

# ArCADia-ESCAPE ROUTES EN

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## Manual for ArCADia-ESCAPE ROUTES



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## Introduction

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## Introduction

# 1. INTRODUCTION

## Introduction

### 1.1. About the program

ArCADia-ESCAPE ROUTES is an intelligent tool that extends the ArCADia LT or ArCADia (PLUS) programs with functions necessary to create professional escape plans. The program is addressed both to engineers, architects and people in charge of construction sites, as well as to people involved in the operation of existing public buildings. The user of the ArCADia-ESCAPE ROUTES program has the possibility to quickly create building plans with the visualization of escape routes. These plans must be available in public buildings (hotels, department stores, etc.) to help those in the building find the fastest escape route in case of fire or other emergencies. The user has the possibility to create evacuation plans on the existing building or zoning plans (DWG, DXF formats) or to make his own drawing showing a given area using ArCADia system tools. The user has at his disposal a library with symbols and tables from the scope of protection and evacuation in case of fire, with the possibility of their edition.

### 1.2. Features and possibilities of the program

The substantive scope implemented by the program and its basic functions:

- Preparation and printing of evacuation plans on the basis of projections made in the ArCADia system.
- Preparation and printing of evacuation plans on the basis of views loaded from other programs (formats: DWG, DXF).
- Automatic creation of a legend with description of used objects and symbols.
- Possibility of any scaling of the viewed evacuation plan.
- It includes a library with ready-made symbols and tables compliant with industry standards.
- Easy to use and intuitive functions for coloring evacuation routes.
- It includes ready-made tables with the rules of conduct in the event of a fire or an accident.
- Symbols, colors and other features of the program comply with the applicable European standard PN EN ISO 7010: 2012.

Working with the program

## 2. WORKING WITH THE PROGRAM

## Working with the program

### 2.1. Basic information about the program

ArCADia-ESCAPE ROUTES allows you to design a network of escape routes in buildings. It enables their visualization and printing in sizes depending on the user's needs.

The main rules for creating evacuation plans are:




- the view of the building (part of the building) or the complex must be simplified in such a way that all details / elements unnecessary for the evacuation will be removed (elements of equipment, descriptions of elements, etc.), and all important ones will be highlighted (stairs, exits, etc.);
- the plan must be drawn correctly with respect to the whereabouts of the person reading the plan;
- the plan must be in color;
- the scale of the plan depends on the size of the building; the following minimum sizes must be ensured:
  - 1: 250 for large construction complexes;
  - 1: 100 for medium-sized building complexes;
  - 1: 350 for individual rooms in buildings;
- the background color for plans is white;
- the minimum size of the plan is A3 (297 x 420 mm), except for the plans to be hung in individual rooms of buildings, in which case they can be printed in the size of A4 (210 x 297 mm);
- the size of the font used must be at least 2 mm;
- the minimum height of the symbols used is 7 mm;
- line thickness: walls - minimum 1.6 mm, internal walls - minimum 0.6 mm, others (windows, stairs, doors) - 0.15 mm.

### 2.2. ArCADia - ESCAPE ROUTES command table

The following options are described in the ArCADia-ESCAPE ROUTES module help, the icon is located on the *Escape routes* ribbon.

\* *BIM* – options available to ArCADia BIM license holders, i.e. after purchasing one of the programs: ArCADia, ArCADia LT or ArCADia PLUS.

Tab. 1 Functions of the ArCADia-ESCAPE ROUTES module














Icon	Option	Description	* <i>BIM</i>
	<i>Escape plan</i>	Inserts an escape plan border.	<b>X</b>
	<i>Fire plan</i>	Inserts a fire plan border.	<b>X</b>
	<i>Polygonal escape plan</i>	Inserts a polygonal escape plan by indicating the number and position of its corners.	<b>X</b>

## Working with the program

	<i>The polygonal stairs area</i>	Inserts a polygonal area of a stair by indicating the number and position of its corners.	X
	<i>Polygonal passable area</i>	Inserts a polygonal driving area by indicating the number and position of its corners.	X
	<i>Polygonal impassable area</i>	Inserts a polygonal impassable area by indicating the number and position of its corners.	X
	<i>Polygonal danger area</i>	Inserts a polygonal hazard area by indicating the number and position of its corners.	X
	<i>polygonal extinguishing water area</i>	Inserts a polygonal area by the extinguishing water by indicating the quantity and position of its corners.	X
	<i>Rectangular escape plan</i>	Inserts a rectangular escape plan by indicating its length and width.	X
	<i>Rectangular stairs area</i>	Inserts a rectangular staircase area by indicating its length and width.	X
	<i>Rectangular passable area</i>	Inserts a rectangular driving area by specifying its length and width.	X
	<i>Rectangular impassable area</i>	Inserts a rectangular impassable area by specifying its length and width.	X
	<i>Rectangular danger area</i>	Inserts a rectangular danger zone by indicating its length and width.	X
	<i>Rectangular extinguishing water area</i>	Inserts a rectangular area with extinguishing water by specifying its length and width.	X
	<i>Automatic evacuation area</i>	The option automatically detects the shape of the room and fills it with the evacuation area.	X
	<i>Automatic stair area</i>	The option automatically detects the shape of the room and fills it with the area of the stairs.	X
	<i>Automatic passable area</i>	The option automatically detects the shape of the room and fills it with the drive-through area.	X
	<i>Automatic impassable area</i>	The option automatically detects the shape of the room and fills it with impassable area.	X
	<i>Automatic hazardous area</i>	The option automatically detects the shape of the room and fills it with a hazardous area.	X
	<i>Automatic extinguishing water area</i>	The option automatically detects the shape of the room and fills it with extinguishing water.	X
	<i>Any area</i>	Inserts a user-defined polygon area, which can be any color and hatch.	X
	<i>Escape route</i>	Enters an escape plan with the width specified when entering.	X



## Working with the program

	<i>Observer</i>	Inserts an observer.	X
	<i>Automatic direction by two points</i>	Inserts directional arrows of the evacuation route automatically determined by indicating the beginning and end point.	X
	<i>Automatic direction</i>	Inserts directional arrows automatically.	X
	<i>Left</i>	Inserts a left directional arrow.	X
	<i>Law</i>	Inserts a right-hand arrow.	X
	<i>Straight</i>	Inserts a simple directional arrow.	X
	<i>Left and right</i>	Inserts with a directional arrow.	X
	<i>Symbol explorer</i>	Shows the <i>Symbol Explorer</i> window.	X
	<i>Description</i>	Inserts a description with a leader line, the description text can be multiline.	X
	<i>Title block</i>	Inserts the <i>Title block</i> with information about the project.	X
	<i>General plan</i>	Inserts a general plan for the project.	X
	<i>Legend</i>	Inserts a legend with a list and descriptions of elements used in the plan.	X
	<i>Help</i>	Displays the help window.	X

## 2.3. Basic information about the entered objects

Objects introduced to the project are selected from the ribbons at the top of the screen or from toolbars (options unavailable in ArCADia LT), if the ribbon has been turned off. When you click on the icon, the command is started and the insert window is displayed. This window allows you to define an object before it is introduced, for example, to set the font size or the color of the arrows to be inserted. The availability of options in the object input window will vary, due to differences in the input or parameters of the given elements.

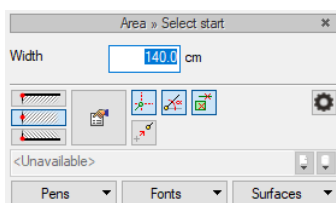


Fig. 1 Window of the escape route being entered

## Working with the program

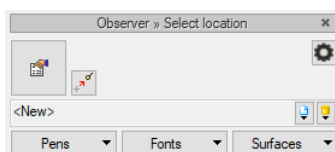


Fig. 2 Observer entry window

Tab. 2 Options in the windows for inserting elements of the escape and fire protection plan

	<i>Input line</i>	Selection of the escape route entry line: one of the edges or the geometry axis.
	<i>Input point</i>	Selection of the entry point for an evacuation plan, fire prevention plan and information table.
	<i>Go to the Properties dialog</i>	It opens the properties window of the introduced element.
	<i>Axis tracking</i>	Option showing horizontal and vertical lines going from detected points of inserted elements. If the option detects, for example, the edge of another entered area, it will show a straight line extending the found edge.
	<i>Tracking angles</i>	The option shows the given angles determined from the existing elements in the project.
	<i>Detecting items</i>	The option detects edges and points of the entered elements.
	<i>Options for inserting elements</i>	It opens the settings dialog window for tracing and options for underlining of inserted objects.
	<i>Reference</i>	It allows to introduce the entered element at a set distance from the indicated point.
	<i>Between points (middle)</i>	It allows you to insert an element in the middle of the indicated distance.
	<i>Between points (percentage)</i>	It allows you to enter elements in a percentage division of the indicated section.
	<i>Type</i>	A saved set of features of a given object, defined in the <i>Type parameters</i> pane of the properties window.
	<i>Project library</i>	List of types saved in the document that are created while working on the project.
	<i>Global library</i>	Type library delivered with the program and extended by <i>the User Library</i> , where you can save your own element types for use in subsequent projects.
	<i>Close</i>	Exits options without inserting an element.
	<i>Pens</i>	Definition of the type of lines used to draw the inserted element.
	<i>Fonts</i>	Definition of the size and type of the font describing the element.
	<i>Surfaces</i>	Assigning materials or textures to individual surfaces of the inserted element is visible in the 3D view.

Before entering the objects, when drawing them or after inserting them, you can enter the properties window. This window will be different for each object, but it will be divided into basic panels: *Object management*, *Appearance*, *Parameters* and *Type Parameters*.

## Working with the program

**Object management** – a panel that saves the *Type* of a given object to the *Global Library* or the *Project Library*. These data are saved from the *Type parameters* panel. Moreover, in this part it is possible to select an already saved *Type* from the library and define or select a *Group*, in which a given object will be placed.

