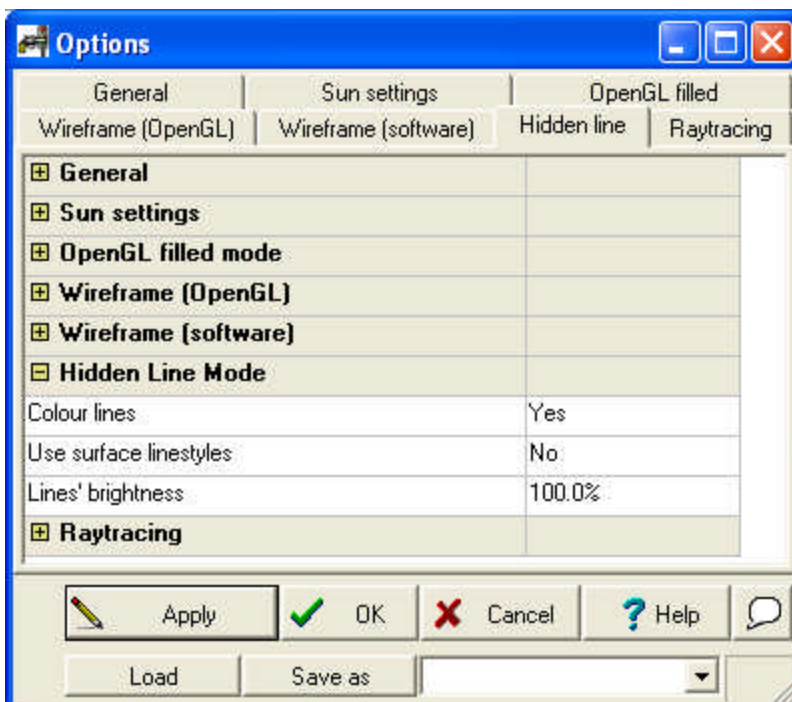


Colored lines: The lines in the wireframe model can be set to the same color as the planes.

Use surface line styles: Planes appear in the color set in 2D or 3D editing modes.

Lines brightness (0-150%): A contrast parameter may also be assigned to the (already specified) color of lines, thereby making them appear brighter or darker. Values closer to zero appear nearly black.

11.8.5 Hidden lines mode

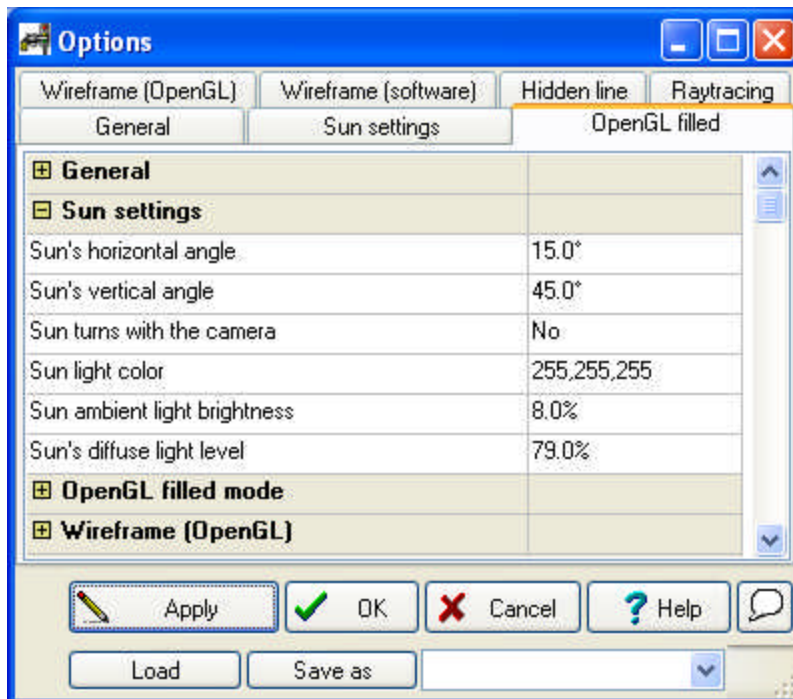


Colored lines: The lines in the wireframe model can be set to the same color as the planes.

Use surface line styles: Planes appear in the color set in 2D floor plan editing.

Lines brightness (0-150%): A contrast parameter may also be assigned to the (already specified) color of lines, thereby making them appear brighter or darker. Values closer to zero appear nearly black.

11.8.6 Sunlight settings



Sun's horizontal angle (0-360): Horizontal angle of the Sun relative to the building.

Sun's vertical angle (0-90): Vertical angle (height) of the Sun relative to the building.

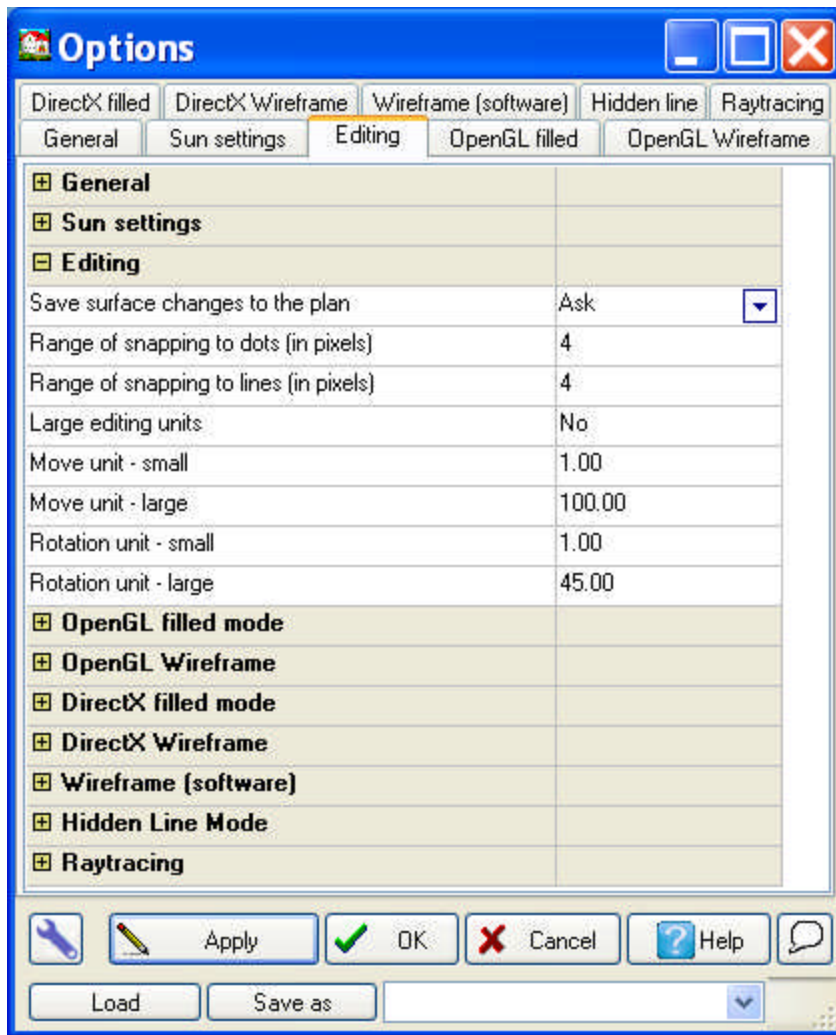
Sun turns with the camera: Yes/No. The Sun's position is fixed relative to the building. Thus, the lighting of the building may be seen from any position by placing a camera in the desired location.

