

ArCADia- LANDSCAPE ARCHITECTURE

User's manual file for ArCADia-LANDSCAPE
ARCHITECTURE



27.08.2019

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1. INTRODUCTION

1.1. Program description (Purpose of the program)

The ArCADia- LANDSCAPE ARCHITECTURE module expands the basic functions of the ArCADia system with options to modify the terrain, introducing reservoirs, ponds and swimming pools. For designed buildings, plots can be designated by their fencing, and areas that become sidewalks, paths or flower beds can be inserted. Adding plants will complete the design. At the end, a list of plants used can be inserted and the fence can be measured and its basic elements counted.

The module is designed for architects, landscape architects and urban planners who by using the program options will be able to present their projects in three-dimensional space.

ArCADia-LANDSCAPE ARCHITECTURE can be used for spatial projects, green areas or home gardens. The work of the module can complement the basic functions of the system (built into ArCADia, ArCADia PLUS, ArCADia LT or ArCADia AC programs) or expand architectural projects by developing the garden or terrain.

1.2. Working in the industry module (Features and possibilities of the program)

The ArCADia-LANDSCAPE ARCHITECTURE module enables:

- modifying the terrain by area or point creates its exact topography,
- closing off areas with fences which can adapt the terrain or be independent from it,
- introducing land areas of various functions, e.g. as sidewalks, avenues, flower beds, lawns, etc. zones;
- defining natural and artificial reservoirs: ponds and swimming pools;
- filling the area with plants, by default in the form of a simplified 3D model, and if necessary changing it into the actual image of a given plant.













2. WORKING WITH THE PROGRAM









2.1. Information about the program

The ArCADia-LANDSCAPE ARCHITECTURE module allows you to create a terrain model based on the basic system options and advanced module commands. On a defined area, plots can be designated by the option of fencing them off. In addition, there is the possibility of inserting plants that in a basic model or with a changed geometry will reflect the three-dimensional model of a garden, park, housing development, etc. ArCADia-LANDSCAPE ARCHITECTURE creates a list of inserted fences showing their lengths and elements of that fence. The inserted greenery can also be counted by inserting the plants lists.

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

Tab. 1 Functions of the ArCADia-LANDSCAPE ARCHITECTURE module placed on the Terrain ribbon

Icon	Option	Description	*BIM
	<i>Spot height</i>	Inserts spot heights thus defining the terrain geometry.	✓
	<i>Spot height line</i>	Inserts a spot height line of a given height by indicating the section.	✓
	<i>Terrain opening</i>	Cuts out an opening in the ground.	✓
	<i>Automatic terrain opening</i>	It cuts out an opening in the ground with the shape of the active or the lowest level (depending on whether the level or the area is active when inserting the opening).	✓
	<i>Convert text into spot heights</i>	Changes the entered numeric values into spot heights.	✓
	<i>External pipe</i>	While checking the collision, it simulates existing networks in the terrain, reproducing them on all views.	✓
	<i>External object</i>	While checking the collision, it simulates existing objects in the terrain reproducing them on all views.	✓
	<i>Fence</i>	The option inserts a fence by indicating subsequent contour points. The fence detects the terrain features inserted by both spot heights and spot heights lines.	✗
	<i>Fence on terrain</i>	The option inserts a fence by indicating subsequent contour points. The fence detects the terrain features inserted by both spot heights and spot heights lines as well as land deformations.	✗
	<i>Plant</i>	Inserts a symbolic plant into the view and the 3D view.	✗
	<i>Swimming Pool</i>	This option allows you to insert a pool of any shape.	✗
	<i>Area</i>	This option allows to insert an area, for example: flowerbeds, sidewalk, etc. objects of any shape.	✗
	<i>Area with terrain reduction</i>	This option allows to insert an area, for example: flowerbeds, sidewalk, etc. objects of any shape, which modifies the relief to the inserted area.	✗

	<i>Trench</i>	This option inserts a hollow with vertical edges and a horizontal bottom.	X
	<i>Hillock/hole by point</i>	This option marks the area of modification and inserts a hillock or hollow in the terrain (depending on the given data) at the indicated point.	X
	<i>Hillock/hole by area</i>	This option marks the area of modification and inserts the hillock or hollow in the terrain (depending on the given data) at the indicated area.	X
	<i>Reservoir by point</i>	This option defines an area such as a waterhole, pond, lake, etc. where the bottom is set by indicating the point.	X
	<i>Reservoir by area</i>	This option defines an area such as a waterhole, pond, lake, etc. where the bottom is set by indicating the area.	X
	<i>Plant List</i>	Table of inserted plants, their type and amount.	X
	<i>Fence List</i>	Table showing the counted fence length and the number of posts.	X
	<i>Area List</i>	Table showing the areas and volumes of areas added to the project (sidewalks, flower beds, etc.)	X

3. DESCRIPTION OF PROGRAM ELEMENTS

The ArCADia-LANDSCAPE ARCHITECTURE module is an extension of the ArCADia BIM system, so it uses its basic management elements such as *Project Manager*, *Global* and *User Library* or templates. These options are described in detail in the ArCADia-SYSTEM help file, below you will find basic information about these elements.

3.1. Project Manager

The Project Manager is a project management window, adding buildings and levels, allowing elements to be turned on and off, their blocking and color definition. When designing the elements of the project in the ARCADIA-ARCHITECTURE module, the program will be placing independently, mainly on the *External Area*, dividing them into appropriate groups: e.g. *Model of the terrain*, *3D furnishing objects*, *Fences*, *Plants*, etc.

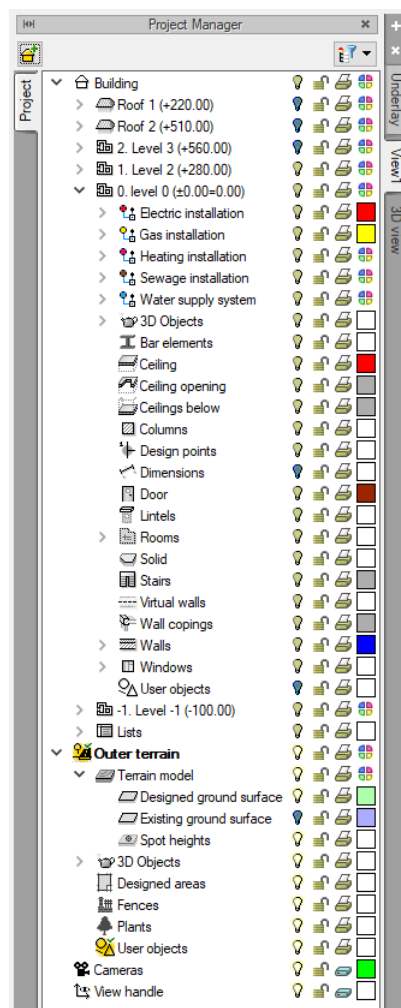



Fig. 1. A sample project in the Project Manager window

The groups of elements can be divided into subgroups, which makes it easier to manage elements later, select them, enable or disable, block or edit them. Such a division is made in the Project manager window by selecting a group and selecting the icon  or clicking the right mouse button and choosing the *Add group* option.

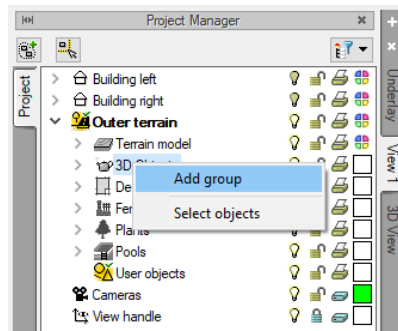


Fig. 2. Dividing elements into groups

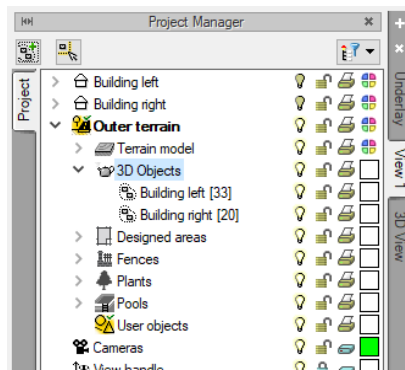


Fig. 3. Furnishing objects divided into sample groups.

Tab. 2 Options available in the Project Manager window

	Group properties	Open the window of Group properties .
	Add subgroup	Adds a group or subgroup of elements to the selected group or subgroup, e.g. plants.
	Remove group	Removes the selected group or subgroup.
	Add selected elements to the	Adds the selected element (s) to the selected group or subgroup.
	Select elements	Selects all elements of a group or subgroup, e.g. all windows on a given level.

More information about the [Project Manager](#) window can be found in the ArCADia System help file.

3.2. Views

The ArCADia system allows you to build a building solid or to design, for example, gas or electricity installations, showing them in different views. The first one is always a view, the 3D view is created automatically based on the entered elements on the view. Other views depend on the industry in which the project is created. For architecture, for example, additional views will be cross-sections and elevations, for water supply installations - axonometry, for gas networks - the profile of the gas network, for the gas installation - view of the development, for the sewage installation - also the profile.

The views are available in the *Project Manager* window as the next tabs by default placed on the right side of the window.