**Appearance** – the panel where pens, fonts and surfaces of individual objects are defined. You can define fill or hatches for some elements.

**Parameters** – the panel with quantities and possibly the angle of the entered object.

**Type parameters** – a panel with characteristic data of objects: size, distance between the arrows of the escape route, plan title or name (description). These data can be saved to *the Project Library*, and if the object will be needed for other drawn plans, the data should be saved to *the Global Library*. Thanks to that in every project there will be access to them.

After inserting elements, apart from the modifications available in the property windows, objects can be copied and moved. Additionally, after selecting an element, the edition window appears in which additional modifications are available. This window is different for individual objects.

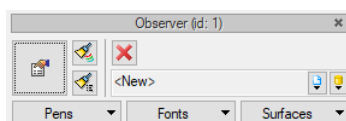


Fig. 3 A sample editing window

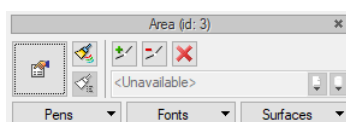




Fig. 4 A sample editing window

Tab. 3 Options in the edit windows

	<i>Properties</i>	Opens the <i>Properties</i> window.
	<i>Fonts and pen painter</i>	It takes over the pen settings (thickness and linetypes) as well as the size and type of the font.
	<i>Type painter</i>	It takes over the element type, its scheme and size, and transfers them to the indicated element or elements.
	<i>Add point</i>	Adds a point (vertex) in the direction of an escape route.
	<i>Remove point</i>	Deletes the selected area top.
	<i>Refresh plan thumbnail</i>	Draws a diagram of the building projection drawn with the ArCADia system options.
	<i>Delete marked objects</i>	Deletes the selected item.
	<i>Type</i>	A saved set of features of a given object, defined in the <i>Type parameters</i> pane of the properties window.

## Working with the program

	<i>Project library</i>	List of types saved in the document that are created while working on the project.
	<i>Global library</i>	Type library delivered with the program and extended by <i>the User Library</i> , where you can save your own element types for use in subsequent projects.
<b>Pens</b>	<i>Pens</i>	Definition of the type of lines used to draw the inserted element.
<b>Fonts</b>	<i>Font</i>	Definition of the size and type of the font describing the element.
<b>Surfaces</b>	<i>Surfaces</i>	Assigning materials or textures to individual surfaces of the inserted element.

## 2.4. An example of drawing a plan on ArCADia LT

The procedure for designing escape routes in ArCADia LT is as follows:

1. We set the required size and scale of the plan from the *Print settings* icon on the *Home* ribbon, and then turn on the *Show sheet* function:

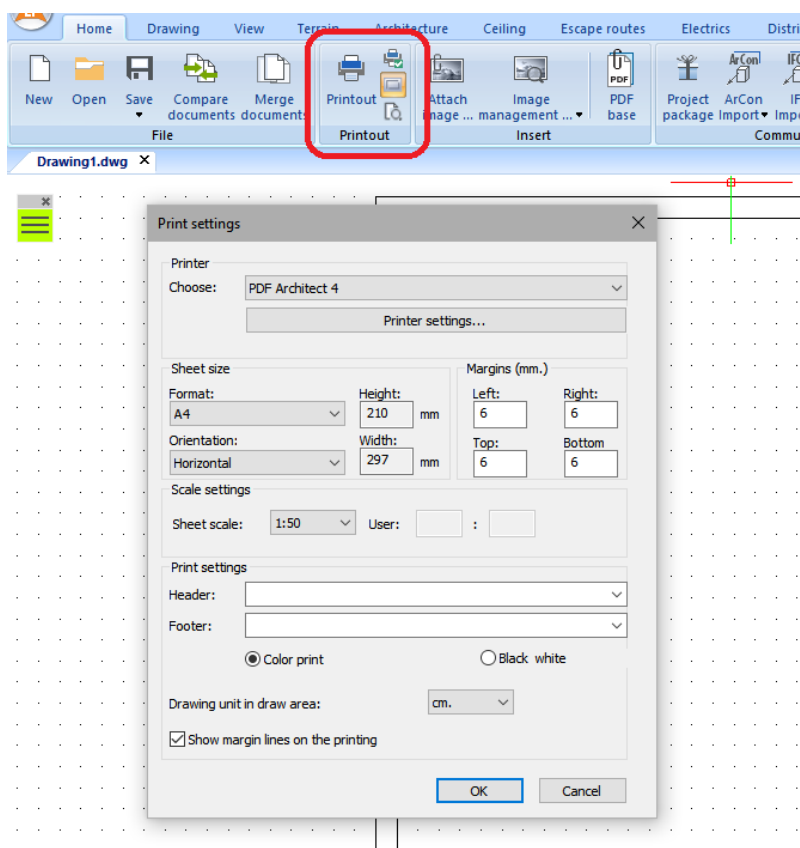



Fig. 5 Print options, i.e. settings of the sheet and print scale

## Working with the program

- For a better effect in the plan view, we also advise you to change the font. This can be done in the *Options* window accessible from the icon  included on the *Tools* Ribbon.

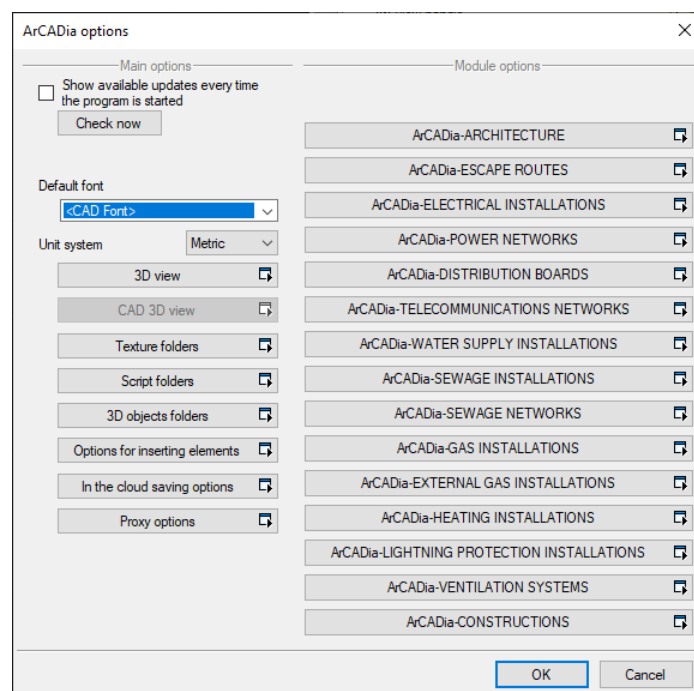





Fig. 6 Options window with the font change box checked

- Select the plan's border and type (options are available on the *Escape routes* ribbon):  *Two-point escape plan* or  *Fire plan by two points*. Then we adjust the size of the border to the selected sheet (A0, A1, A2 etc.). After this operation, we can turn off the *Show sheet* option.
- We load or draw a building plan. Drawing a building plan can be done using the basic functions of the ArCADia system or, for more complex and detailed drawings, using the ArCADia-ARCHITECTURE industry module. It is also possible to load CAD drawings made in other programs. Possible formats are DWG, DXF. We use the loaded drawing as a base, inserting the necessary elements into it.

In the drawings made with ArCADia, we remove all information unnecessary for the evacuation plan (dimensions of rooms, descriptions of doors or windows). This can be done most comfortably with the *Project Manager*, by right-clicking on the level name in its tree  *Level properties*. In the properties window, click the *Appearance of room description* button and turn off unnecessary descriptions in the table.

- In the next step we mark the whereabouts of the (observer). This is the place in the building where the escape route plan is to be hanged. The person reading the plan should know where he is and what direction to take in the event of an emergency.

## Working with the program

6. The next step is to mark all escape routes (on the part of the building shown on the plan) in the standard color (light green) and the evacuation stairs (dark green). In addition, other important areas (passable area, impassable area, special hazards, etc.) can be marked in standard colors.
7. Using the *Automatic direction* function, we now mark the two shortest evacuation routes (from the observer's place of stay to the nearest exit from the building).
8. As the next step, we mark places with first aid, firefighting measures and emergency places (symbols) on the plan. We use elements from the *Symbol Explorer* window for this.
9. To improve the general orientation in the event of an evacuation, insert as the next thumbnail of the general plan of the building (option *General plan* ). If necessary, you can supplement this plan with important details using the line tools.
10. Now we insert from the *Symbol Explorer* window, from the *Information boards* directory:
  - *In case of fire*
  - *In case of accidents*.
11. Finally, a legend with used objects and items should be inserted. Since these items are automatically collected in the legend, it should be inserted last.

Drawing escape routes and fire protection plans in ArCADia and ArCADia PLUS programs is the same as above from point 2. The scale and sheet are defined before printing.

Observer



## 3. OBSERVER

## Observer

### 3.1. Insert an observer

Using the *Observer* function, we define the place where the person reading the plan is in the building (place where the plan is hanged). It is the starting point in the event of an evacuation.

#### Activation:

- *Escape routes* ribbon ⇒ logical group *Escape routes* ⇒  *Observer*
- *ArCADia-ESCAPE ROUTES* toolbar ⇒  *Insert an observer*

After selecting the option, the element inserting window appears, from it you can enter the properties of the object being inserted or insert it on the projection.

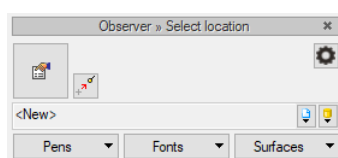








Fig. 7 Insertion window for the Observer option

Tab. 4 Options in the Insert window

	<i>Go to Properties dialog box</i>	It opens the properties window of the introduced element.
	<i>Reference</i>	It allows to introduce the entered element at a set distance from the indicated point.
	<i>Options for inserting elements</i>	It opens the settings dialog window for tracing and options for underlining of inserted objects.
<New>	<i>Type</i>	A saved set of features common to many objects of the same type.
	<i>Project library</i>	Compatible with the selected template and created along with the development of the drawing when saving subsequent types of objects.
	<i>Global library</i>	Type library delivered with the program and extended by <i>the User Library</i> , where you can save your own element types for use in subsequent projects.
	<i>Close</i>	Exits options without inserting an element.
Pens	<i>Pens</i>	Definition of the type of lines used to draw the inserted element.
Fonts	<i>Fonts</i>	Definition of the size and type of the font describing the element.
Surfaces	<i>Surfaces</i>	Assigning materials or textures to individual surfaces of the inserted element.