Sunlight color: Set the color of the sunlight.

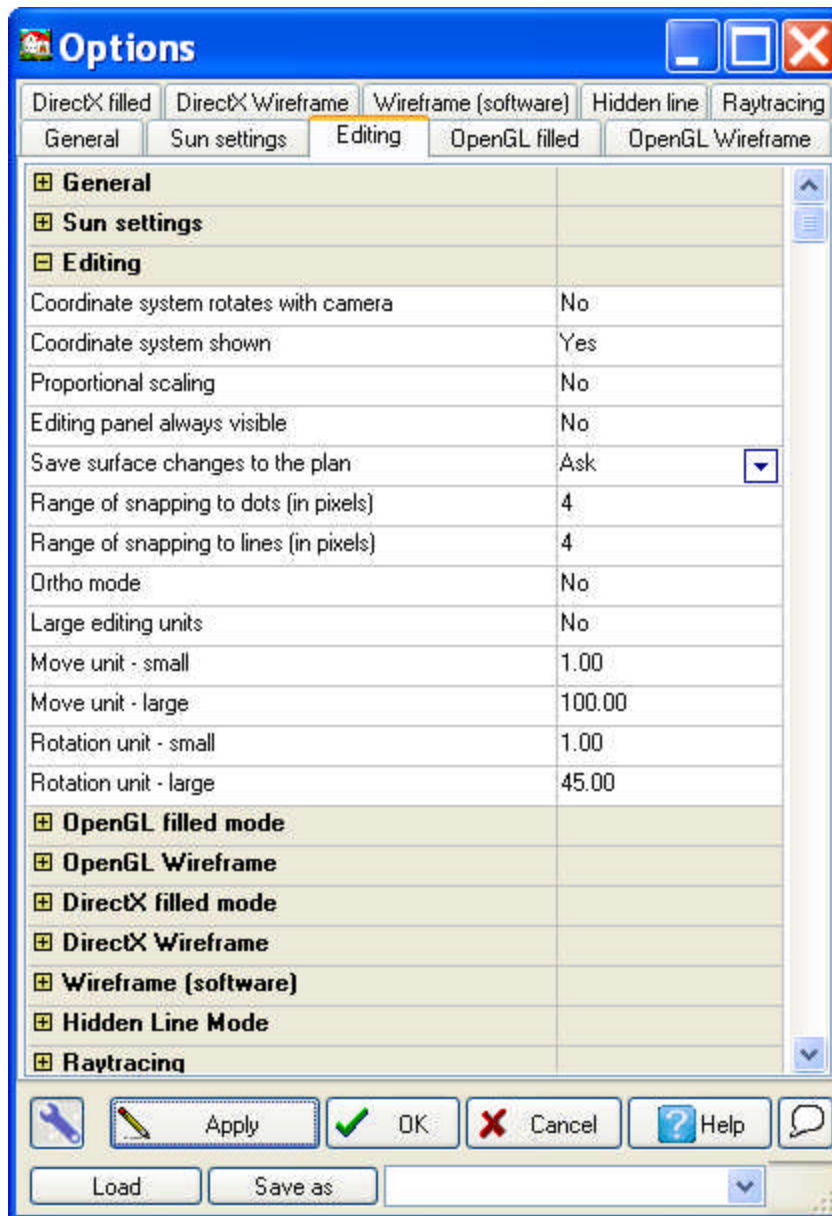
Sunlight brightness (0-100%): Set the sun's brightness, creating effects ranging from a sunburst to twilight.

Sunlight contrast (0-100%): Higher contrast makes the planes of similar colors more distinguishable and shadows stronger.

11.8.7 Editing options



Simple Editing options



Professional editing


11.9 Ray tracing parameters

Creating photo-realistic images

Create 3D images of photographic quality using *Ray tracing*. While the primary advantage of ray tracing is the creation of realistic, high-quality images, it is memory- and time-consuming. Generating images with ray-tracing takes much more time than generating painted/wireframe images due to the meticulous arrangement of shadows, reflections, transparencies, etc. However, the memory and time costs of ray tracing may be decreased somewhat by modifying the image's resolution.