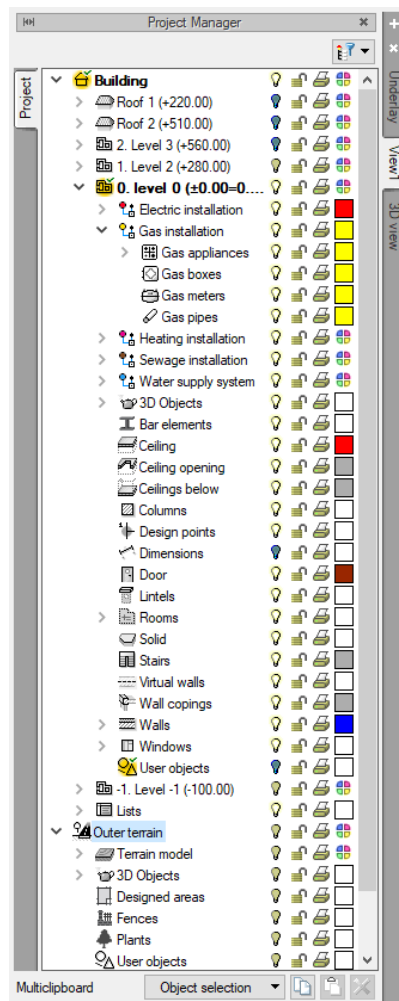


Fig. 4. The Project Manager window




In the ArCADia- LANDSCAPE ARCHITECTURE module the basic view is the floor view, the second view is the 3D View.

3.2.1. The view

ArCADia program shows the project in views: floor views, cross-sections, elevations, etc. In the view, all existing buildings, floors, land development or only selected elements can be displayed.

Activation:

ArCADia and ArCADia PLUS

- *Project Manager* ⇒  ⇒ *Insert View*
- *Insert* ribbon ⇒ logical group *View* ⇒  *Insert View*
- *ArCADia-SYSTEM* toolbar ⇒  *Insert View*

ArCADia LT

- *Project Manager* ⇒  ⇒ *Insert View*
- *View* ribbon ⇒ logical group *Insert* ⇒  *Insert View*

NOTE: The next (new) view can be inserted with only the floor view active. In other views: cross-sections, 3D view, axonometry, etc., the new views will not be inserted, but the information about the need to switch to the view will be displayed.

Switching and managing the view takes place in the *Project Manager*.

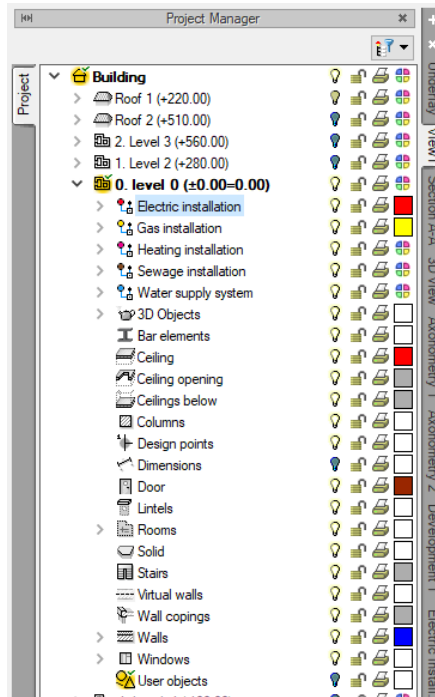


Fig. 5. The Project Manager window

Only one building, one floor or external area can be active for the view. The rest is just a trace that can be turned on or off with an icon . This means that the entry and editing takes place only on the level marked with the icon *Active level* or *Outer terrain*. Switching what is active is done by double clicking on a given floor or terrain.

NOTE: The floor is active only on the View and only for the model made with elements of the ArCADia system.

After choosing the *Insert view* option and showing the location, the first and possible subsequent views are inserted. After entering the view, its properties can be set by right-clicking of the mouse on the tab of the given view and selecting from the context menu the *View properties*.

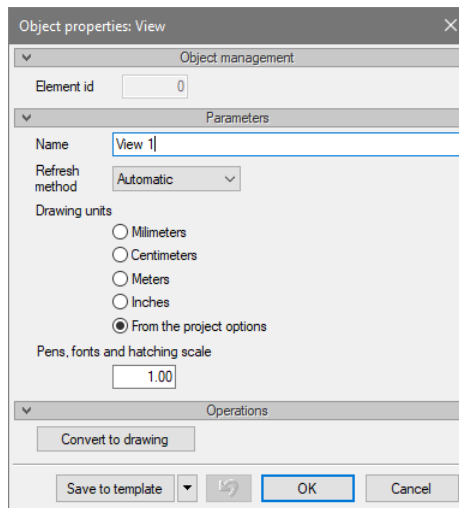


Fig. 6. The properties window of the selected view

In the window above, the *Name* can be given, the *Refresh method* and the *Drawing Units*. In addition, the selected view can be *Convert to drawing* so that from now on will only be composed of lines. This will make it possible, for example, to refine the details of cross-sections or other details.

NOTE: *With a large project consisting of several views, there might be a need to define the refresh method as **Manual**. This will significantly speed up the work on the project, because the element inserted in one view will not have to be presented on the others. Each mapping of all introduced options on more than one view significantly extends the drawing process.*

3.2.2. The 3D view

Projects done in the ArCADia program are three-dimensional projects. All entered elements have information about sizes on both the horizontal view as well as on a vertical view. The project can therefore be seen in the *3D view*.

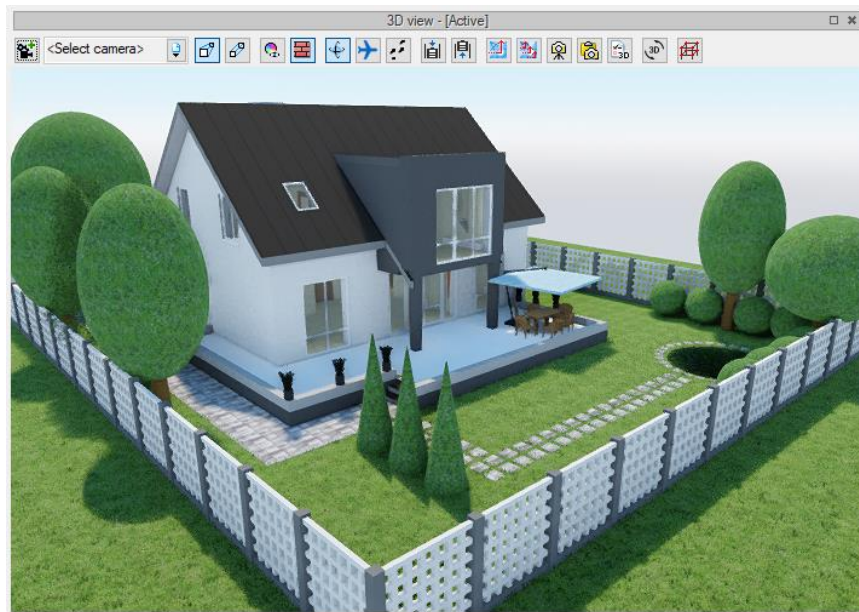


Fig. 7. A sample design in the window with the old 3D view engine



Fig. 8. A sample design in the window with the new 3D view engine

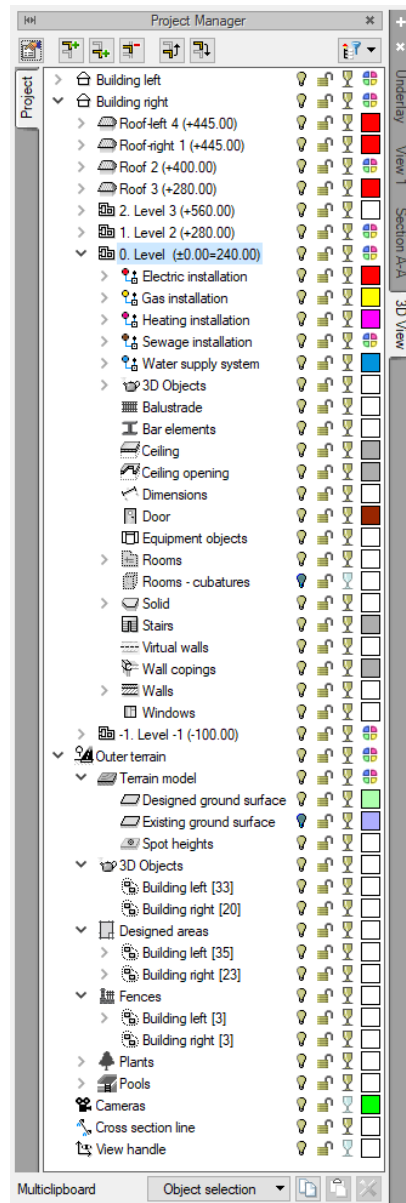



Fig. 9. The Project Manager window with a tree of elements of a sample document for the 3D view

The *3D view* Tree differs from the other views in that print items cannot be defined, because only the saved image can be printed. Instead of printing in the view tree, it is possible to make an element transparent .

NOTE: the project trees on the View 1, 3D view tabs, etc. are separate trees, which means that elements can be turned on and off in every view, which will have no reference in other views. Each tree showing the same project can have a different status of displayed and blocked elements.