By selecting the icon  *Go to Properties dialog box* or double clicking on the inserted element, the element properties window appears:



## Observer

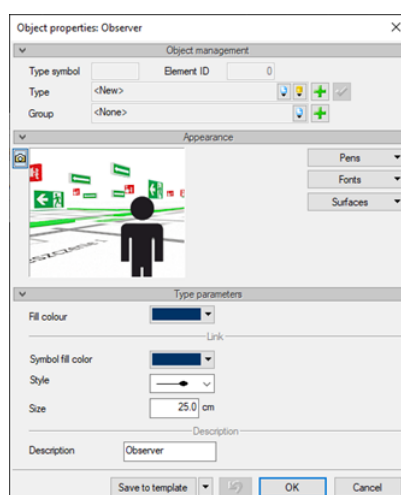


Fig. 8 Observer properties window

The element properties dialog window allows you to define its color, description font and the size of the symbol indicating the location. We also have the option of saving a newly defined element as a template.

When inserting an element, first indicate the whereabouts of the person reading the plan (first mouse click), and then define the place for the description (second mouse click).

## 3.2. Edition

Editing takes place mainly in the properties window. Some of the modification options are also available from the edit window that is displayed after selecting the *Observer*.

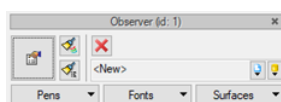









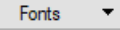
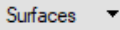


Fig. 9 The window for editing the entered observer

Tab. 5 Options provided in the edit window

	<i>Go to Properties dialog box</i>	It opens the properties window of the introduced element.
	<i>Fonts and pen painter</i>	It takes over the pen settings (thickness and linetypes) as well as the size and type of the font.
	<i>Type painter</i>	It takes over the element type, its scheme and size, and transfers them to the indicated element or elements.
	<i>Type</i>	A saved set of features common to many objects of the same type.

## Observer

	<i>Project library</i>	Compatible with the selected template and created along with the development of the drawing when saving subsequent types of objects.
	<i>Global library</i>	Type library delivered with the program and extended by <i>the User Library</i> , where you can save your own element types for use in subsequent projects.
	<i>Delete marked objects</i>	Deletes selected items.
	<i>Close</i>	Exits options without inserting an element.
	<i>Pens</i>	Definition of the type of lines used to draw the inserted element.
	<i>Fonts</i>	Definition of the size and type of the font describing the element.
	<i>Surfaces</i>	Assigning materials or textures to individual surfaces of the inserted element.

Escape route and firefighting plan

## 4. ESCAPE ROUTE AND FIREFIGHTING PLAN





## Escape route and firefighting plan

The function of the escape routes and fire protection plan frame enables automatic insertion of the plan frame, including its title. The plan can be introduced in two ways: by indicating a point (inserting a plan of a given size) or by indicating the diagonal of the plan, two points (i.e. by specifying the size of the border on the plan).

### 4.1. One-point plan entry

The option enables the user to insert a plan of a size specified in the property window. Default types saved in the plan enable the selection of a specific frame, which will allow for easy scaling to a printout, e.g. on an A3 sheet.

#### Activation:

- *Escape routes* ribbon ⇒ logical group *Escape routes* ⇒  *Escape plan* or  *Fire plan*
- *ArCADia-ESCAPE ROUTES* toolbar ⇒  *Insert an escape plan border* or  *Insert a fire plan border*

After selecting the option, the element insertion window appears, you can use it to enter the properties to set the size of the plan or select a defined type from the library and insert it into the projection by indicating the location.

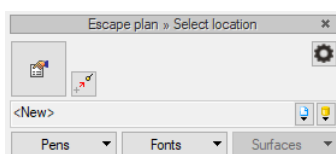




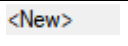







Fig. 10 Window for inserting an escape plan of a given size

Tab. 6 Options in the Insert dialog

	<i>Input point</i>	Choosing the point of introducing the plan.
	<i>Go to Properties dialog box</i>	It opens the properties window of the introduced element.
	<i>Reference</i>	It allows to introduce the entered element at a set distance from the indicated point.
	<i>Options for inserting elements</i>	It opens the settings dialog window for tracing and options for underlining of inserted objects.
	<i>Type</i>	A saved set of features common to many objects of the same type.
	<i>Project library</i>	Compatible with the selected template and created along with the development of the drawing when saving subsequent types of objects.





## Escape route and firefighting plan

	<i>Global library</i>	Type library delivered with the program and extended by <i>the User Library</i> , where you can save your own element types for use in subsequent projects.
	<i>Close</i>	Exits options without inserting an element.
	<i>Pens</i>	Definition of the type of lines used to draw the inserted element.
	<i>Fonts</i>	Definition of the size and type of the font describing the element.

### 4.2. Entering a plan with two points

If an escape routes or fire protection plan is to be introduced by indicating its size, then the following options should be selected:

**Activation:**

- *Escape routes* ribbon ⇒ logical group *Escape routes* ⇒  *Escape plan by two-point* or  *Fire plan by two points*
- *ArCADia-ESCAPE ROUTES* toolbar ⇒  *Insert an escape plan border through two points* or  *Insert the border of the fire protection plan through two points*


With this option, the plan is introduced on the projection with two diagonal points. After introducing a border, you can enter properties and define, for example, a title or its font type.

---

**TIP :** In these input options, the size of the plan is taken from the outline drawn on the projection and it can be corrected only after inserting it.

---

### 4.3. Properties of the plan

Both before inserting (especially in the case of plans entered with a given size) and after, the properties of the plan can be accessed with the icon  *Go to Properties dialog box* from the inserting or editing window or after double-clicking on an inserted element.

## Escape route and firefighting plan

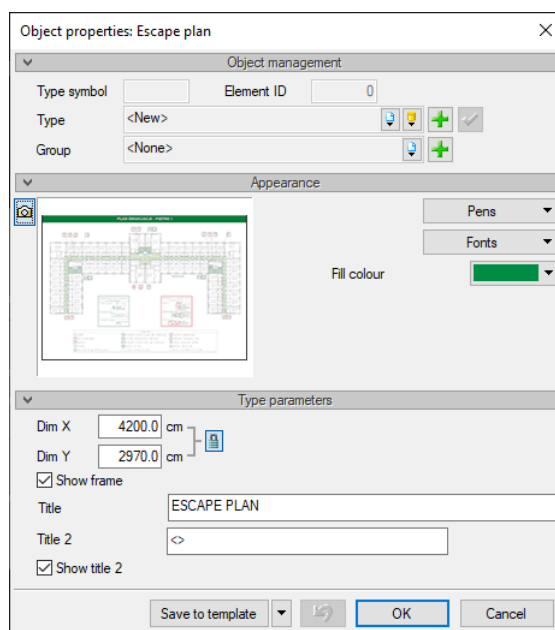


Fig. 11 Escape plan properties window

The element properties dialog window allows us to define the size of the plan as well as the color, pen and font of the title. We can also change the name of the plan freely and add a second title. Data from the *Type parameters* panel can be saved to the global library and used in subsequent projects.




### 4.4. Editing the plan

The entered plan can be modified in the properties, it can be moved and copied.

Tab. 7 Options provided in the edit window

	<i>Go to Properties dialog box</i>	It opens the properties window of the introduced element.
	<i>Fonts and pen painter</i>	It takes over the pen settings (thickness and linetypes) as well as the size and type of the font.
	<i>Type painter</i>	It takes over the element type, its scheme and size, and transfers them to the indicated element or elements.
	<i>Type</i>	A saved set of features common to many objects of the same type.
	<i>Project library</i>	Compatible with the selected template and created along with the development of the drawing when saving subsequent types of objects.
	<i>Global library</i>	Type library delivered with the program and extended by <i>the User Library</i> , where you can save your own element types for use in subsequent projects.
	<i>Delete marked objects</i>	Deletes selected items.

## Escape route and firefighting plan

	<i>Close</i>	Exits options without inserting an element.
	<i>Pens</i>	Definition of the type of lines used to draw the inserted element.
	<i>Fonts</i>	Definition of the size and type of the font describing the element.

Direction of Escape route

## 5. DIRECTION OF ESCAPE ROUTE



## Direction of Escape route

The direction of escape route shows the person reading the plan how to choose the path to leave the building as quickly as possible. The program provides the function of automatically inserting direction arrows, as well as the insertion of arrows manually, one after the other.

### 5.1. Automatic direction by two points

The option enables finding the shortest route between two indicated points, the beginning, i.e. the place where the observer is located, and the end, i.e. the emergency exit or a staircase.


---

**NOTE :** This option works only on projections created with the ArCADia system options, that is on the level, where the rooms are defined by the outline of the walls.

---

#### Activation

- *Escape routes* ribbon ⇒ logical group *Escape routes* ⇒  *Automatic direction by two points*
- *ArCADia-ESCAPE ROUTES* toolbar ⇒  *Automatic direction by two points*

After calling the command from the input window, the icon  *Go to Properties dialog box*, you can enter the properties of an element.