Using Ray Tracing

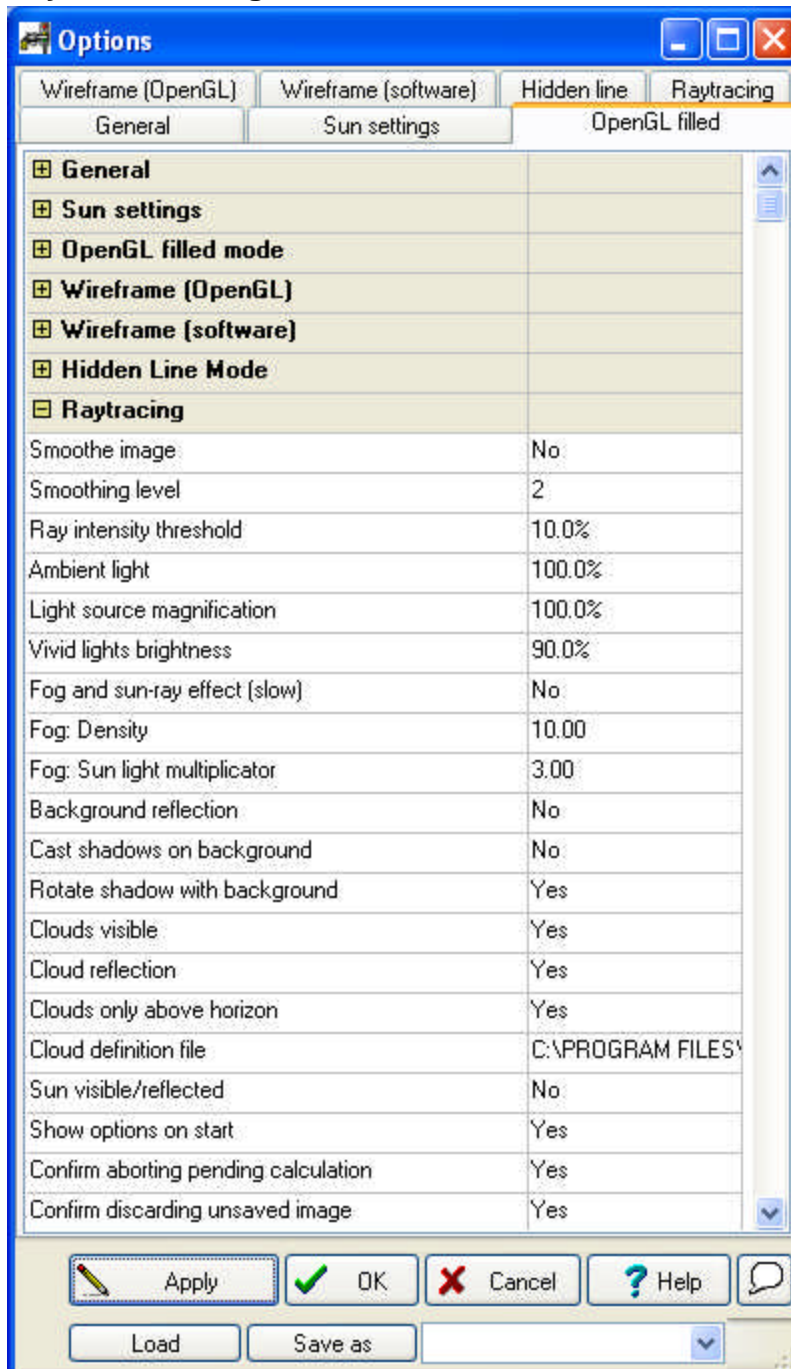
After loading the 3D image, position it using the mouse or icons, or by rotating the camera. You may also set a background, then request ray tracing by opening the RAY TRACING module.

Set parameters for the ray traced image in the ray tracing menu by clicking on the  icon. Enter the image's dimensions, resolution and type, then start generating the image. To further modifications the contrast, shades and other properties of the finished image, right click on it and select *Adjust colors*.

The images can be set as a BMP or JPG file if the quality of the image is appropriate.

Note: Create multiple versions of a single image by adjusting their colors.

Ray trace settings



Set ray trace parameters in the 3D settings menu. These parameters should be specified before beginning generation of the ray trace image.

Smooth image: Yes/No: After the image is generated, the smoothing algorithm corrects any remaining irregularities.

Smoothing level (1-10): Set the level of smoothness. A higher value results in a finer picture, but is more time-demanding

Ray intensity threshold (0-100%): This option determines the quality of reflections, transparencies and lighting properties. As a threshold value, it sets a level of intensity below which no rays are displayed. The lower this threshold is set, the finer the image quality, however the calculation also takes more time.

Ambient light (0-200%): Set the strength of ambient light. In reality all surfaces are also light sources as well. As it would be impossible to model these complex optical dynamics, the diffuse light sources are substituted by a general ambient light that illuminates all surfaces, irrespective of their position. The default value (100%) generally yields near-optimal results.

Light source amplification (10-200 %): Set the strength of light sources.

Strong lights brightness (10-200%): Set the contrast of the lighting of non-illuminated surfaces. The default value can be reapplied by Undo.

Fog and sun effects: Yes/No.

Fog density (1-100): This option simulates the optical effect of a fog or dust particles in the air. This phenomenon is observed, for example, when sunbeams are seen in a dark, dusty room. A similar effect may be seen when the sun shines through a gap between clouds. Distant objects in fog also appear grayer and dimmed.

These effects may appear with sunlight or with other light sources. It is easiest to find the optimal value for fog density using trial-and-error. (The fog density value corresponds to how many thousandths of a percent of the available light is absorbed by the fog in one meter.) If the fog is too thick and the effect cannot be discerned, you may raise the light strength (see below).

Fog, sunlight multiplier (1-50): It is especially practical to use the sunlight strength multiplier when using fog effects. If the light beams cannot be seen in the fog, the sunlight value may be raised. When using high sunlight values, it is advisable to also set the *Brightness* and *Gamma-correction* values accordingly in the *Adjust colors* dialog (see above).

Background settings

Three kinds of backgrounds may be used: empty, backgrounds loaded in 3D, and background clouds. You may also set whether the background is reflected on reflective surfaces.

Background reflection (Yes/No): The background is reflected on the relevant surfaces.

Shadows on background (Yes/No): The shadow of the building is cast on the background. At times the background may not appear because the shadow covers all of the background.

Rotate shadows in background (Yes/No): The background can be set to rotate together with the building when generating shadows.

Clouds visible (Yes/No): Clouds set in the scene are visible in the background.

Cloud reflection: Clouds are reflected on reflective surfaces when this option is selected.

Cloud description files: Choose from the cloud-types included in the program.

Sun visible: Yes/No

Open Settings when beginning ray trace (Yes/No): The ray trace dialog may be set to open automatically when starting the ray tracing process. You can set the size and DPI properties of the RT image as well.

Ask for confirmation when aborting a pending calculation: Yes/No

Ask for confirmation when discarding an unsaved image: Yes/No

11.9.1 Starting Ray Tracing



Beginning ray trace

The ray trace options dialog box is opened after clicking the icon above (if **Show options on start** is switched on)

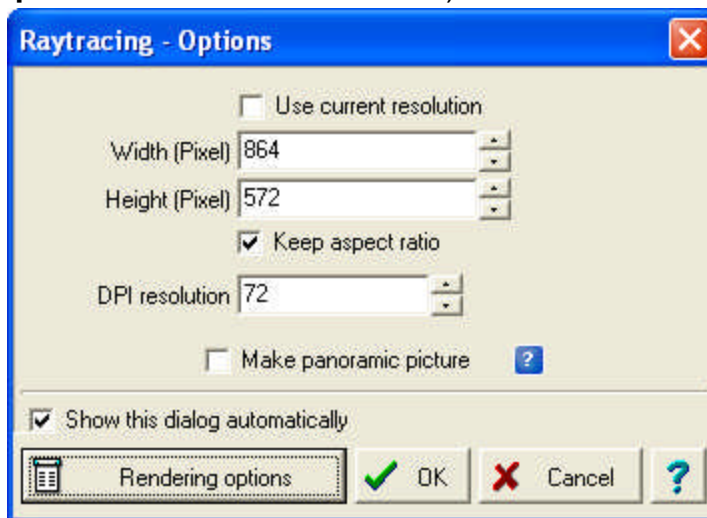


Image size: Size in pixels. If *Keep proportionality* is switched on, then the two values (height and width) are interrelated and mutually determined. The size of the image in large part determines the time and memory demand of its generation.