3.3. Inserting objects

3.3.1. The insert window

To facilitate the insertion of elements: selection of the input handle, access to *Properties* and type, the *Insert object* window was created.

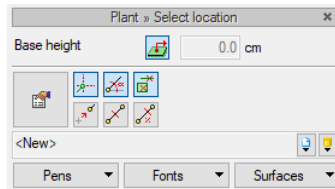


Fig. 10. A sample window that appears when inserting a plant

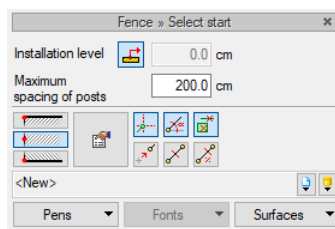












Fig. 11. A window displayed when inserting a fence

Tab. 3 The insertion window options

	<i>Insertion Line</i>	Choosing fence entry line: one of the edges or axis of symmetry.
	<i>Insertion Point</i>	Selection of the point of entry, e.g. the plant list.
	<i>Get the assembly level from the existing/terrain</i>	Reads the height of the terrain and sets it for the element being entered.
	<i>Element properties</i>	Opens <i>Element properties</i> : e.g. <i>Plants</i> .
	<i>Tracking axes</i>	The option displays horizontal and vertical straight lines directed from the detected points to the inserted elements. If the option will detect an edge of the inserted element it will display a straight line extending the detected edge.
	<i>Tracking angles</i>	This option displays the set angles determined from the existing elements in the project.
	<i>Elements detection</i>	This option detects edges and points of the inserted elements
	<i>Reference</i>	Enables inserting a chosen element at a selected distances from the indicated point.
	<i>Between points (centre)</i>	Enables inserting an element in the middle of the indicated distance.
	<i>Between points (percentage)</i>	Enables inserting elements with a percentage division of the selected section.
	<i>Angle</i>	Inserts a section of e.g. a fence at a given angle.

	<i>Lenght</i>	Inserts a section of e.g. a fence of a given length.
	<i>Parallel</i>	Enables inserting an element parallel to the specified one
	<i>End of command</i>	Closes the drawn contour, leading the outline of e.g. swimming pool to the starting point and ends the command.
	<i>Type</i>	Saved set of the common features for many objects of the same type (elements template defined by the user).
	<i>Project library</i>	Compatible with the selected template and created with the development of the drawing when saving subsequent types.
	<i>Global library</i>	Type library supplied with the program and expanded by the <i>User library</i> where the user can save and store element types created by him for use in future projects.
	<i>Close</i>	Exists the options without inserting an element.
	<i>Pens</i>	Definition of the type of the line 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 the individual surfaces of the inserted element.

3.3.2. Additional insert options

Additional options to facilitate drawing are available after choosing the option of inserting an element (e.g. *Plant*, *Fence*, etc.) in the insertion window, in the reporting window or in the command area. These options are available for all elements.

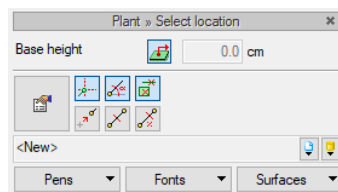


Fig. 12. The insertion window

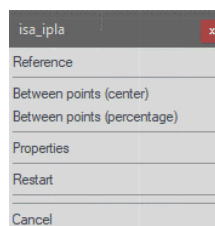


Fig. 13. The reporting window

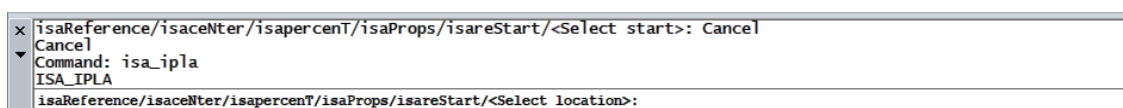


Fig. 14. The command area

3.3.2.1. Reference

Reference is a feature that enables inserting a selected element at a selected distances from the indicated point. This feature is perfectly suited for inserting e.g. a plant at a pre-determined distance from another element e.g. a fence.


3.3.2.2. Between points (center)

The *Between points (center)* feature allows you to introduce an element, e.g. a plant, at the middle of the indicated distance e.g. between the fence and the pavement.

3.3.2.3. Between points (percentage)

The *Between points (percentage)* feature enables inserting elements with a percentage division of the selected section. With this option, a plant can be inserted, for example, at 1/3 of the distance between the pavement and the fence.

3.3.2.4. Parallel

The *Parallel* option is activated in a slightly different way than the insertion aids described above. In order to draw a fence parallel to the existing reference line or for example a wall, the *Fence* option need to be activated, then indicate the beginning of the fence and only then will the *Parallel*  option become available in the insertion window. Then, after selecting the option, the two points on the reference element need to be chosen, which locks the angle of entry parallel to the one shown. In the next step, when locking the angle, the length of this section of the fence can be shown.

3.4. Working with types

Some of the ArCADia objects, such as a wall, plant, fence etc., work with a *Type library*. The element type is a saved set of features common for many objects of the same type. For example, the wall type stores information about the number, type of layers, etc.. A type is saved under the name provided by the user. By default objects do not have a type assigned to them, unless the user selected a type from the library when introducing the object type.

There are two kinds of type libraries:

- *Project library* (saved in the document) – it allows transferring types along with the document.
- *Global library* (saved on the computer in the user's folder) – it allows transferring types between different documents.

If the object works with the *Type library*, the *Object management* panel is available in the upper part of the *Properties* dialogue box for the item.

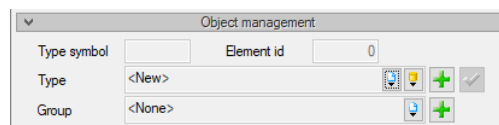


Fig. 15. The type manager when no type is active

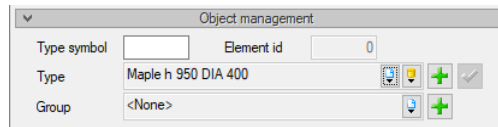




Fig. 16. The type manager with a type active

The available options are:

Type — to be selected from a drop-down list. A list of the types previously used in the document is also available. After selecting a type from this list the object properties are changed to match the ones set for the type. The type name will appear on the bar.

 **Add new** — creates a type based on currently set object features. The user is asked to give a name to the type and to save it to the global and (or) project library. Saving the type to the global library will allow for accessing it with every new project. If this type is only saved in the project library it will not be available for future projects.

 **Update** — if, once a type is applied to an item, the user modifies any of the type properties, the type name displayed in the bar will be preceded by the prefix "<New> based on ...". This will also activate the button. Using it will overwrite the type with the properties of the current object and also propagate these changes to all the objects of this type.

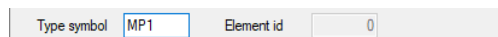


Fig. 17. The type symbol field

Type symbol — the command is active if a type has been applied to an object and it wasn't modified (see: **Update**). This enables adding a short designation to the object type, which can be used e.g. for creating lists. In the case of windows and doors the type symbol (designation) may be displayed on the "description", for walls, ceiling and roof it may be displayed in the element description (flag) located in the cross-section.

Moreover, right-clicking the extended type list will activate the pop-up menu with two options: **Rename** and **Remove type**.

NOTE: Once the parameters of an element are defined, the type needs to be saved. Saving the type will automatically add a **Type symbol**, or it will provide a field for the symbol to be given by the user. The type symbols may be changed freely, however they can't be defined without saving the type.

3.5. Editing objects

Elements of the ArCADia system can be modified in various ways, but each element may be subject to different modifications. Some objects can be copied and mirrored, some objects cannot, therefore the options for modifying individual elements are described at the given object. Moreover, besides modifications such as: copying, moving, deleting or rotating, these elements often have their own unique options available in the edit window, which is always displayed after selecting the element.

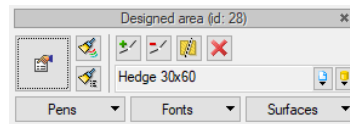


Fig. 18. A sample editing window

3.6. Terrain

The ArCADia-LANDSCAPE ARCHITECTURE module is based on the basic functions of the ArCADia system. Mainly it is based on the area that must be entered before selecting the module option.

A ground terrain can be entered with spot heights or spot heights lines. These options give the possibility of free shaping the terrain, faithfully reflecting the existing and designed state on which the building being designed is to be placed.

Activation:

- *Terrain* ribbon ⇒ logical group *Terrain* ⇒ *Spot height* and *Spot height line*
- *ArCADia-TERRAIN* toolbar ⇒ *Insert spot height* and *Insert spot height line*

After selecting the option, the insertion window opens: *Spot height*.

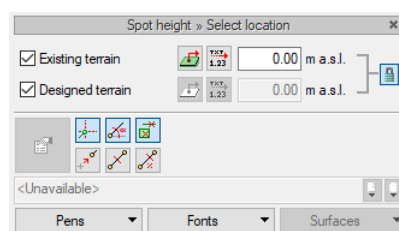


Fig. 19. The spots height insertion dialog window

Existing terrain – turns on or off the existing terrain coordinate for this spot height and deactivates (dims) the controls: to enter values, the button.

Take value from text and the check box from the terrain related to this coordinate.

Synchronize values – on or off editable field *Existing terrain*, taking or not taking the value from the *existing terrain*.