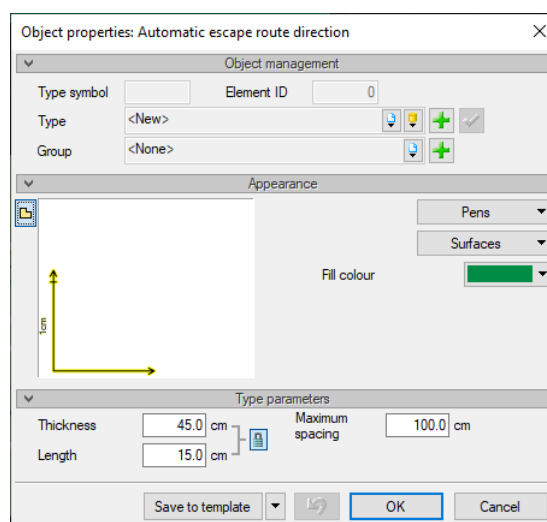


Fig. 12 The window of the escape route properties before putting it on the projection

In the window, you can define the size of the direction arrows, their color and spacing. After approving the changes, the place where the starting point of the designated escape route is (the *Observer* will be introduced here) and the exit from the building or the staircase should be indicated. If an exit is indicated, click on the end point just in front of them, but still in the building, in the room.

## Direction of Escape route

If it finds only one way, the directional arrows will be entered automatically. If there are more, they will default to a maximum of three. The one over which the cursor will be displayed will be marked with arrows, the others - with a continuous line. Moving the cursor over another path will change the marking. The length of each route found will be displayed. Click the left mouse button to confirm the selected route.

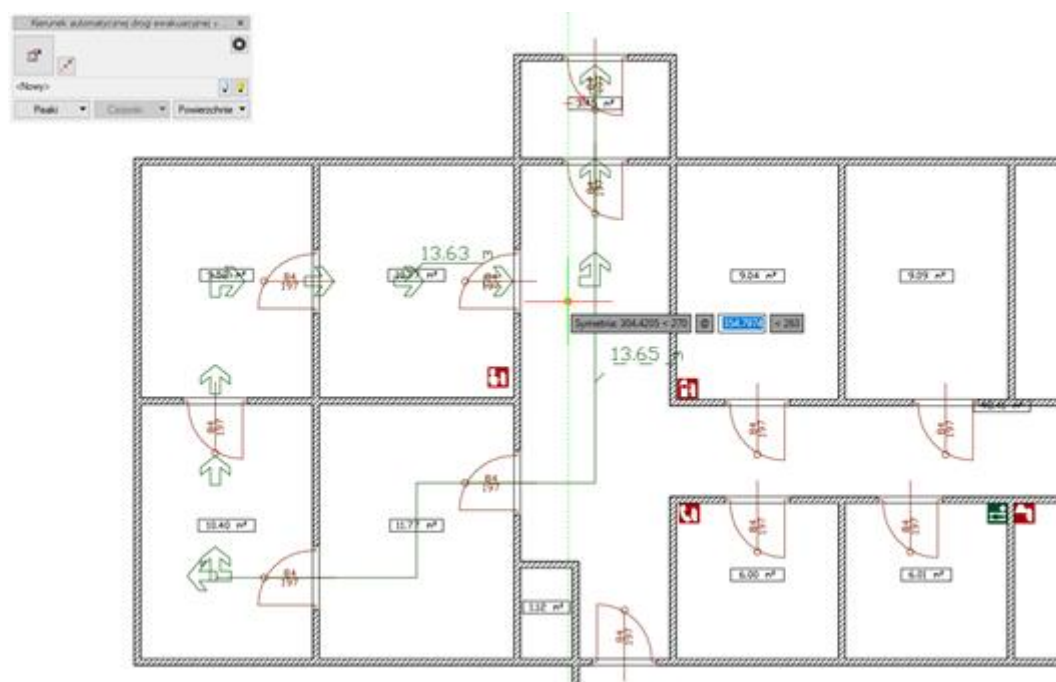


Fig. 13 An example of choosing an escape route

If necessary, you can change this number in the [ArCADia BIM Options](#) window under the [ArCADia-ESCAPE ROUTES](#) button. Note, however, that a large number of routes found may slow down the program.

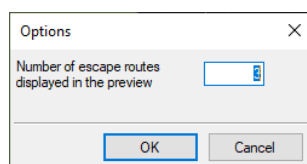




Fig. 14 The window enables changing the displayed number of automatically found escape routes

## 5.2. Automatic direction

The option allows showing the escape route by indicating the beginning, successive turns and the end of the route. The indicated path will be automatically filled with directional arrows.

## Direction of Escape route

### Activation

- *Escape routes* ribbon ⇒ logical group *Escape routes* ⇒  *Automatic direction*
- *ArCADia-ESCAPE ROUTES* toolbar ⇒  *Automatically*

After selecting the option, the element inserting window appears, from it you can enter the properties of the object being inserted or insert it on the projection.

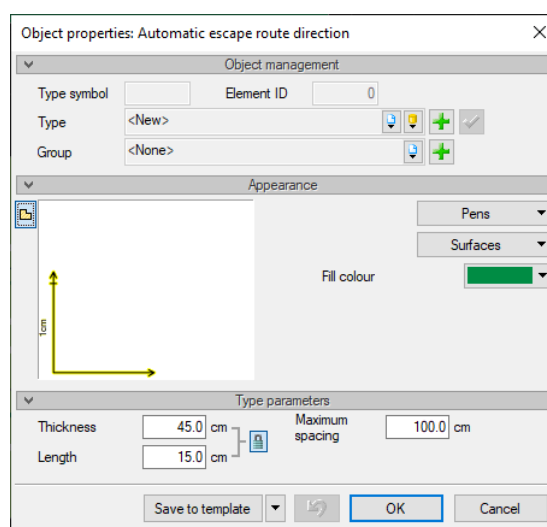


Fig. 15 The window of the automatic direction of the escape route before its introduction









The element properties dialog window allows you to define the color of the arrows and their size and spacing. We also have the option of saving a newly defined element as a template.

When automatically inserting arrows, first define the starting point (left mouse button), indicate the escape route and exit from the building. We end the command with the right mouse button.

## 5.3. Direction arrows

Single direction symbols can be introduced to supplement automatic escape routes or at exits from the building, for example.

### Activation:

- *Escape routes* ribbon ⇒ logical group *Escape routes* ⇒  *Left*,  *Law*,  *Straight* or  *Left and right*
- *ArCADia-ESCAPE ROUTES* toolbar ⇒  *Left*,  *To the right*,  *Straight* or  *Left and Right*

After selecting the option, the element inserting window appears, from it you can enter the properties of the object being inserted or insert it on the projection.

## Direction of Escape route

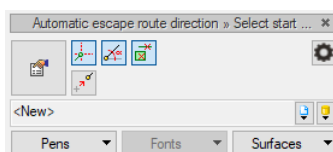


Fig. 16 The window for entering the direction of an escape route

Tab. 8 Options provided in the edit window

	<i>Go to Properties dialog box</i>	It opens the properties window of the introduced element.
	<i>Tracking axes</i>	Option showing horizontal and vertical lines going from detected points of inserted elements. If the option detects an edge of the entered element, it will show a straight line extending the found edge.
	<i>Tracking angles</i>	The option shows the given angles determined from the existing elements in the project.
	<i>Element and section detection</i>	The option detects edges and points of the entered elements.
	<i>Options for inserting elements</i>	It opens the settings dialog window for tracing and options for underlining of inserted objects.
	<i>Reference</i>	It allows to introduce the entered element at a set distance from the indicated point.
	<i>Center between the points</i>	It allows you to insert an element in the middle of the indicated distance.
	<i>Percentage between points</i>	It allows you to enter elements in a percentage division of the indicated section.
	<i>Close</i>	Exits options without inserting an element.
	<i>Pens</i>	Definition of the type of lines used to draw the inserted element.
	<i>Surfaces</i>	Assigning materials or textures to individual surfaces of the inserted element.

By selecting the icon *Go to the Properties dialog box* or double clicking on the inserted element, the element properties window appears:

## Direction of Escape route

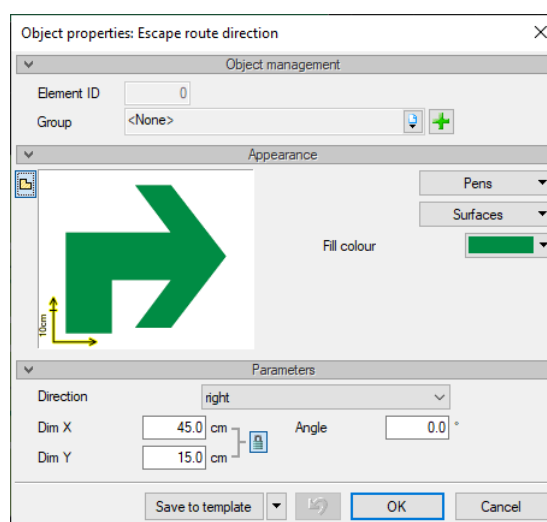


Fig. 17 Directional arrows input window

The element properties dialog window allows us to define the arrow's color, change its direction, size and insertion angle. Editing is possible before and after inserting into the plan. We also have the option of saving a newly defined element as a template.

## 5.4. Edition

Both the direction of the route entered automatically and with single arrows can be modified by moving or turning. You can also go to the properties window and change basic parameters such as spacing, size and the color of arrows. It is also possible to modify the automatically entered direction of the escape route using the options available in the edit window, i.e. after selecting the entered direction.

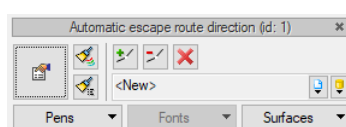


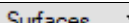


Fig. 18 The window for editing the automatic direction of the escape route

Tab. 9 Options provided in the edit window

	<i>Properties</i>	Opens the <i>Properties</i> window.
	<i>Fonts and pen painter</i>	It takes over the pen settings (thickness and linetypes) as well as the size and type of the font.
	<i>Type painter</i>	It takes over the element type, its scheme and size, and transfers them to the indicated element or elements.
	<i>Add point</i>	Adds a point (vertex) in the direction of an escape route.
	<i>Remove point</i>	Deletes the selected area top.