Use current resolution: The size of the image is defined simply by the size of the window.

Width (pixels): Width of the image in pixels.

Height (pixel): Height of the image in pixels.

Keep proportionality: Height and width are interrelated and mutually determined. Thus, the image retains its original proportions.

Resolution (DPI): resolution of the image

Make panoramic image: 360 degree panoramic images

Rendering options: Other ray tracing parameters may be set here

11.10 Panoramic pictures

Using ray tracing you can also create 360 degree panoramic images, which are then saved as QuickTime files. The advantage of panoramic images is that they provide a complete overview of a project. Horizontally you can make a full revolution of 360 degrees, while vertically you can move in a band defined by the height of the image.

It is possible to zoom in on the image. Panoramic pictures are most practical for interior views, as they contain all information that can be seen from one point by

rotating in a circle. These images take more time to generate, as they require at least double the resolution of normal images in order to produce the same quality.

Request panoramic pictures in the *Ray Tracing* dialog box by selecting the option *Make a panoramic picture*.

The resolution depends on the width of the picture, while the height determines the visible vertical magnitude of the image. It is normally practical to set the height around 60-80% of the width.

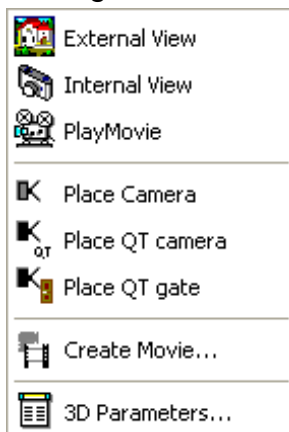
Width, Height: The values normally set for ray tracing apply here as well. It is advised to set these around 2000x1500 for a resolution appropriate for a panoramic picture.

Note: QuickTime is needed in order to generate and view panoramic pictures.

11.11 Movie

To make a movie from your project, place cameras on the floor plan. Cameras can be placed inside or outside the building. The program automatically calculates the number of frames needed based on the position and distance between cameras.

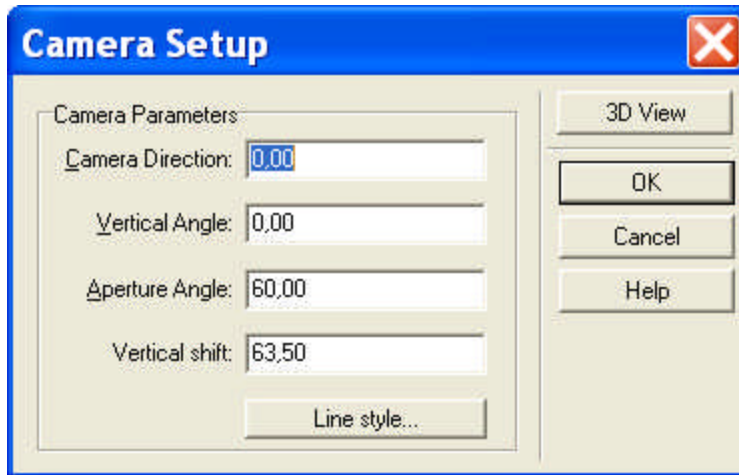
You can save multiple camera routes, and specify which one is to be used when creating a movie.



11.11.1 Putting down cameras for AVI movies

To make a movie, first place cameras on the floor plan by clicking on *Place camera* in the 3D menu. The cameras should be set in the order of the shots to appear in the movie. Cameras can be rotated with the +/- buttons. For a more fine-grained rotation, use Shift+F3 or decrease the magnitude of the rotational step.

Other parameters of the camera, such as its height, may be modified by selecting and double-clicking on them, or by right-clicking and choosing *Properties* from the menu.



Camera orientation: The orientation of the camera on the floor plan in degrees. The current value is displayed when the dialog is opened.

Vertical angle: The camera be tilted upwards or downwards. A vertical angle of 0 degrees means the camera is placed horizontally; negative degrees indicate downward tilt.

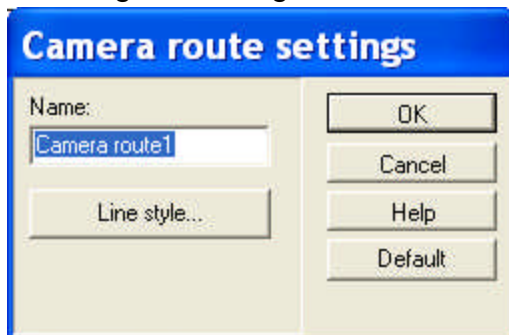
Aperture angle: The aperture angle in degrees.

Vertical shift: The height of the camera, relative to its level.

3D view: View the camera's positioning in 3D.

Note: Make sure that all 3D parameters are set correctly before you start making the film. Click **3D parameters** to review them.

To assign a name to a camera route, double click on the line and enter the name in the dialog box. Doing so will facilitate the movie-making process.



Camera route name dialog

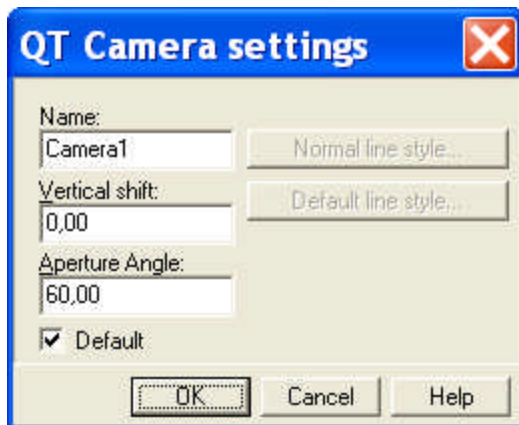
Name: name of the camera route

Line style: line style of camera route

11.11.2 Cameras and passages for MOV movies

Placing QT cameras for MOV movies

For panoramic films, QT cameras must be placed at all points where a 360 degree shot is desired. Do this with the command *Place QT cameras* from the 3D menu. The cameras should be set in the order of the shots to appear in the movie.