NOTE: This button is only available when both check boxes are selected: **Existing terrain coordinate** and **Designed terrain coordinate**.

From area – when enabled deactivates the controller for entering the land elevation value of the existing/designed terrain coordinate. The program itself reads the height of the existing/designed terrain under the mouse cursor or snap points and enters the taken value into the controller. If the mouse cursor is outside the existing/designed terrain plane, the value 0.00 is passed to the controller.

Designed terrain – analogously to the field of *Existing terrain*.



After entering the values, the Spot heights or Spot heights lines are entered accordingly. The more spots height, the more accurately the terrain will be shaped.

NOTE: In order to adjust the Height of the terrain point to the foundation of the building, it should be remembered that the location of the building is defined by the Absolute base altitude, meaning a.s.l. defined for the base level (usually the first level defined).

3.6.1. Inserting spot heights

Before entering the spots height, their height must be specified, and then the destination point needs to be shown.

Activation:

- *Terrain* ribbon ⇒ logical group *Terrain* ⇒  *Spot height*
- *ArCADia-TERREIN* toolbar ⇒  *Insert spot height*

The entered spots height are shown in the drawing as in the image below.

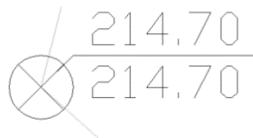


Fig. 20. Spot height in the drawing

After choosing the option, the spots height can be entered with different heights, changing them accordingly in the insertion window: *Spot height* for the designed or existing terrain.

The more spot heights are entered into the view, the more accurate the shape of the emerging terrain is.

Each spot height can be edited by changing its height, symbol or, for example, by moving it. Below is the *Object Properties* window: *Spot height*.

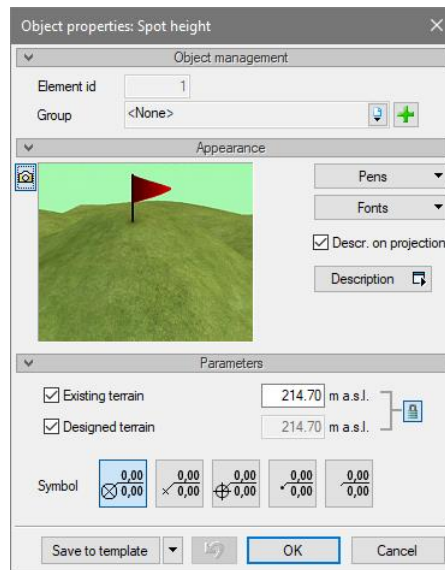


Fig. 21. The spot height properties window

NOTE: When the third spot height is entered, the terrain plane (existing, designed, or both) is added. In the terrain surface properties window it can be defined whether it is visible from the top (default) or from the bottom (e.g. to show installations or sewage systems).

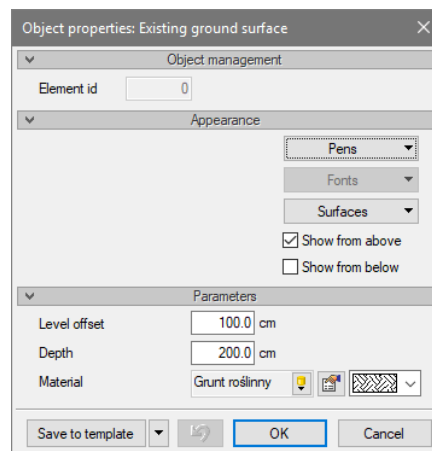




Fig. 22. The terrain surface properties window

3.6.2. Inserting spot heights lines

Before entering spot height lines, the position of the first spot height line needs to be specified for the existing and/or designed terrain (or, when using the *Synchronize values* option, only one value), it needs to be indicated, and then, if the second spot is at a different height, it needs to be entered with the appropriate value and then the last spot height line need to be entered. The command is continuous, which means that after entering the first spot height line the command is not turned off and it allows you to enter another spot height line, where the first point of the entered spot height line point becomes the end.

Activation:

- *Terrain* ribbon ⇒ logical group *Terrain* ⇒  *Spot height line*
- *ArCADia-TERREIN* toolbar ⇒  *Insert spot height line*

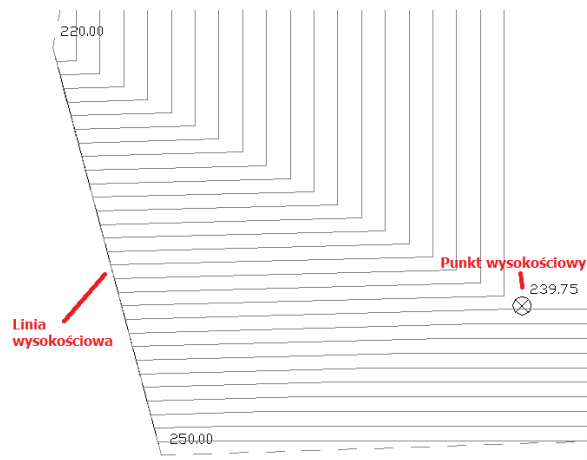


Fig. 23. The elements of the terrain on the view

Editing the spot height line is similar to editing spot heights. The values can be changed for the existing or designed terrain, the spots height or the whole spots height lines can be moved or the spot height line can be divided. The last option is available from the edit window and it gives the possibility to enter an additional spot height on the selected spot height line. Of course, the spot height to be inserted can be assigned any height.

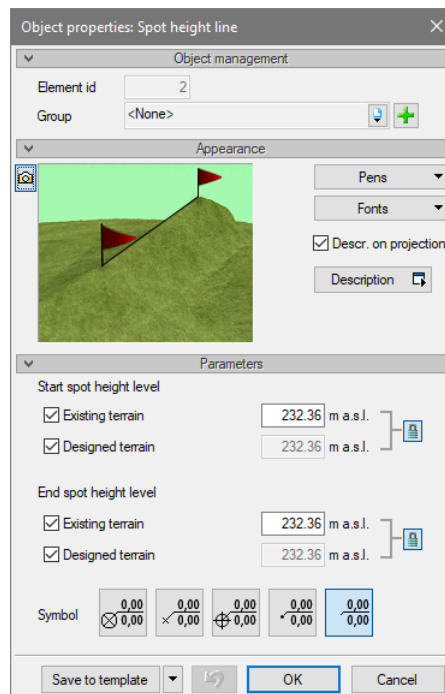


Fig. 24. The spot height line properties window

NOTE: When the second spot height line is entered, the terrain surface (existing, designed, or both) is added. In the terrain surface properties window it can be defined whether it is visible from the top (default) or from the bottom (e.g. to show installations or sewage systems).

3.6.3. Opening in the terrain

The opening in the terrain can be entered in two ways: by defining its shape or subordinating the shape to the view of the building. The second option allows you to automatically cut the opening in the area with the shape of the lowest level (if the terrain is active) or the level on which the option is called.





Activation

- *Terrain* ribbon ⇒ logical group *Terrain* ⇒  *Automatic terrain opening* or  *Terrain opening*
- *ArCADia-TERRAIN* toolbar ⇒  *Insert automatic terrain opening* or  *Insert terrain opening*

3.6.4. The external objects

External objects are designed to simulate existing elements on or in the terrain that may collide with elements of the designed documentation. The *External pipe* can simulate elements of various installations: electric, gas, etc. The *External object* can simulate an existing building, fence, well and similar elements in the project.



Activation:

- *Terrain* ribbon ⇒ logical group *Supplementary elements* ⇒  *External pipe* or  *External object*
- *ArCADia-TERRAIN* toolbar ⇒  *Insert external pipe* or  *Insert external object*

3.6.4.1. The external pipe

The *External pipe* is an element that simulates different networks in the field. In the project it can be used to check collisions and for mapping existing networks on all views, including the profile.


Activation:

- *Terrain* ribbon ⇒ logical group *Supplementary elements* ⇒  *External pipe*
- *ArCADia-TERRAIN* toolbar ⇒  *Insert external pipe*

3.6.4.2. The external object

The *External object* is used to simulate various objects in the field. In the project it can be used to check collisions and for mapping of existing field objects on all views, including the profile. It can take the shape of a cuboid or cylinder.

Activation:

- *Terrain* ribbon ⇒ logical group *Supplementary elements* ⇒  *External object*
- *ArCADia-TERRAIN* toolbar ⇒  *Insert external object*

4. DESCRIBING AND EDITING OBJECTS

4.1. Fence

There are two options available for fence insertion: *Fence* and *Fence on terrain*. The first option reads the height of the terrain at the beginning and end of the fence segment by inserting it in a straight line between the two heights. The second one, checks the height of the terrain along the entire length of the entered section, modifying it in according to the terrain.







Fig. 25. A sample of placing a fence around a plot

4.1.1. Placing the fence

The fences are entered by indicating the beginning and end of subsequent fence segments.

Activation:

- *Terrain* ribbon ⇒ logical group *Landscape architecture* ⇒  *Fence* or  *Fence on terrain*
- *ArCADia-TERRAIN* toolbar ⇒  *Insert Fence* or  *Insert fence on terrain*

After selecting in the insertion window the option Go to the *Properties dialog box*, the *Object management: Fence* window will appear.