## Direction of Escape route

	<i>Delete marked objects</i>	Deletes the selected item.
	<i>Pens</i>	Definition of the type of lines used to draw the inserted element.
	<i>Surfaces</i>	Assigning materials or textures to individual surfaces of the inserted element.

This window appears for both the direction entered with the *Automatic direction through two points* and *Automatic direction* options.

The *Remove Point* options will help simplify the automatic escape route.

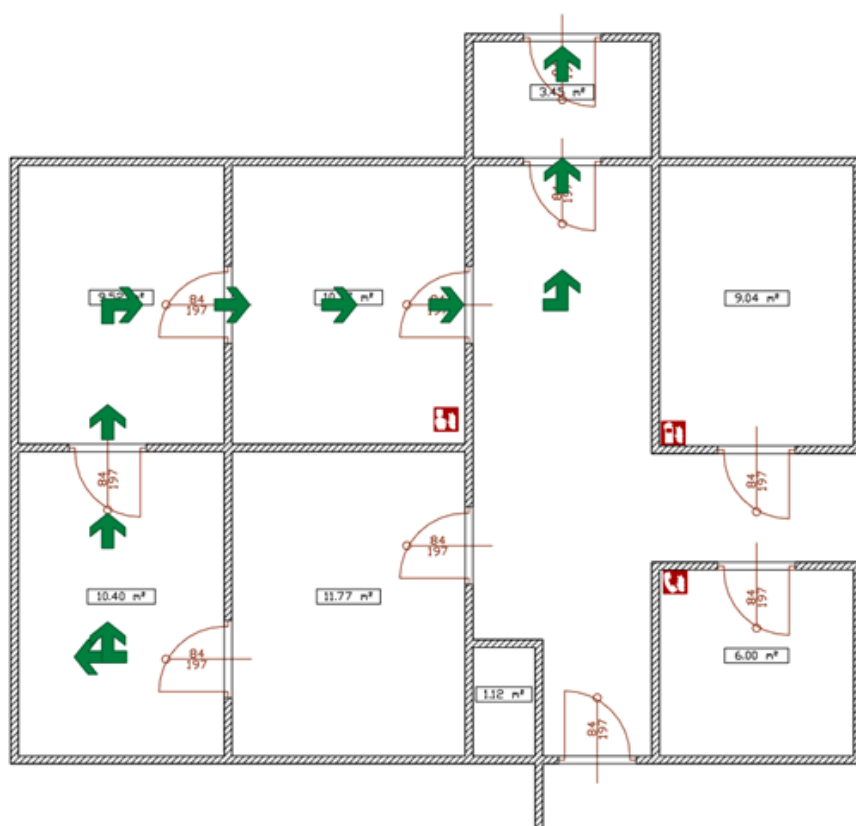



Fig. 19 An example of the designated escape route with two points

After selecting the directional arrows in the edit window, select  *Remove point* and then select unnecessary route points. In the example above, such point is the beginning of the path.

### Direction of Escape route

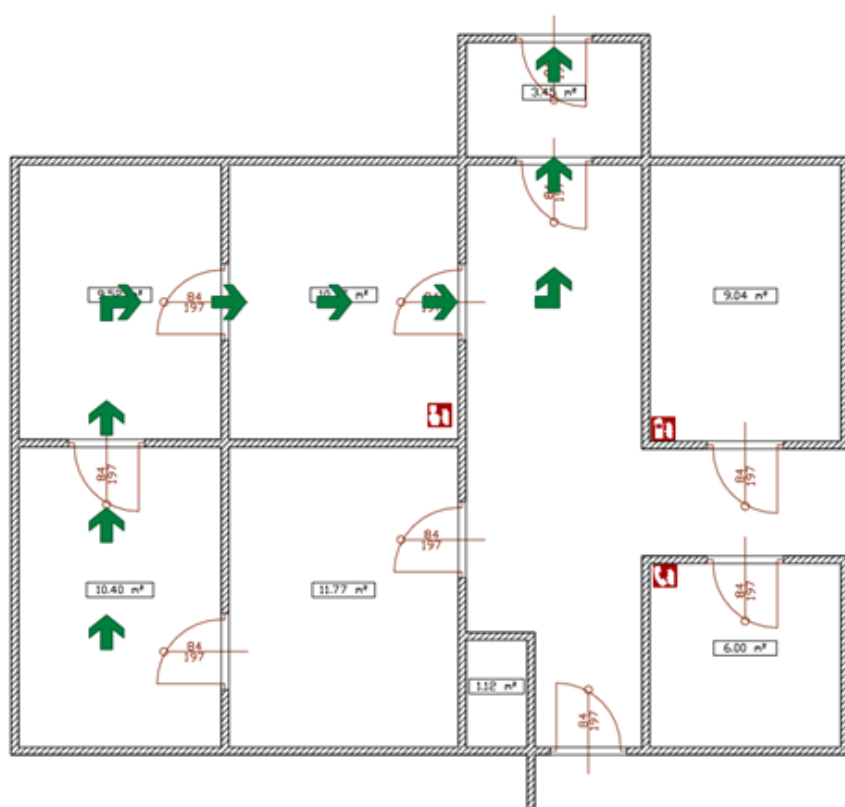


Fig. 20 Escape route after modification

Directional arrows entered individually can be moved, copied and rotated. The remaining modification options are available in the Properties and Editing window.

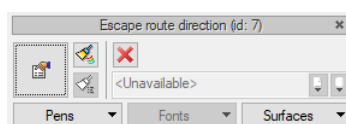






Fig. 21 Directional arrows editing window

Tab. 10 Options provided in the edit window

	<i>Properties</i>	Opens the <i>Properties</i> window.
	<i>Fonts and pen painter</i>	It takes over the pen settings (thickness and linetypes) as well as the size and type of the font.
	<i>Type painter</i>	It takes over the element type, its scheme and size, and transfers them to the indicated element or elements.
	<i>Delete marked objects</i>	Deletes the selected item.
<b>Pens</b>	<i>Pens</i>	Definition of the type of lines used to draw the inserted element.
<b>Surfaces</b> ▼	<i>Surfaces</i>	Assigning materials or textures to individual surfaces of the inserted element.

Areas



## 6. AREAS



## Areas

The areas function is used to mark special zones in buildings, i.e. those that are important in the event of an evacuation or fire, such as evacuation zones, escape stairs zones, places with extinguishing water, etc.

Individual areas can be inserted into the plan in several ways: with a rectangle, a polygon or by automatically detecting the shape of the room.

By default, the following evacuation areas are available on the ribbon (light green):  and , to select other areas, expand the selection menu (small triangle) next to the area name:

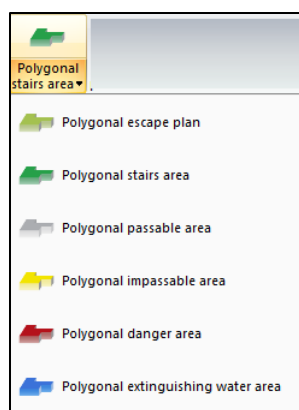


Fig. 22 List of available evacuation areas



When you click on one of the insert area icons, the insertion element dialog window appears and allows you to add an element to your project.

## 6.1. Entering areas

### 6.1.1. Insert a rectangular area

The rectangular area introduced with the width and depth gives the possibility of introducing a rectangular contour at any angle

#### **Activation:**

- *Escape routes* ribbon ⇒ logical group *Escape routes* ⇒  *Rectangular escape plan*
- *ArCADia-ESCAPE ROUTES* toolbar ⇒  *Inserts rectangular escape plan area by indicating its length and width*

When inserting areas with a rectangle, we define the area with three points:



- starting point,
- width,
- the depth of the area.

## Areas

### 6.1.2. Insert a polygonal area

Any number of vertices (contour break points) is possible when inserting areas with a polygon. Define the required number of vertices with the left mouse button, and end the command with the right mouse button.

#### Activation:

- *Escape routes* ribbon ⇒ logical group *Escape routes* ⇒  *Polygonal escape plan*
- *ArCADia-ESCAPE ROUTES* toolbar ⇒  *Inserts polygonal escape area by indicating its length and width*

### 6.1.3. Automatic area

Corridors with the width of escape routes can be easily converted into route areas. It is enough to click inside the room for the area to insert itself.

#### Activation:

- *Escape routes* ribbon ⇒ logical group *Escape routes* ⇒  *Automatic evacuation area*
- *ArCADia-ESCAPE ROUTES* toolbar ⇒  *Automatic evacuation area*

Selecting a point located inside a room automatically checks its contour and introduces an area of the same shape.





Fig. 23 An example of entering an area by finding its outline

### 6.1.4. Any area

Any area is introduced by selecting a polygon. Its main advantage is the possibility for the user to define the type of this area and save it to the library.

## Areas

### Activation:



- *Escape routes* ribbon ⇒ logical group *Escape routes* ⇒  *Any area*
- *ArCADia-ESCAPE ROUTES* toolbar ⇒  *Insert a free polygonal area indicating the number and position of its corners*

The area is introduced by indicating successive contour corners. Both before and after inserting, you can enter the properties window and define the hatch type, background and name for the new area.

## 6.2. The escape route

The area is introduced by indicating the successive segments of the escape route.

### Activation:

- *Escape routes* ribbon ⇒ logical group *Escape routes* ⇒  *The escape route*
- *ArCADia-ESCAPE ROUTES* toolbar ⇒  *Inserts an escape route by indicating the position of path points*

After calling the command, the insertion window is displayed in which you can define the width of the entered route. This width is only available when entered.

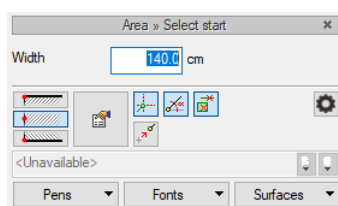


Fig. 24 Escape route insertion window

The path can be entered with an edge or a middle, between these input lines we switch in the above window (on its left side). On the projection, select the starting point and subsequent turns of the route, and click the right mouse button to finish. Properties of the area introduced in this way do not differ in any way from the areas entered in any other way.