11.11.2.1 QT passages

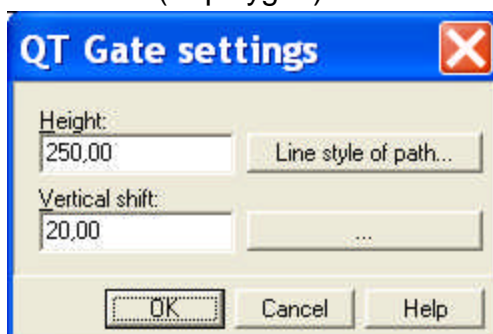
QT passages for MOV films

By defining crossings between two cameras, passages are created between the two points. It is possible to define passageways from one room to several others, thereby connecting a camera to multiple other cameras. The passages are active areas which allow the viewer to move from one picture/room to another. Place QT cameras with the command *3D/Place QT camera*.

The steps in creating a film, therefore, are the following:

Select **Place QT camera** and place the cameras in the rooms on the floor plan.

Choose **Place QT gate** from the 3D menu, select two cameras and an opening, or draw a line (or polygon) that defines the passage's position.



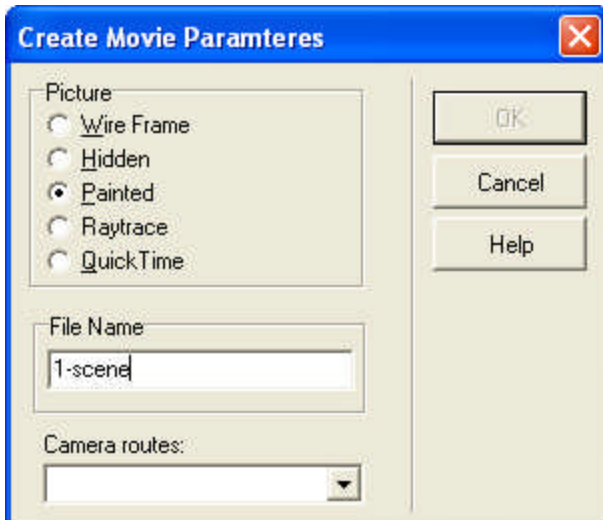
Entering values for a QT passage with polygon

The passage has height, shift and width values. If you defined the passage by selecting an opening, then it takes on the values from the opening. If you are creating a custom opening, the properties of the passage may be defined by right-clicking and choosing **Properties** from the right-click menu.

If you drew a polygon, then a horizontal passage is created (useful for instance with slab apertures or when going up stairs).

11.11.3 Making the movie

Click *Create movie* in the 3D menu. Choose **Wireframe**, **Hidden line**, **Painted**, **Ray-traced** or **QuickTime** movie from the dialogue. Provide a name for the file - this is where the constituent pictures are stored. Specify which camera route the movie will use.



Images:

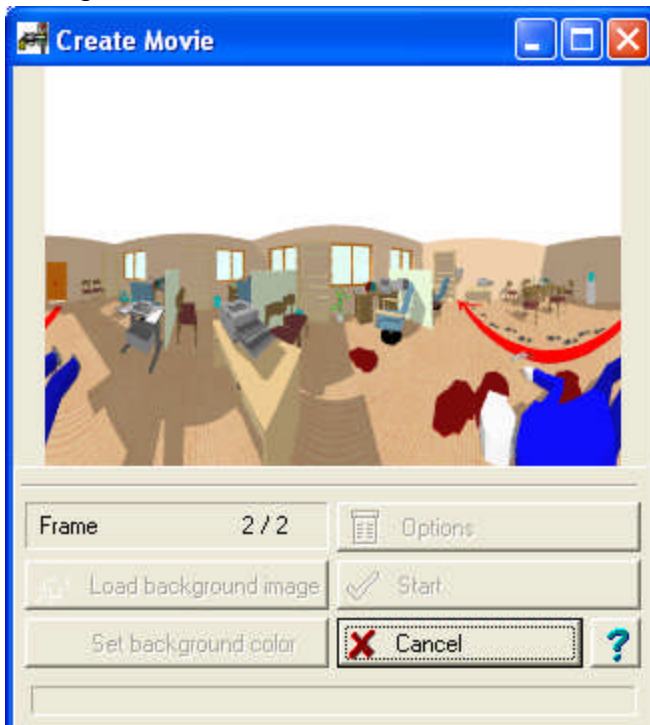
Wireframe (AVI, FLV, SWF): Composed of wireframe pictures of the plan. This is the fastest way to generate a movie.

Hidden line (AVI, FLV, SWF): Composed of wireframe pictures of the plan, but with hidden lines.

Painted* (AVI, FLV, SWF): Composed of the painted 3D pictures of the project.

Ray-traced (AVI, FLV, SWF): Composed of the ray-traced images of the project, with detailed shadows, transparencies, etc. Select this option for photo-realistic and/or panoramic films.

QuickTime (MOV): you may also create 360 degree panoramic pictures with passages



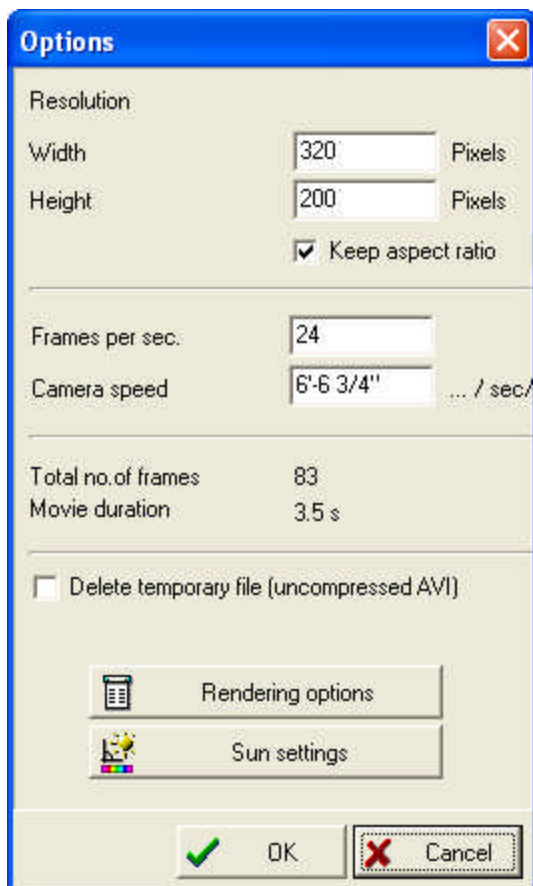
Options: The image properties dialog is opened from here. (Version 8.3)

Load background image: Render a background image behind the pictures.