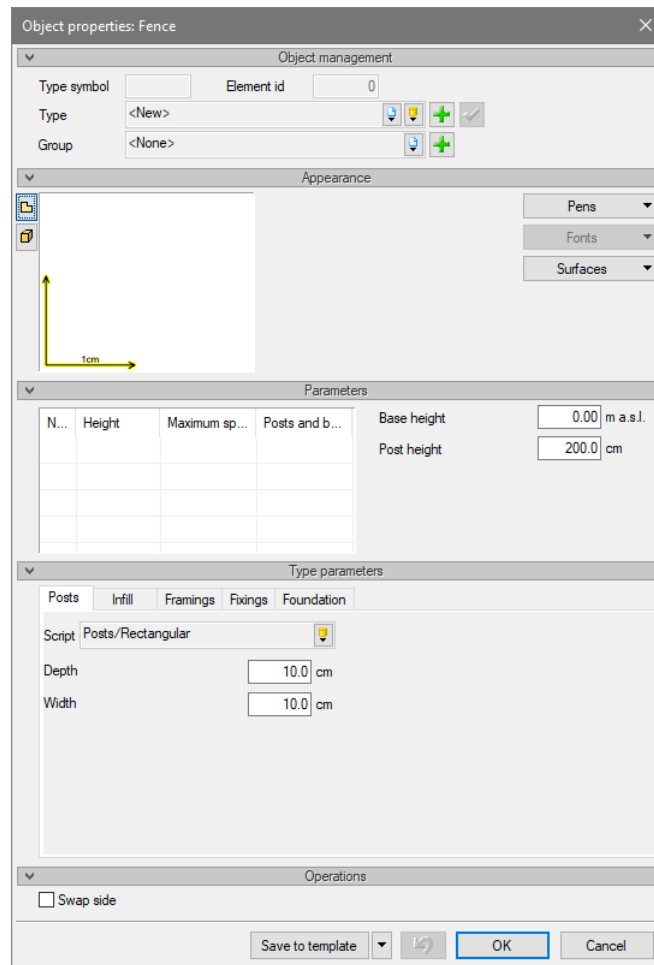



Fig. 26. The fence properties window before insertion

When inserting the fence, we do not have all its parameters available, some of them will be available only after the insertion on the view. The following parameters are available:

Object management

A panel that allows you to save the element type to the *Project library* or *Global library* or finding in the library a previously saved element and using it in the current document. Additionally, you can select or indicate to which group the given element will belong.

Appearance

Before introducing a fence the inserted element can be seen after clicking on the *3D View* icon . The *2D view* will be available after introducing the fence on the view.

Parameters

Base height – the height of the fence position is determined in meters above sea level (this value is given for the first post and from this *Height* the values are given in the table on the left, of course only after inserting the fence).

Post height – the post height in which the infill is located, and the foundation may be found below the posts.

After inserting the fence, information about the posts and infills of subsequent sections of the contour will be available in the left part of the panel.

Type parameters

In this part of the window the individual elements of the fence can be defined, their appearance and parameters. The fence is divided into 5 main parts: *Posts*, *Infill*, *Framings*, *Fixings* and *Foundation*, placed on separate tabs. Each tab is divided into two parts, the left one, in which there are variable parameters depending on the chosen script and the right one which manages the position of the element. The data on the right side of the tabs is saved, the scripts and their data after selecting from the list, always return to the original setting. Some of the tabs, e.g. *Posts* have only script data, and the right side of the tab is empty.

NOTE: Turning off individual fence elements is done by selecting an empty element from the script list. For example, to turn off the posts you have to select the **Empty posts** script. If there should be no infill between the posts, you select **Empty infill** script.

Posts

Options available for scripts of individual posts:

Depth – the post size calculated along the fence.

Width – the post size calculated across the fence.

Rounding radius – the possibility of rounding edges.

Infill

Space from framing top – distance of the space from the framing calculated from the framing axis.

Space from framing bottom – distance of the infill from the framing calculated from the framing axis.

Space from framing edges – distance of the infill from the framing calculated from the framing axis to the first post axis.

Options available for individual Infill scripts:

Amount – in the panel infill the number of elements (panels) from which the fence is created is optional. All panels are the same height.

Width – the thickness of the main infill elements calculated across the fence.

Cross-section width – the cross-section thickness of the main infill elements calculated across the fence.

Cross-section height – the cross-section height of the main infill elements.

Cross-section fillet radius – the possibility of rounding the edge of the infill elements.

Amount of arches – the number of decorative infill elements.

Ridge height – the size of the arcs` curvature shown as a percentage.

Spacing (in axes) – the spacing of the infill elements, e.g. in the infill *Grid (at angle)*.

Offset – the offset of the beginning of the infill.

Angle – the angle of the inserted infill elements, e.g. in the infill *Grid (at angle)*.

Decor cross-section width – the cross-section thickness of the decorative infill elements calculated across the fence.

Decor cross-section height – the cross-section height of the decorative infill elements.

Decor width – the width of the decorative element e.g. lilies

Height of decor – the height of the decorative element e.g. lilies

Decor level – the height of the decorative element center counted from the post bottom or from the bottom and the top in the infill, alternately. The height is given as a percentage.

Maximum spacing – the maximum distance between the infill posts counted in axes. The program checks by itself the infill length and inserts the posts at equal interval between each other, not exceeding the given value.

Every which post – the choice of at which every post should the decorative element be placed.

Décor diameter – the diameter of a decorative element, e.g. in an oval infill.

Diameter – the diameter of the main infill elements.

Thickness – thickness of the infill panel.

Offset – the height of the decor position counted from the post bottom.

Framings

Space from the top – the distance of the axis framing from the top, i.e. top of the post

Space from the bottom – the distance counted from the bottom of the posts to the framing axis.

Space from post axis – the distance from the post axis to the framing axis.

Options available for individual scripts of Framings:

Width – the value calculated across the fence.

Height – the height of the framing.

Rounding radius – the possibility of rounding the framing edge.

Fixing

Number of lower fixings – the number of fixings inserted from the fence lower edge to the framing.

Number of vertical fixings – the number of side fixings between the post and the framing.

Horizontal fixing spacing – the distance between the axes of lower and upper fixings.

Vertical fixing spacing – the distance between the axes of side fixings.

Horizontal fixing offset (from axis) – the shift of fixings from the segment axis.

Vertical fixing offset (from axis) – the shift of fixings in relation to the vertical center of the framing.

Options available for individual Fixings scripts:

Diameter – the embracing filling diameter in the circular fixture.

Length – the embracing infill length in the circular fixture.

Clamping ring diameter – the diameter of the infill handle in the circular fixing.

Clamping ring thickness – the handle thickness to mill filling.

Mill depth – the depth to which the filling enters the fixings.

Height/width – the height of the side rectangular fixtures and width of the lower and upper fixings.

Foundation

Options available for individual Foundation scripts:

Width – the value calculated across the fence.

Height – the full height of the foundation, both the part placed in the ground and above it.

Above ground – the height to which the foundation is extending above the ground.

Operations

Change side – changes the side of the infill. This option is useful, for example with alternate infill scripts.

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

After confirming the settings, you can go to the fence drawing, which is similar in both input options, but differs in the insertion window and the effect of the inserted fence.

Activation:

- *Terrain* ribbon ⇒ logical group *Landscape architecture* ⇒  *Fence*
- *ArCADia-TERRAIN* toolbar ⇒  *Insert Fence*

Calling the command shows the following input window.

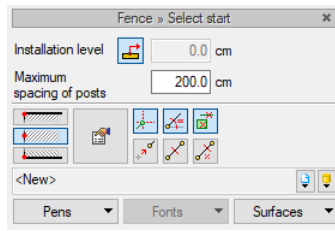



Fig. 27. The fence insertion window

After confirming the settings, you can proceed to drawing the fence by indicating or giving coordinates of its subsequent tips (corners). In the entered sections, the program will introduce posts in a similar distance to the one given, you need to remember that the program will adapt the entry of the posts so that their division is equal on a given section and does not exceed the given spacing. If the icon  *Get the assembly level from the existing/designed terrain* is marked, then the start and end post takes information about the terrain height and insert itself on it. Intermediate posts do not collect this information, they are introduced on an even line connecting the heights of both ends. If this option is disabled, then the user can specify the base height for the beginning and the end of the base height.