## Areas

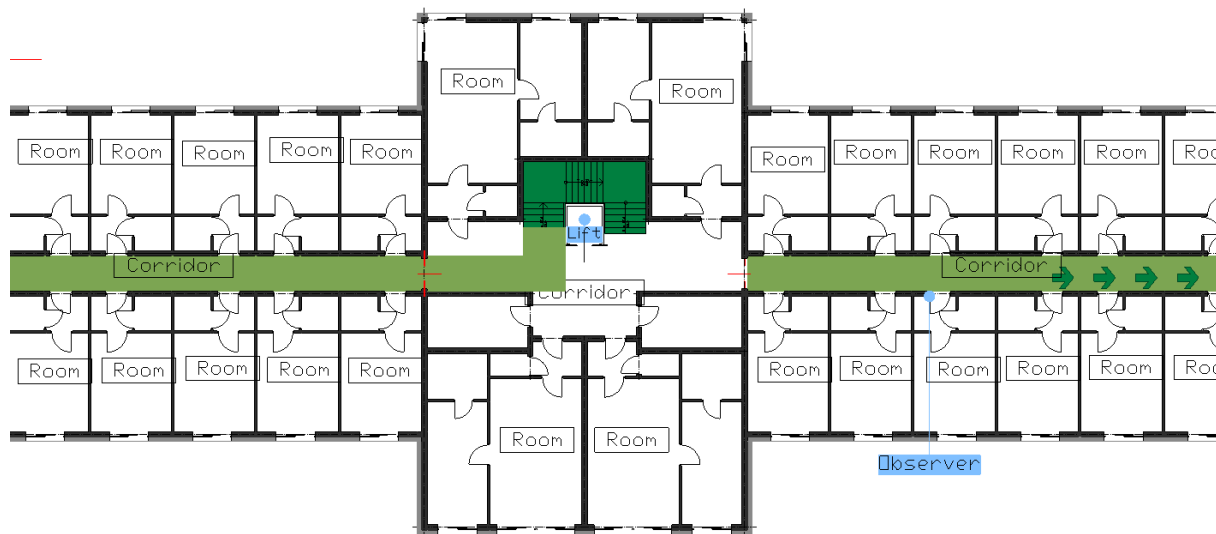



Fig. 25 An example of an escape route introduced by the width

### 6.3. Area properties

By selecting the icon  *Go to the Properties dialog box* in the inserting and editing window or double clicking on the entered area, the element properties window appears:

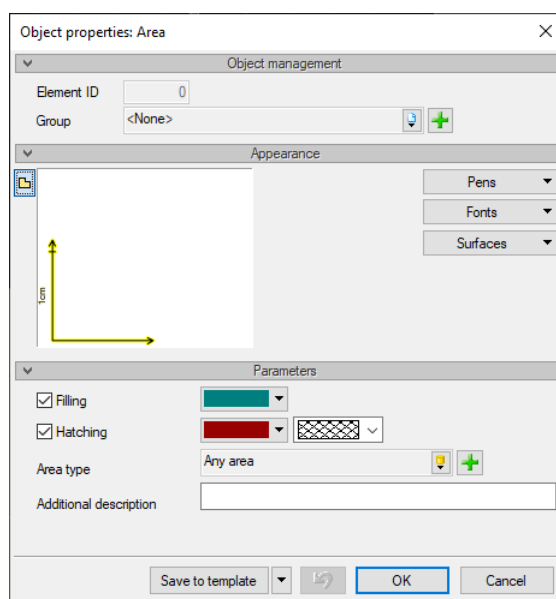



Fig. 26 Escape area properties window

## Areas

*Object management* – a panel where you can define or select a group to which the area will belong.

*Appearance* – a panel that allows you to define the color of filling and hatching, specifying the pens and the font of a possible description.

*Parameters* – a panel that defines the *Area type*. It allows you to save it and assign a possible description. Icon  *Add to the area library* opens a window in which we define a new *Area type* and save it to the library.

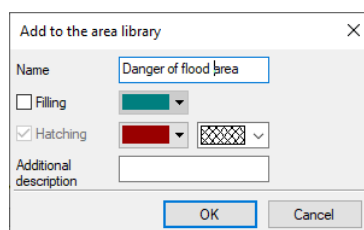


Fig. 27 Own area window

After confirming the data, the new area will appear in the *Area Type* list.

## 6.4. Editing areas

Areas can be copied, moved and rotated in the story plan. You can edit area properties both before and after inserting them. You can change the *Area Type*, its color, add a hatch or a description at any time. We also have the option of saving a newly defined area as a template.

After selecting the inserted area, the editing window appears, where you can modify its contours:

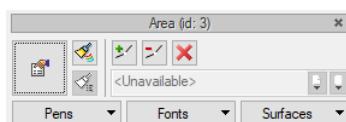







Fig. 28 Rectangular area edit window

Tab. 11 Options provided in the edit window

	<i>Properties</i>	Opens the <i>Properties</i> window.
	<i>Fonts and pen painter</i>	It takes over the pen settings (thickness and linetypes) as well as the size and type of the font.
	<i>Add point</i>	Adds a point (vertex) on an area contour so that you can modify its shape.
	<i>Remove point</i>	Deletes the selected area top.
	<i>Delete marked objects</i>	Deletes the selected item.

## Areas

<b>Pens</b>	<i>Pens</i>	Definition of the type of lines used to draw the inserted element.
<b>Fonts</b> ▼	<i>Font</i>	Definition of the size and type of the font describing the element.
<b>Surfaces</b> ▼	<i>Surfaces</i>	Assigning materials or textures to individual surfaces of the inserted element.

In order to modify the contour, select one of the options (*Add point* or *Delete point*) and then click on the required element. If the *Add point* option was selected, we click on the side of the polygon dividing it into two parts. After exiting the option, the inserted vertex should be moved to a new place. If the *Delete point* option was selected, the indicated point should be a vertex, which is deleted when you click it, and the polygon contour is modified automatically.

Symbol explorer

## 7. SYMBOL EXPLORER



## Symbol explorer

The *symbol explorer* contains all the standard symbols needed to draw evacuation plans. The library has been rebuilt so that the signs are sorted according to the standards they come from. This way, it will be easier to find the symbols you need.

### 7.1. Introducing

After finding the needed symbol, double-click on it and insert it into the projection.

#### Activation:

- *Escape routes* ribbon ⇒ logical group *Escape routes* ⇒  *Symbol explorer*
- *ArCADia-ESCAPE ROUTES* toolbar ⇒  *Show symbol explorer*

After selecting the option, the *Symbol explorer* dialog window box appears, which allows you to select the required symbol and insert it:

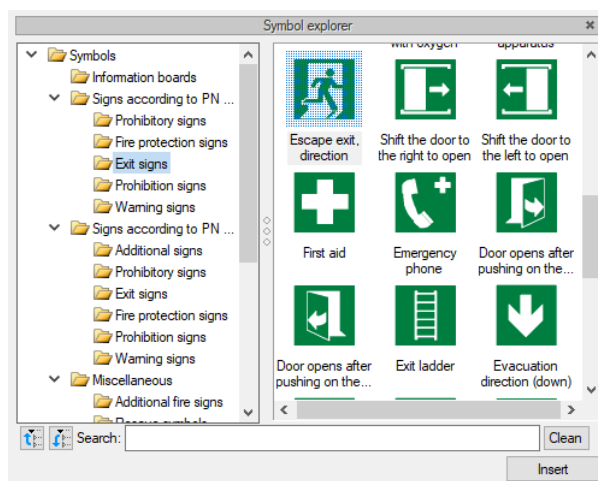


Fig. 29 A window with symbols for escape and fire protection plans

By marking and double clicking on the given symbol, we choose it to be inserted. We indicate the location of the reference and the symbol on the plan (using the left mouse button). The first click defines the actual location of a given element in the building, but if there is not enough space to insert a symbol on the plan in a given room, the second click can be used to insert a symbol on the side, and the program automatically generates a reference to the location:



## Symbol explorer

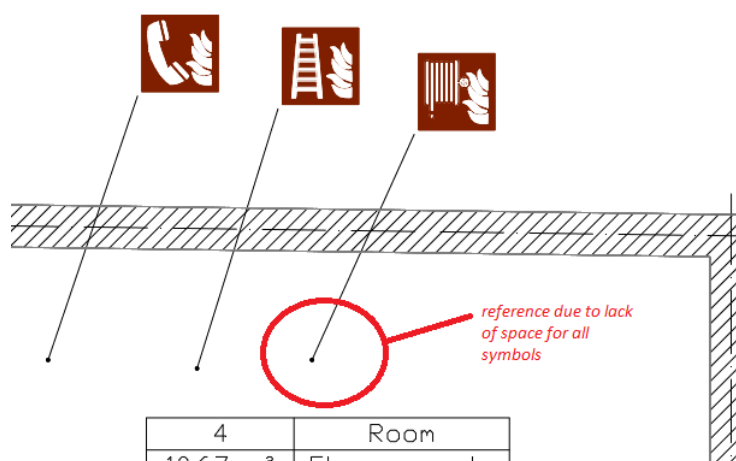


Fig. 30 An example of using the symbol offset from the insertion point

If we have enough space for symbols, we position the symbol over the real position of the object marked on the symbol with the second click. The link will then not be visible.