Set background color: Select a background color from the palette.

Start: Begin producing film.

Cancel: Movie production is canceled.



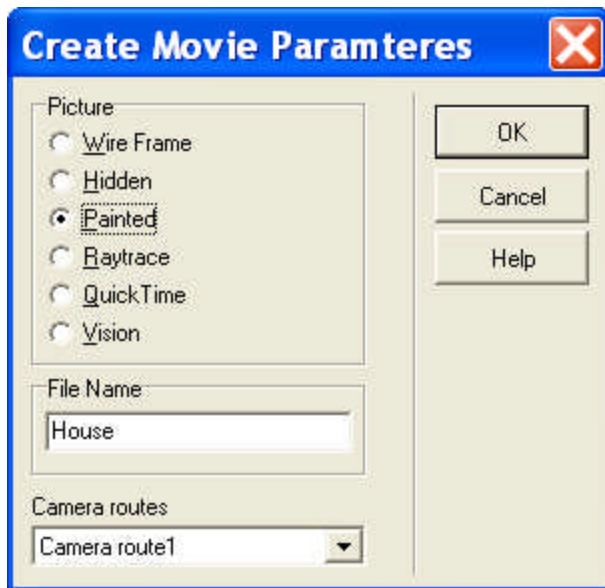
Resolution (width, height): You can define the size of the frames (pictures) the movie

Frame / sec: The number of frames (pictures) the movie is made up /sec-- of depends of the distance between cameras.

Delete temporary file: delete the uncompressed AVI (SCP) files

Start: Begin producing film.

Click *Create movie* in the 3D menu. Choose **Wireframe, Hidden line, Painted, Ray-traced** or **QuickTime** movie from the dialogue. Provide a name for the file - this is where the constituent pictures are stored. Specify which camera route the movie will use.



Images:

Wireframe (AVI): Composed of wireframe pictures of the plan. This is the fastest way to generate a movie.

Hidden line (AVI): Composed of wireframe pictures of the plan, but with hidden lines.

Painted* (AVI): Composed of the painted 3D pictures of the project.

Ray-traced (AVI): Composed of the ray-traced images of the project, with detailed shadows, transparencies, etc. Select this option for photo-realistic and/or panoramic films.

Frames: The number of frames (pictures) the movie is made up of depends of the distance between cameras.

Options: The image properties dialog is opened from here. (Version 8.3)

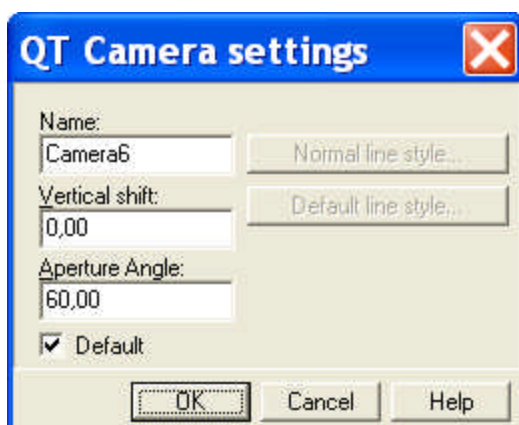
Set background color: Select a background color from the palette.

Load background image: Render a background image behind the pictures.

Start: Begin producing film.


Cancel: Cancel making the film.

Quick Time movies (MOV): Panoramic movies may be created from panoramic pictures. In these movies, passages on the pictures function as hot spots which, when clicked, allow the viewer to move to the next picture, room, level, etc.



To create a QT movie containing QT panoramic pictures, choose *QT movie* in the dialog box.

The film is generated by ray tracing. Clicking *Options* opens the ray tracing dialog. Enter the dimensions of the panoramic pictures. These should be at least 2000x1200 pixels for good resolution. Once the movie is completed it can be viewed on other computers in QuickTime as well.

- Filename: The pictures generated are stored here. The extension of the file may be AVI or MOV. View the movie once it is finished by pressing the  icon, or in *Windows Media Player* or *QuickTime* .


Note: QuickTime may be downloaded from:
<http://www.apple.com/quicktime/download/>

The amount of time needed to generate the movie depends on:

- the complexity of the project,
- the number of frames,
- and the type of images used (painted / hidden line or ray traced)


While the movie is being generated you may follow its progress and view the completed frames individually.

Filename: The pictures generated will be stored here.

The extension of the file may be MOV. View the movie once it is finished by pressing the  icon, or in *Windows Media Player* or *QuickTime* .

Note: QuickTime may be downloaded from:
<http://www.apple.com/quicktime/download/>

11.11.4 Watching the movie

View movies by pressing the  icon, or with the *Play movie* command from the 3D menu. Movies made in 3dEyewitness are regular AVI files, so the program opens them by starting Windows Media Player.



Windows Media Player dialog:

The movie may be viewed using the functional buttons.

Open movies by clicking on **File** and choosing a movie.

> : Advance the film frame by frame

>> / << : Fast forward/backward

Play: Play the film

II: Pause at any point

Exit: Close the player by clicking the X icon in the upper right corner, or by going to File/Exit.

Viewing options can be adjusted, including **Continuous play /Auto Repeat/:** The movie restarts automatically once it reaches its end.

In the information field the current frame is visible. During play the sliding indicator moves along with the frame counter. Above the sliding indicator is the frame number (ScaleFrame). You may modify this feature to display the time instead of the current frame.

Part

XII



12 Graphical editor

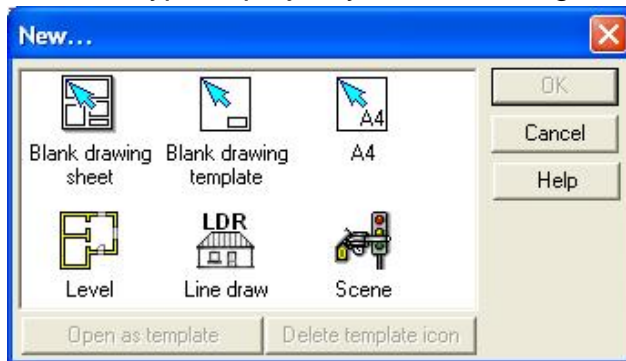
The program allows you to combine multiple drawings on a single drawing sheet. For instance, the 2D floor plans and 3D perspective, facade and sectional views may all be placed on the same sheet. When the drawing sheet is loaded, all of its constituent projects and drawings are loaded as well.

The drawing sheet's size may be customized or you can use a template to which you have added your own emblems and stamps.