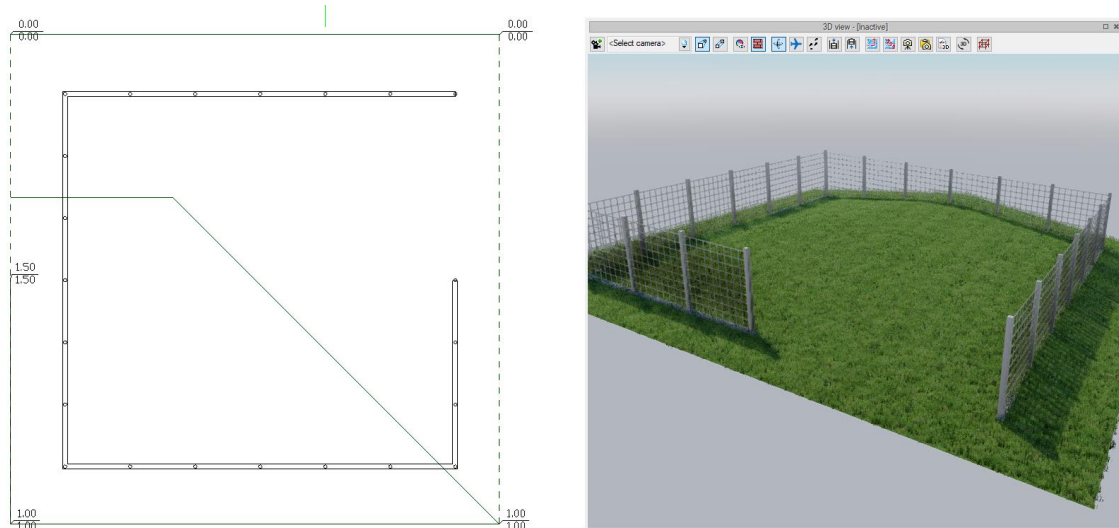


Fig. 28. The fence option after insertion

Activation:

- *Terrain* ribbon ⇒ logical group *Landscape architecture* ⇒  *Fence on terrain*
- *ArCADia-TERRAIN* toolbar ⇒  *Insert fence on terrain*

Calling the command shows the following insertion window.

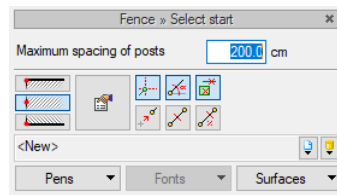


Fig. 29. The fence insertion window

Drawing the fence on the terrain is done by indicating or specifying the coordinates of its subsequent tips (corners). In the sections being entered, the program will enter the posts trying to introduce them at a distance similar to the one set in equal sections. In this case, however, the terrain will have a higher priority than the spacing. This means that the posts will be entered at the beginning and the end of the section and on all the contour breaks of the area. Between these posts, equally spaced posts will be introduced. This means that the program will read the height to which each post is to be inserted, not only the first and last section. The height of the position is read for all entered posts.

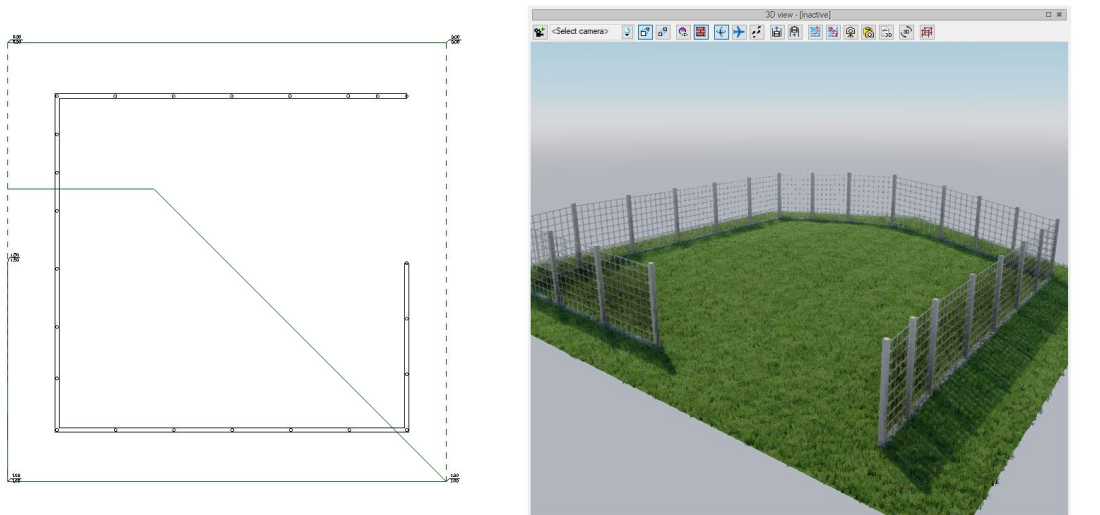


Fig. 30. The fence on terrain after insertion

Options will be available in the properties window after inserting the fence, e.g. to switch off individual posts or infills. More information can be found in the [Fence modifications](#) chapter.

4.1.2. Fence modifications

The inserted fence, can be copied, mirrored, moved, rotated and deleted. In addition to the above-mentioned modification options, the following window appears on the edit window:

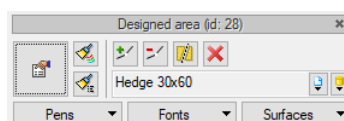


Fig. 31. The fence editing window

Tab. 4 The modification tools for the fence

	<i>Properties</i>	Opens the <i>Properties</i> window.
	<i>Fonts and pen painter</i>	Takes over the settings of pens (thickness and line types), and the size, and the type of the font.
	<i>Type painter</i>	Takes over the fence type and transfers it to the selected fence.
	<i>Add point</i>	Adds a point (which can be another tip) on the contour of the fence, allowing you to modify the contour
	<i>Remove point</i>	Removes the selected tip of the fence.
	<i>Swap side</i>	Changes the side of the infill. This option is useful, for example when infill scripts alternate.
	<i>Remove fence segment</i>	Removes the fence segment, i.e. one of the sections of the inserted fence.
	<i>Split fence</i>	Divides the fence into two parts at the indicated place.
	<i>Extend/shorten fence</i>	Changes the length of the selected fence without changing its angle to the Z axis.
	<i>Delete marked</i>	Deletes selected elements.
	<i>Type</i>	Save set of features common for many objects of the same type (elements template defined by the user).
	<i>Project library</i>	Compliant with the selected template and created together with the development of the drawing while new types are saved.
	<i>Global library</i>	The type library supplied with the program and expanded by <i>User library</i> where the user can save and store own element types created for use in future projects.
	<i>Close</i>	Exits the options without inserting an element.
	<i>Pens</i>	Definition of the type of line with which the inserted element is being drawn.
	<i>Surfaces</i>	Assigning materials or textures to the particular surfaces of the inserted element.

After inserting the fence, additional options will be made available in the *Properties* window.

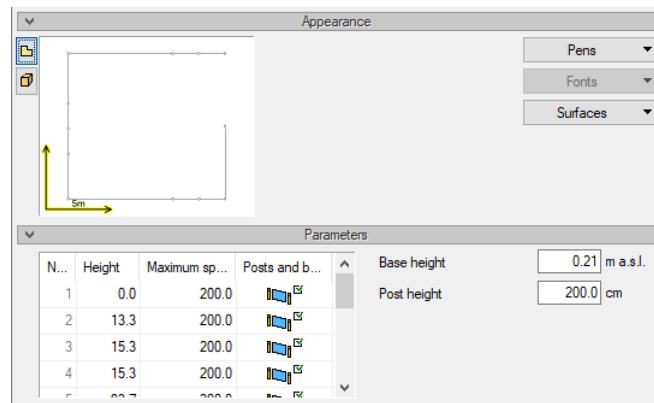


Fig. 32. Options available only after inserting the fence

In the *Appearance* panel, a 2D preview of the entered fence is available, which makes it much easier to use the table in the *Parameters* panel. The operation rule is analogous to the roof properties window and its modifications. Selecting a segment in the preview selects the appropriate row in the table.

Parameters

Node – the main posts creating a fence. Usually, these are posts placed in the corners.

Height – the location of the main posts in relation to the first one. Its location is shown on the right in the *Base height* field.

Maximum spacing of posts – the distance between the posts, which will not be exceeded. It depends on the length of the segment and its division into equal parts.

Posts and infill – the column enabling switching off individual posts or infill.

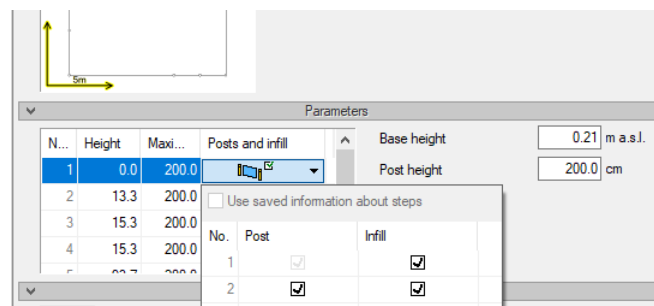


Fig. 33. The additional options for enabling and disabling posts and infill


4.2. Swimming pool

4.2.1. Introducing the swimming pool

The ArCADia-ARCHITECTURE LANDSCAPE module among its options has the ability to enter a swimming pool. It can be either a swimming pool dug in the ground or standing on the terrain surface.

Activation:

- *Terrain* ribbon ⇒ logical group *Landscape architecture* ⇒ *Swimming pool*

- *ArCADia-TERRAIN* toolbar ⇒  *Insert swimming pool*

After selecting the option *Move to properties dialog box*, the *Object Properties: Swimming pool* window will appear.

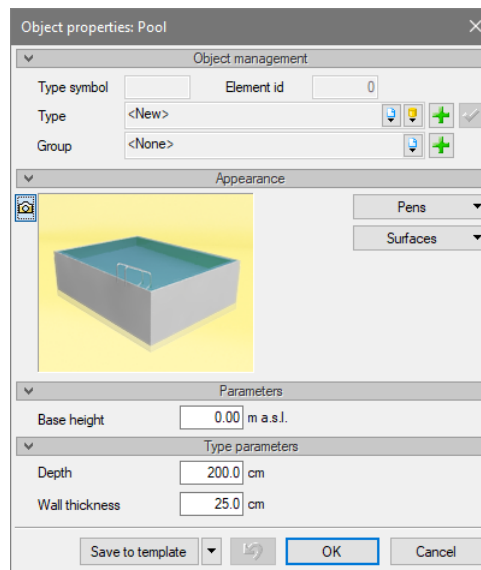


Fig. 34. The swimming pool properties window

Object management

A panel that allow to save an element type to the *Project Library* or *Global Library*, or to find a previously saved element in the library and use it in the current document. In addition, the group to which the element will belong can be selected or specified.