## 7.2. Edition

Each symbol can be edited at any time after its insertion. Select the symbol and move the handles:

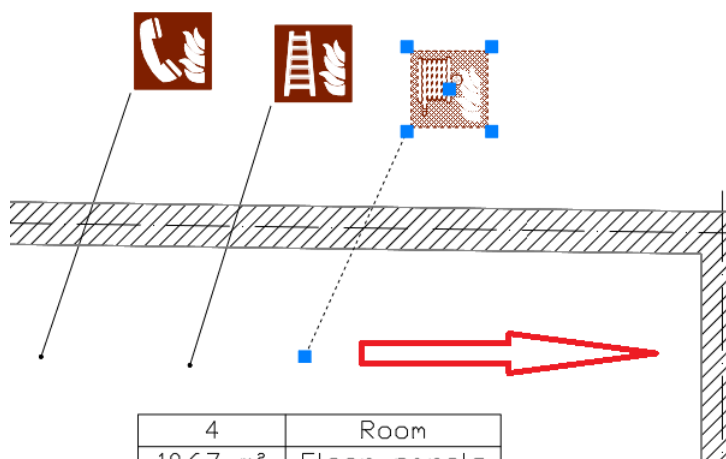


Fig. 31 An example of selecting a symbol to be moved

If we move the reference holder after selecting it (as you can see in the screenshot above), only the reference holder will be moved, that is the actual position of the item. Its symbol will remain in the same place. If, after selecting, we move one of the four handles on the symbol's contour, only the symbol will be moved. The reference line changes to show the originally clicked reference point and the new character location. If, after selecting, the object is "caught" with the left mouse button and

## Symbol explorer

moved (while the button is still held), both the reference line and the symbol will move. The object will behave in a similar way when you move it behind the center handle on the symbol.

You can also copy symbols on the plan. Their size, however, is defined in the properties window, which can be accessed from the edition window or after double clicking on the entered symbol.

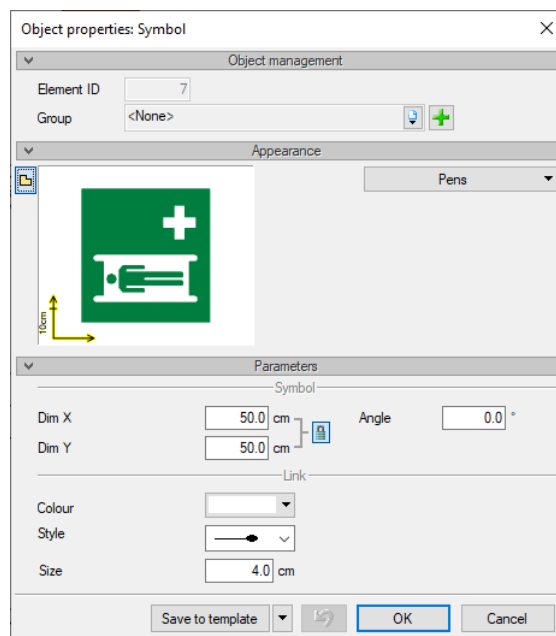


Fig. 32 Symbol properties window

In the above window, apart from the size and rotation angle of the symbol, you can also define the reference style, its size and color.



General plan

## 8. GENERAL PLAN

## General plan

If the floor plan has been drawn with walls, the *General plan* function will automatically generate a thumbnail of the building plan, filling the entire shape with gray.

### Activation:

- *Escape routes* ribbon ⇒ logical group *Escape routes* ⇒  *General plan*
- *ArCADia-ESCAPE ROUTES* toolbar ⇒  *Insert a general plan*

The *General plan* is used to facilitate orientation after leaving the building by showing people reading the plan important points around the building, such as the meeting point. Using 2D tools (lines, polylines, etc.) it is possible to draw necessary elements, insert texts or add symbols from the *Symbol Explorer*.

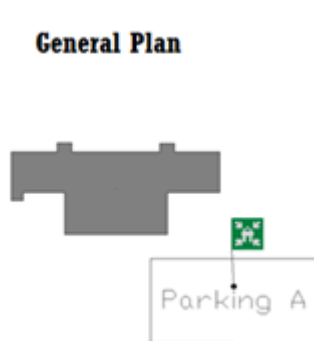


Fig. 33 Sample general plan with meeting point shown

After selecting the option, the element inserting window appears, from it you can enter the properties of the object being inserted or insert it on the projection.

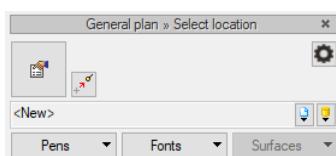


Fig. 34 Plan insertion window

## General plan

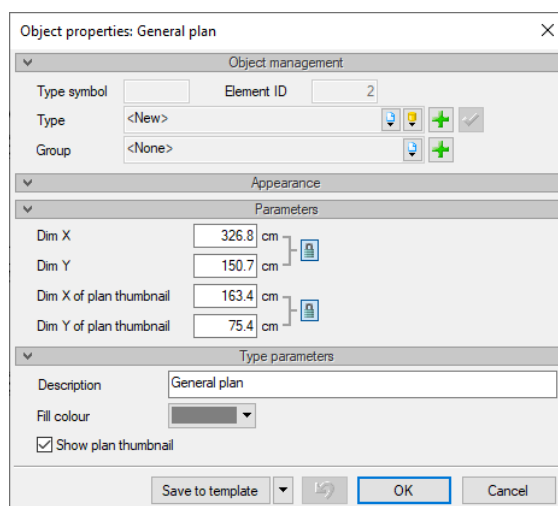


Fig. 35 Plan properties window

The properties window allows you to define the plan size and the symbol representing the building outline, as well as its color. We also have the option of saving the newly defined plan as a template.

Legend

## 9. LEGEND



## Legend

All symbols, areas and directions of evacuation introduced on the plan are automatically placed in the legend.

### 9.1. Introducing

The legend is introduced by indicating its size on the plan.

#### Activation:

- *Escape routes* ribbon ⇒ logical group *Escape routes* ⇒  *Legend*
- *ArCADia-ESCAPE ROUTES* toolbar ⇒  *Insert the legend*

After selecting the option, the element inserting window appears, from it you can enter the properties of the object being inserted or insert it on the projection.

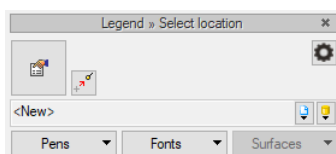








Fig. 36 Legend insertion window

Tab. 12 Options in the Insert dialog

	<i>Go to Properties dialog box</i>	It opens the properties window of the introduced element.
	<i>Reference</i>	It allows to introduce the entered element at a set distance from the indicated point.
	<i>Options for inserting elements</i>	It opens the settings dialog window for tracing and options for underlining of inserted objects.
<New>	<i>Type</i>	A saved set of features common to many objects of the same type.
	<i>Project library</i>	Compatible with the selected template and created along with the development of the drawing when saving subsequent types of objects.
	<i>Global library</i>	Type library delivered with the program and extended by <i>the User Library</i> , where you can save your own element types for use in subsequent projects.
	<i>Close</i>	Exits options without inserting an element.
Pens	<i>Pens</i>	Definition of the type of lines used to draw the inserted element.
Fonts	<i>Fonts</i>	Definition of the size and type of the font describing the element.

## Legend

In order to insert a legend, indicate its location with two points specifying the size of the table, the points lie diagonally.

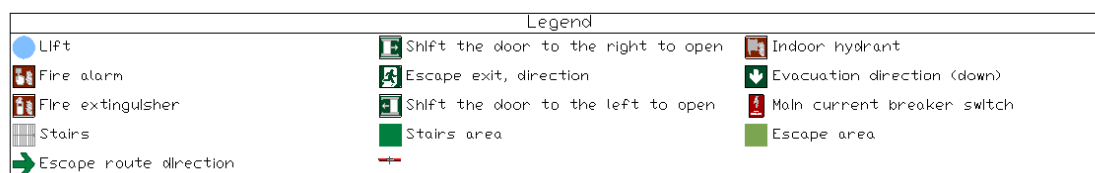


Fig. 37 An example of an entered legend

## 9.2. Edition

The legend on the view can be modified by moving the handles that define its size. The remaining parameters, e.g. the number of columns, are defined in the properties window.

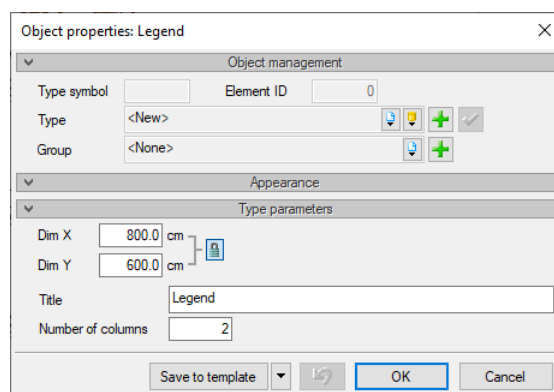


Fig. 38 Legend properties window

The legend properties dialog window allows you to edit it freely. In the *Appearance* area, define *Pens* and *Fonts*. In the *Type parameters* area, define the size of the table, its title and the number of columns.



Auxiliary elements



## 10. AUXILIARY ELEMENTS

## Auxiliary elements

### 10.1. Title block

The Title block provides information about the project and the building.

#### Activation:

- *Escape routes* ribbon ⇒ logical group *Escape routes* ⇒  *Title block*
- *ArCADia-ESCAPE ROUTES* toolbar ⇒  *Insert Title block*

After selecting the option, the element inserting window appears, from it you can enter the properties of the object being inserted or insert it on the projection.

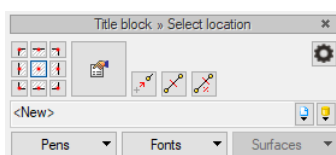





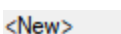



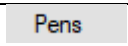
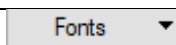


Fig. 39 Title block input window

Tab. 13 Options on the Insert dialog

	<i>Insertion point</i>	Selection of the table entry point by one of the corners, the midpoints of the sides or the center of the table.
	<i>Element properties</i>	Opens the window with the object's properties.
	<i>Reference</i>	It allows to introduce a selected element at a set distance from the indicated point.
	<i>Center between points</i>	It allows you to insert an element in the middle of the indicated distance.
	<i>Percentage between points</i>	It allows you to enter elements in a percentage division of the indicated section.
	<i>Type</i>	A saved set of common features for many objects of the same type (user-defined element template).
	<i>Project library</i>	Compatible with the selected template and created along with the development of the drawing when saving subsequent types.
	<i>Global library</i>	Type library delivered with the program and extended by <i>the User Library</i> , where you can save your own element types for use in subsequent projects.
	<i>Close</i>	Exits options without inserting an element.
	<i>Pens</i>	Definition of the type of lines used to draw the inserted element.
	<i>Fonts</i>	Definition of the size and type of the font describing the element.