The following icons from the upper menu row are used in creating LDR drawings: *Select*, *Symbols*, *Dimensioning* (only two-point dimensioning and area measurement), *Drawing* and the various *Zoom* icons.

Note: *It is also possible to place 2D top view drawings from the library onto the drawing sheet.*

Open a new drawing sheet by selecting **File/New**. From the dialog box that appears, select the type of project you'd like to begin.



House: Start a new documentation.



Level: Create a new level.



Line drawing: Open a new window for an LDR drawing. This opens a blank drawing sheet where you may create a line drawing which may be saved as an LDR file.



Blank drawing sheet: Open a new drawing sheet where you may transfer other plans/drawings.






Blank drawing template: Create a customized drawing sheet.



A4: Open a pre-set A4 drawing sheet template.

12.1 Line drawing

Create line drawings in 3D EyeWitness by selecting 3D wireframe or hidden line models.

The 3D model is generated in a separate window after pressing the  or  icons. Once a hidden line model has been created, it may be transferred to another window by pressing .

Drawings created in this way may be:

1. Modified, corrected, or added to
2. Transferred to a drawing sheet
3. Saved as an LDR file
4. Printed directly from the window

The following icons from the upper menu row are used in creating LDR drawings:

Select

Symbols

Dimensioning (only two-point dimensioning and area measurement)

Drawing

Zoom icons.



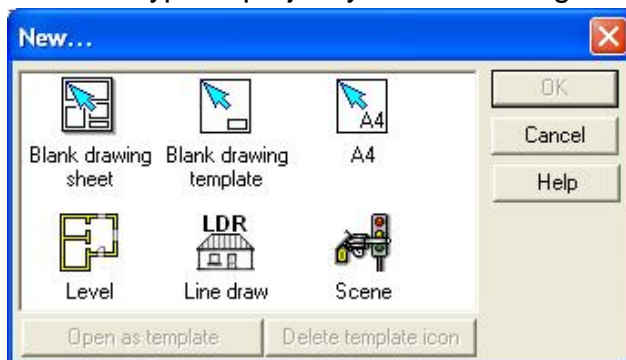
Note: *It is also possible to place 2D top view drawings from the library onto the drawing sheet.*

The contents of windows with drawings may be transferred to drawing sheets, along with other drawings, or even floor plans.

Note: *Note that all supplementary structures in the drawing window (such as lines*, captions) are transferred as well. In addition, any further changes to the original will appear on the drawing sheet as well. Thus, it is practical to transfer a drawing only after finalizing all of its aspects. Otherwise, make further changes in the original window so they will appear on the drawing sheet as well.*

12.2 New line drawing sheet

Open a new drawing sheet by selecting **File/New**. From the dialog box that appears, select the type of project you'd like to begin.



Blank drawing sheet: Open a new drawing sheet where you may transfer several other plans/drawings.

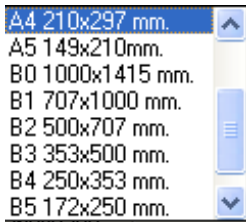


Blank drawing template: Create a customized drawing sheet.



A4: Open a pre-set A4 drawing sheet template.

The size of the drawing sheet may be specified either in the dialog that appears after selecting **Blank drawing sheet** or by selecting **Settings/ Sheet format**.



Predefined sizes: Select a sheet size from the scroll-down list or enter a custom size.

Width/Height: The dimensions of the sheet

Orientation: Portrait / Landscape


Name: The name of the drawing sheet, displayed on the window tab.

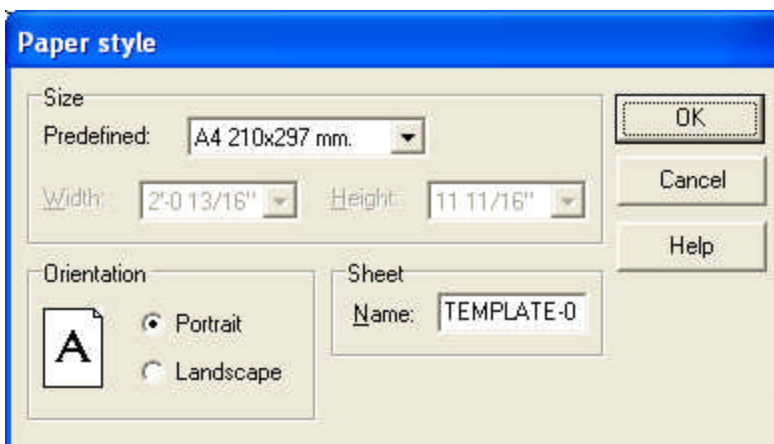
12.3 Customized drawing sheets



Blank drawing template: Create your own, customized drawing sheet. By selecting this option you can create a drawing sheet with your own logo or labels and save it as a default drawing sheet to be used in the future.



Click the  icon and the **Drawing sheet style** dialog appears. Specify the dimensions, identifiers and orientation of the template. Select the size of the sheet from the scroll-down list where the standard sizes from A0 to B5 are listed.



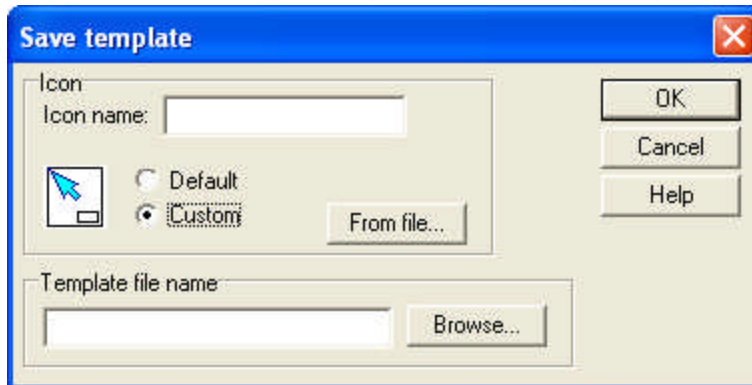
Customize own drawing sheet consisting of line drawings and/or 3D projects. After finishing save the sheet as your own default drawing sheet.

Note: Customized drawing sheets designed as templates do not contain floor plans, only 3D or sectional drawings (that is, LDR files) or BMP, JPG, or WMF images. It is

practical to include recurrent information on the drawing sheet such as logos, company names, emblems, etc.

Save the file with **File/Save**.

After clicking on **Save** another dialog appears where you are prompted to assign an icon and an identifier text to the drawing sheet. This way you may find your drawing sheet template in the dialog box when beginning a new project.