Appearance

A panel in which the pens and surfaces of an element are defined.

Parameters

Base height – the height of the upper edge of the pool given in meters above sea level.

Type parameters

Depth – the height of the pool calculated from the upper edge (*Base height* downwards).

Wall thickness – the width of the walls of the pool.

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

After defining the parameters, the swimming pool can be inserted on the view by indicating its contour.

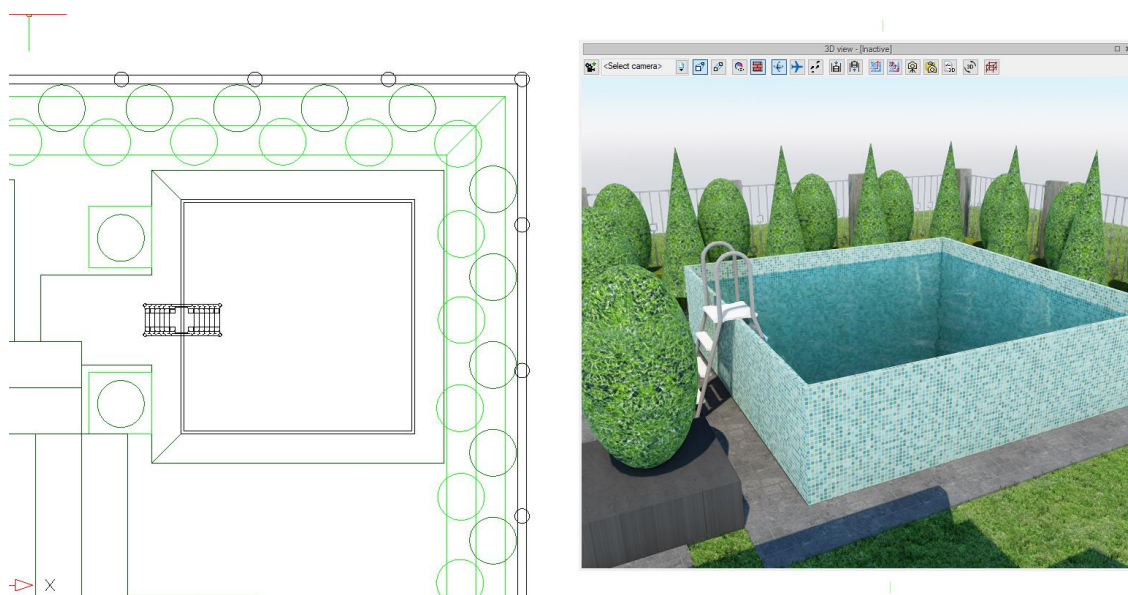


Fig. 35. A sample of the inserted swimming pool

4.2.2. Editing the swimming pool

The inserted swimming pool can be copied, moved, rotated, mirrored and deleted. In addition, the swimming pool has the following modification options in the edit window.

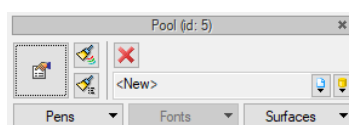










Fig. 36. The swimming pool editing window

Tab. 5 The swimming pool modification tools

	<i>Properties</i>	Opens the <i>Properties</i> window.
	<i>Fonts and pen painter</i>	Takes over the settings of pens (thickness and line types), and the size, and the type of the font.
	<i>Type painter</i>	Takes over the swimming pool type and transfers it to the selected swimming pool.
	<i>Delete marked</i>	Deletes selected elements.
	<i>Type</i>	Save set of features common for many objects of the same type (elements template defined by the user).
	<i>Project library</i>	Compliant with the selected template and created together with the development of the drawing while new types are saved.
	<i>Global library</i>	The type library supplied with the program and expanded by <i>User library</i> where the user can save and store own element types created for use in future projects.
	<i>Close</i>	Exits the options without inserting an element.

Pens	<i>Pens</i>	Definition of the type of line with which the inserted element is being drawn.
Surfaces	<i>Surfaces</i>	Assigning materials or textures to the particular surfaces of the inserted element

4.3. Plant

4.3.1. Entering plants

When managing gardens, parks, and similar projects, the option of introducing plants will be useful.

Activation:

- *Terrain* ribbon ⇒ logical group *Landscape architecture* ⇒  *Plant*
- *ArCADia-TERRAIN* toolbar ⇒  *Insert plant*

After selecting the option *Move to properties dialog box*, the *Object Properties: Plant* window will appear.

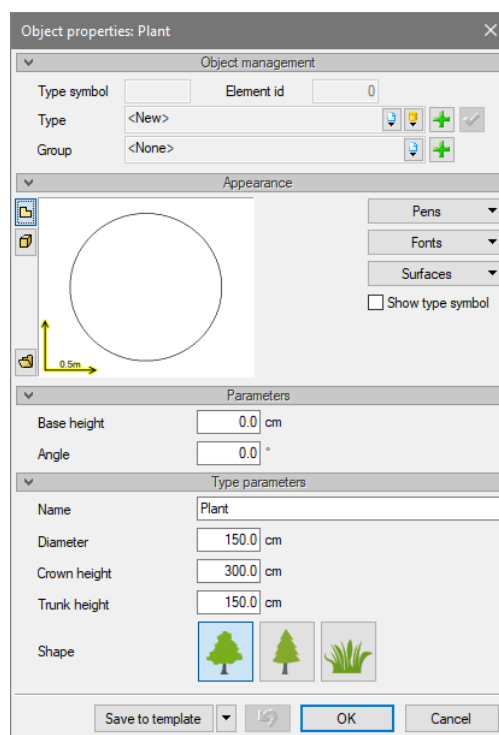





Fig. 37. The plant properties window

Object management

A panel that allows you to save an element type to the *Project Library* or *Global Library*, or to find a previously saved element in the library and use it in the current document. In addition, the group to which the element will belong can be selected or specified.

Appearance

A panel in which pens, fonts and surfaces of an element are defined. In the preview window, depending on the view selected  [2D View](#) or  [3D View](#), the plant is shown on the view or in 3D. Choosing this view allows to change the symbol or geometry of the plant. The  [Change object 2D appearance](#) option opens the 2D or 3D object library accordingly.

[Show type symbol](#) – allows you to show the designation of the plant saved as a type to the [Project](#) or [Global Library](#).

[Parameters](#)

[Base height](#) – the height of plant introduction, automatically read from the terrain.

[Angle](#) – the rotation angle of the entered plant.

[Type parameters:](#)

[Name](#) – the name for the plant being entered.

[Diameter](#) – the diameter of the crown of a tree, in the case of a deciduous plant, this diameter appears in the center of the crown's oval. In conifer plants it is the diameter of the cone.

[Crown height](#) – the height of the oval of the crown of the deciduous tree, the cone of a coniferous plant or grass.

[Trunk height](#) – the option available for deciduous and coniferous plants. This field is automatically turned off with the grass option. If the trunk height is zero, it will mean that the trunk will not be in the plant.

[Shape](#) – the selection of the type of a plant.

[Save to template](#) - saves pen settings, selected type and other element parameters to the template.

After defining the parameters, entering the plant can begin by indicating its location on the project view or by providing coordinates of the plant center.