## Auxiliary elements

The program offers the choice of a ready table from *the Global Library* with the possibility of its edition:

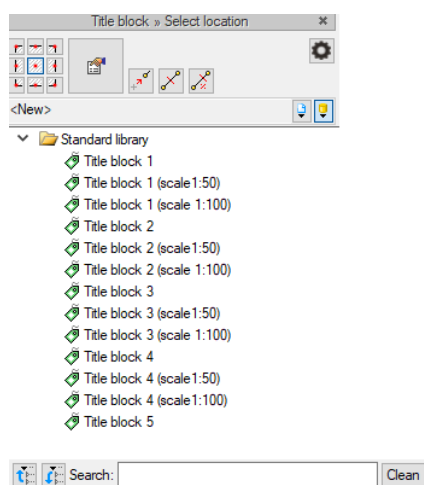



Fig. 40 Global library of the program

The modified table can be saved to *the Project Library* or *the User Library*, which will allow you to use it in subsequent projects.

We enter the properties window with the icon  *Go to Properties dialog box*.

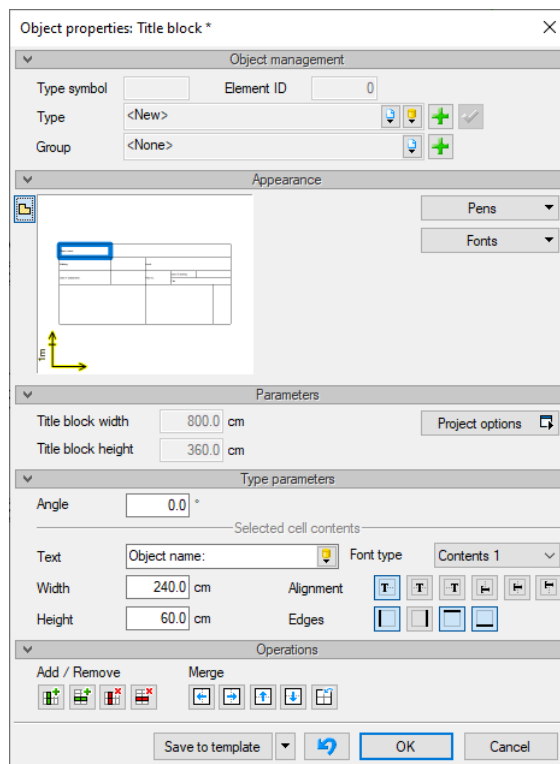



Fig. 41 Default table properties window

## Auxiliary elements

The table properties dialog box allows us to freely edit it. In the *Appearance* panel, define *Pens* and *Fonts*. *Parameters* is a panel with information about the size of the entire table. It results from the size of individual cells, therefore the values are not editable. To change the size of a table, individual rows or columns must be changed. In the *Type parameters* panel, define the following properties:

- height and width of individual table cells,
- insertion angle,
- cell contents,
- text alignment,
- edge visibility.



The values defined in this panel are saved as *Type* (  *Saving in the library the type created on the basis of the current element settings* ) the table to *the User Library*, thanks to which we do not have to define it again in subsequent projects.

In the *Operations* area, we add, delete, or combine table rows, columns, or cells.

## 10.2. Description

The *Description* option may be introduced on the evacuation or fire protection plan as an additional designation, for example, of partitions between different zones, entry to a fenced area, names of individual buildings on a general plan, or lines separating fire zones.

### **Activation:**

- *Escape routes* ribbon ⇒ logical group *Escape routes* ⇒  *Description*
- *ArCADia-ESCAPE ROUTES* toolbar ⇒  *Inserts description*

Before introducing options on the view, enter the properties and in the *Description* field, enter the appropriate text that will be shown on the view. Additionally, the *Leader* End Style can be selected. After confirming the data, the reference point is indicated first, e.g. the line separating the zones, and then the location of the description.

## Auxiliary elements

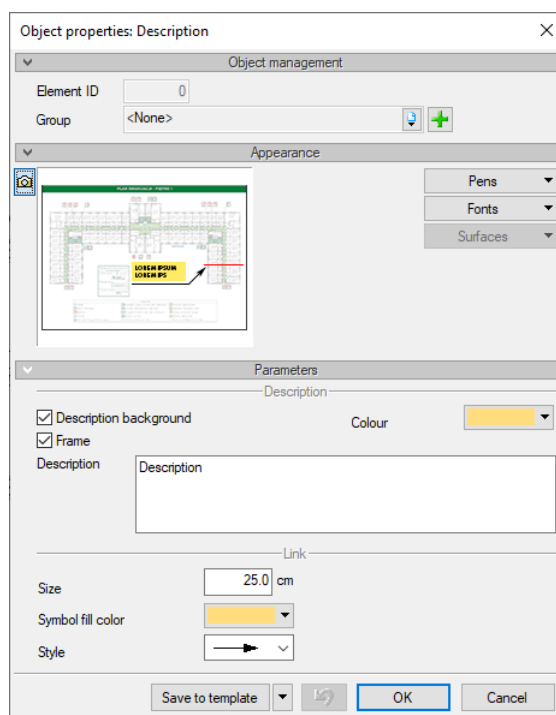


Fig. 42 Sample description on the escape plan

The description text can also be defined after entering it on the view.

### 10.3. Measure the distance between buildings

If in the general plan we have more than one building and we need to show the distance between the buildings, we can use the *Dimension* option.

#### **Activation:**

ArCADia and ArCADia PLUS

- *Description* ribbon ⇒ logical group *Dimensions* ⇒ *Dimension*
- *ArCADia- ARCHITECTURE* toolbar ⇒ *Insert any dimension*

ArCADia LT

- *Architecture* ribbon ⇒ logical group *Supplementary elements* ⇒ *Dimension*

It is introduced by indicating two points (the beginning and the end) of the dimensioned element and the distance of the dimension line from the object. When specifying dimensions, it is possible to define the type of dimension - whether it will be a linear or a aligned dimension. At any time, both before and after inserting dimensions, you can enter the *Object properties: Dimensioning* window and set the necessary parameters.

## Auxiliary elements

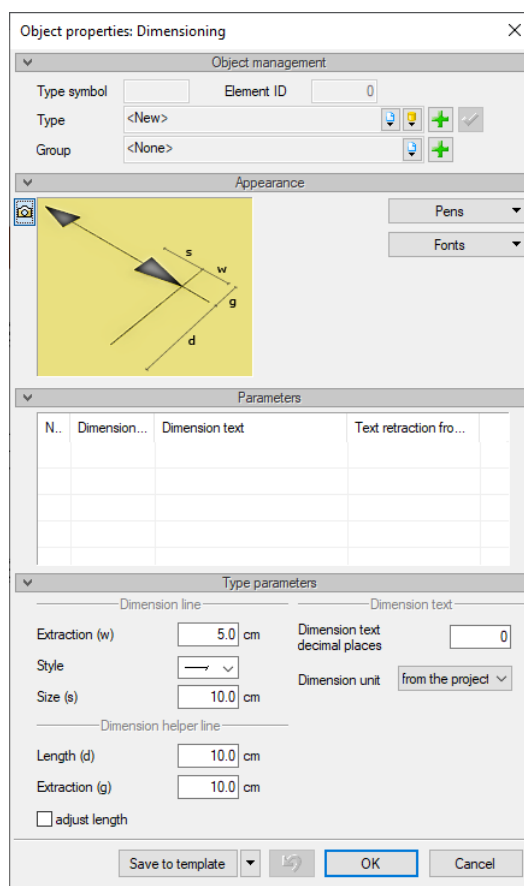


Fig. 43 Dimensioning properties window before inserting

**Dimension line** – definition of the dimension line beyond the length of the **draw** guides, **style** the tip (arrow, griddle, etc.) and its size.

**Dimension helper line** – the line length-reaching dimensioned element of the dimension line and beyond it. You can also specify that the extension line has a fitted length, that is, it extends from the element to the dimension.

**Dimensional text** – definition of the text size, color and accuracy of its presentation. Irrespective of the drawing, which is made in cm by default, you can change the **Dimensional unit** (m, mm, cm, DIN). An additional editable element is the numerical value itself, which can be given for any selected dimension.

**Save to template** – saves the pen settings, selected style and other element parameters to the template.





## 10.4. Create your own symbols

To extend the symbol library, the **New 2D object** option was created, which allows to save a drawing fragment (lines, circles and arcs) as a 2D object.

## Auxiliary elements

### **Activation:**

ArCADia and ArCADia PLUS

- *Insert* ribbon ⇒ logical group *Insert* ⇒  *Object explorer* ⇒ bookmark *2D objects* ⇒  *Create*
- *ArCADia-SYSTEM* toolbar ⇒  *Show Object Explorer* ⇒ bookmark *2D objects* ⇒  *Create*

ArCADia LT

- *View* ribbon ⇒ logical group *Insert* ⇒  *Object explorer* ⇒ bookmark *2D objects* ⇒  *Create*

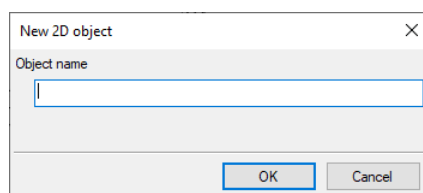


Fig. 44 New 2D object creation window

After activating the option to save your own 2D symbols, you should give a name for a new object, and then indicate the elements that this symbol is to create.

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**NOTE:** If a new symbol is to be saved in a directory other than the default one, then from the Object Explorer window, before starting the Create option, one must select the appropriate directory or the Add folder icon.

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