Icon Name: Enter a short text to be displayed under the template icon. For each customized drawing sheet you can assign an icon and identifying text, thereby making them easier to distinguish later on.

Icon: Choose the default icon or use one of your own. If you choose a non-default icon, you may import it from a file. The icons may be in ICO form, or use the A0-A4 symbol icons included in the program.

Template file name: The customized drawing sheet) is saved as a TPL file. It is advisable to use the same file name as the icon name. Make sure that the files remain in their original library, as the program searches for them in the original folder when loading.

12.4 Importing drawings to the drawing sheet


Transfer the contents of an active window to a drawing sheet by right-clicking on the drawing sheet and choosing *Insert part* from the right-click menu.

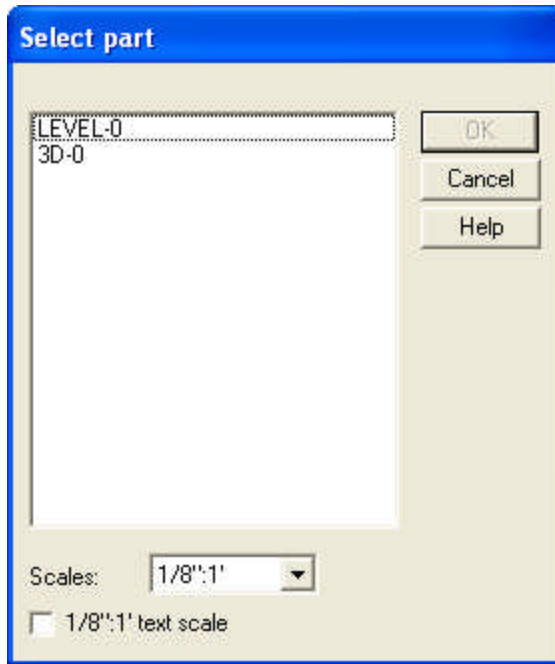
The list of windows (levels, drawings) which may be imported appears.

Select one of them, set the scales, and import the drawing by clicking OK. A rubber line frame appears which assists in positioning.

Once imported onto the drawing sheet, modifications cannot be carried out directly on the sheet. Make modifications in the original window, which are then carried out on the drawing sheet too.

Windows that can be transferred to the drawing sheet:

- levels of a building (each level is in a separate window). Each level has an identifier having the format LEVEL- n , where n is the number of the level. The level identifiers can be modified.
- line drawings of the building, which have a 3D- n identifier, where n is a serial number. Hidden line models may be transferred to different drawing sheets by pressing the  icon.
- sectional views of the building. Their identifier name refers to that of the sectional plane.



Here you may choose from the levels etc., which one you want to put on the sheet.

Scales: The scaling with which the project is put on the sheet.

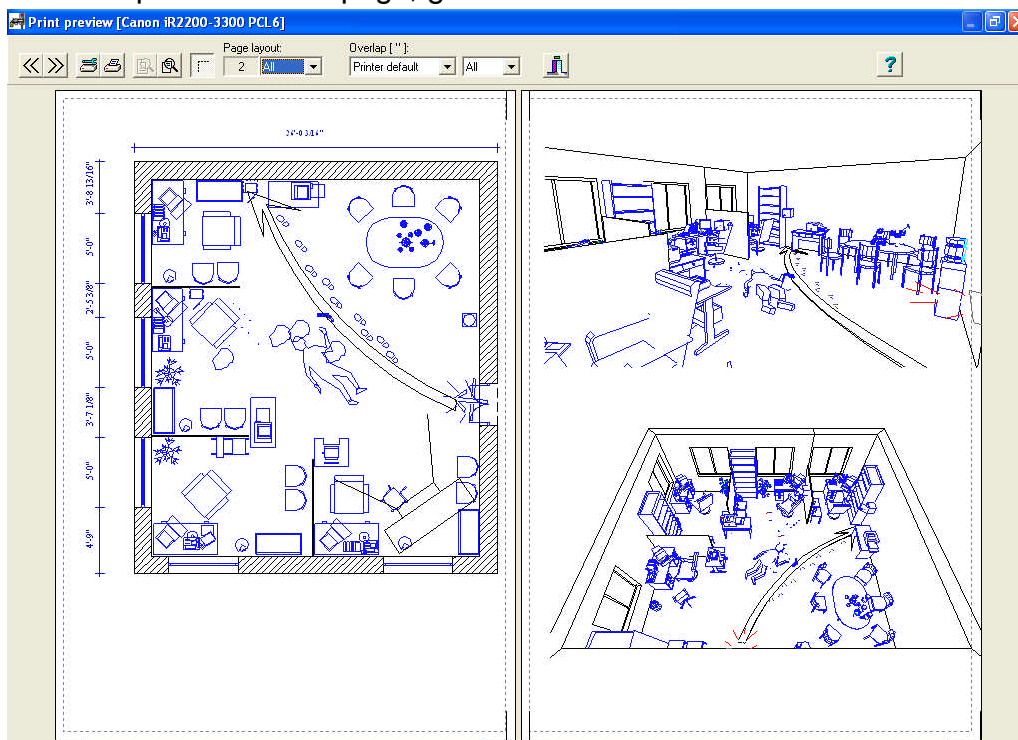
1:100 text scale: Here you may request that text on the project is placed on the sheet with a scale of 1:100, independently of the drawing's scale.

12.5 Printing the drawing sheet

The completed drawing sheet can be printed on one or several pages, depending on your printer, the size of the project, etc.

When adjusting printing parameters, set the number of pages to be used, the width of margins, placement of page numbers, and/or scaling displayed on the page.

To see a preview of the page, go to **File/Print view**.



Print view displayed before printing.

Print view displayed before printing.

Note: The program automatically divides the drawings according to fit the the paper size. Thus, you can print out projects of any dimension and join the sheets together after printing to obtain the full view.

You can save your project as a file and print it from another computer. For example, if the drawing is too big and you wish to print it on an A0 printer, first acquire the driver of the printer (from the Internet, or directly with the installation software of the printer). Install the driver and set Print to file for this printer. A PNR file is created, which you send to the computer that is connected to the printer and print. In the printing options make sure that you do NOT use the printer's fonts, but instead print TrueType fonts as BIT images.

If your computer does not have enough memory to save certain drawings as files, it is necessary to expand the memory.

Note: When printing a drawing sheet it is not possible to define margins. This does not present a problem, as one may position the project freely on the drawing sheet when importing it. If you wish to print out a level with its given scaling without transferring it to a drawing sheet, then you should adjust the margins for it.

Note: The area between the dashed lines indicates the printable area.

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