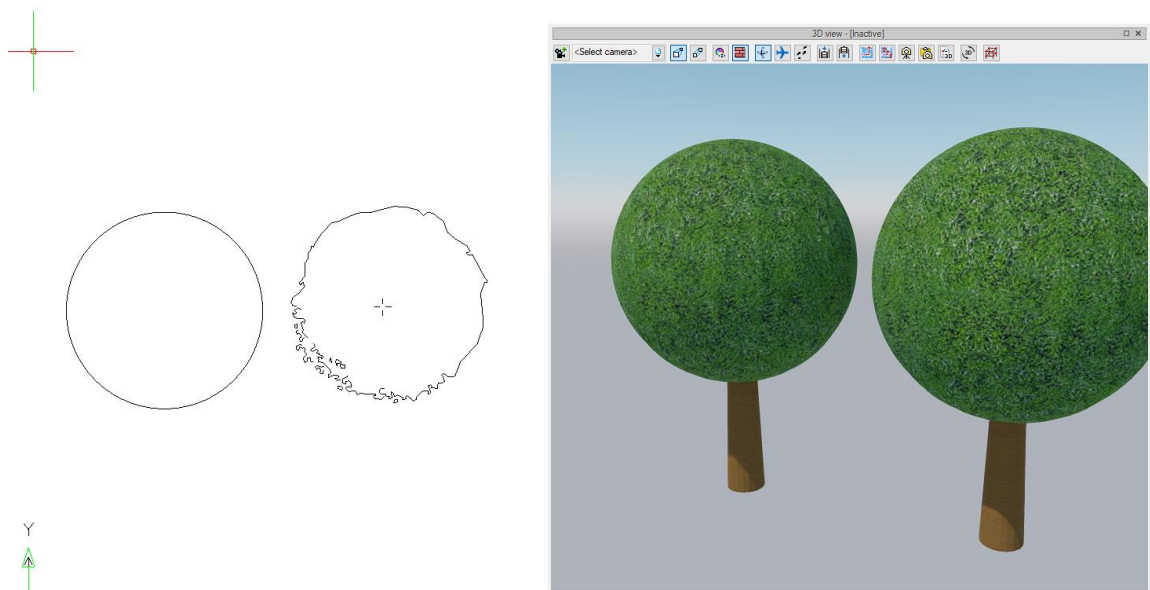


Fig. 38. A sample of introducing plants and changing them into one 2D symbol

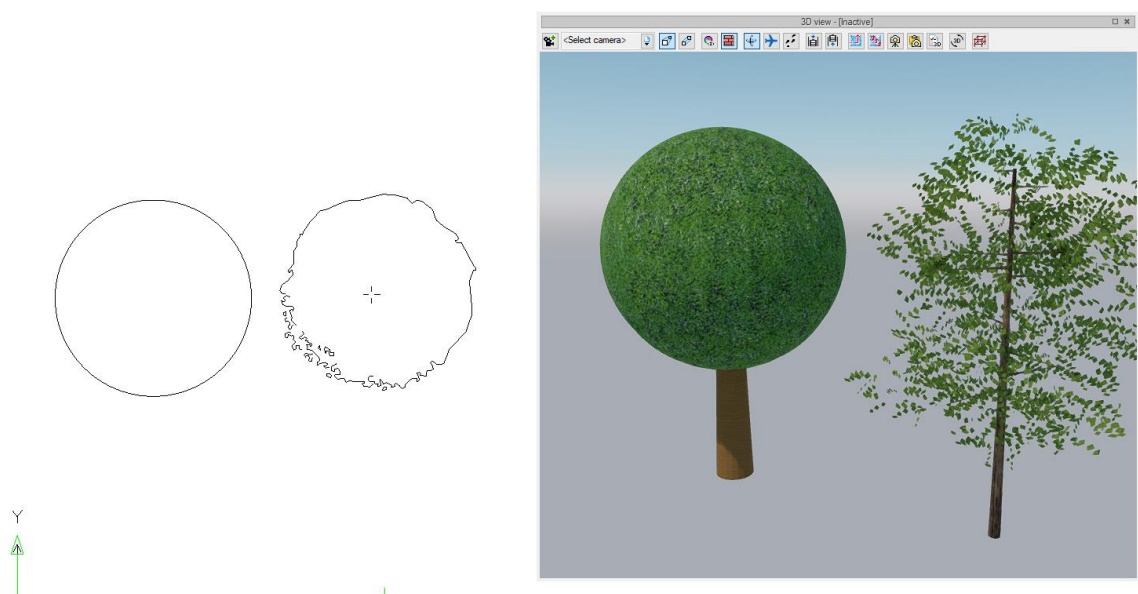


Fig. 39. A sample of entering plants with a changed 2D and 3D view

4.3.2. Editing plants

The entered plants can be copied, moved, rotated, reflected in the mirror and deleted. In addition, the plant has the following modification options in the edit window.

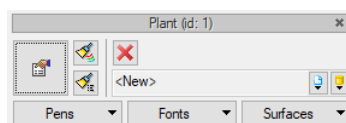








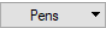
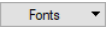



Fig. 40. The plant editing window

Tab. 6 The plant modification tools

	<i>Properties</i>	Opens the <i>Properties</i> window.
	<i>Fonts and pen painter</i>	Takes over the settings of pens (thickness and line types), and the size, and the type of the font.
	<i>Type painter</i>	Takes over the plants type and transfers it to the selected plants.
	<i>Delete marked</i>	Deletes selected elements.
	<i>Type</i>	Save set of features common for many objects of the same type (elements template defined by the user).
	<i>Project library</i>	Compliant with the selected template and created together with the development of the drawing while new types are saved.
	<i>Global library</i>	The type library supplied with the program and expanded by <i>User library</i> where the user can save and store own element types created for use in future projects.
	<i>Close</i>	Exits the options without inserting an element.
	<i>Pens</i>	Definition of the type of line with which the inserted element is being drawn.
	<i>Fonts</i>	Definition of the size and type of the font describing the element.
	<i>Surfaces</i>	Assigning materials or textures to particular surfaces of the inserted element

NOTE: the substituted 2D symbol or the 3D appearance of the plant can be transferred from one plant to the other plant, **Type painter** option. However, it must be remembered that this option will also copy data in the **Type Parameters** panel.

4.4. Area

Area is the option with which project elements such as sidewalks, flower beds, terraces, paths, etc. can be created. When entering, the command it moulds to the terrain or modifies it, depending on the chosen entry option.

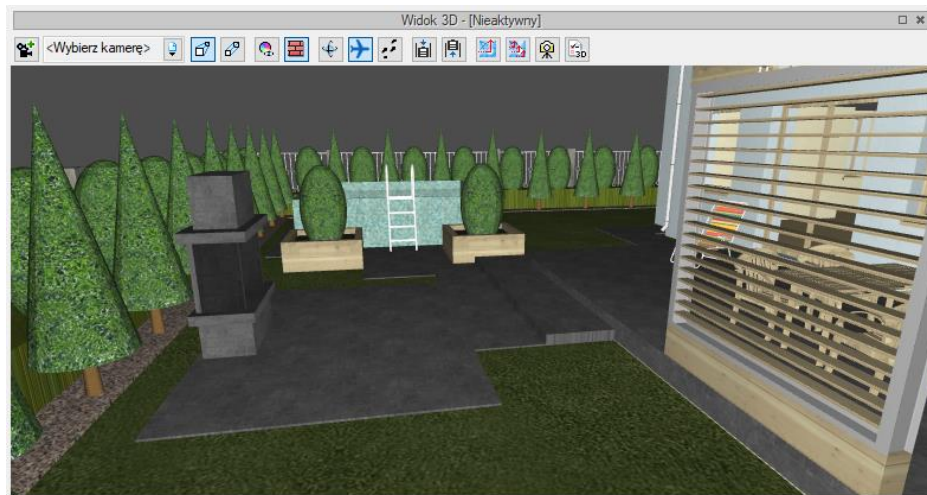


Fig. 41. An area sample as a flower bed, pavement and terrace, shown in one project

4.4.1. Inserting the area

The *Area* option is inserted into the terrain by default without modification. There is the option that along with the area you can enter spot heights or spot heights lines at each corner of the entered contour. This way of inserting the area allows you to model it along with the terrain at different heights.

Activation:

- *Terrain* ribbon ⇒ logical group *Landscape architecture* ⇒ *Area*
- *ArCADia-TERRAIN* toolbar ⇒ *Insert area*

Calling the command displays the insert window.

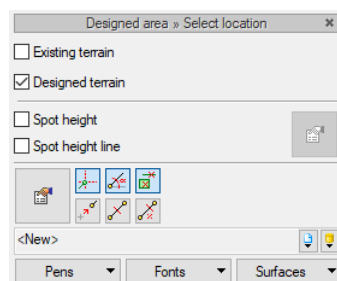


Fig. 42. The entering the area window

Existing terrain/ Designed terrain – the options available interchangeably, it means, that the area can be entered into an existing or designed terrain. It cannot be entered in both areas at the same time.

Spot height/ Spot height line – options which operate interchangeably, entering the area along with the contour of the area. After selecting one of the options, the *Properties* icon is available, under which the height of entered spot heights or spot heights lines can be entered.



Fig. 43. The data for entering the height of spot heights and spot heights lines

After selecting the option *Move to properties dialog box*, the *Object Properties: Area* window will appear.

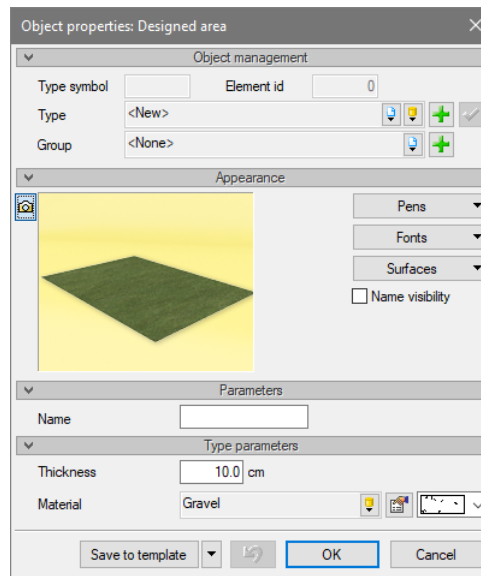


Fig. 44. The area properties window

Object management

A panel that allows you to save an element type to the *Project Library* or *Global Library*, or to find a previously saved element in the library and use it in the current document. In addition, the group to which the element will belong can be selected or specified.

Appearance

A panel in which the pens and surfaces of an element are defined. In addition, the visibility of the area name on the view can be defined.

Parameters

Name – the name of the entered area. It may be visible on the view or not, depending on the option selected in the *Appearance* panel.

Type parameters

Thickness – the height of the entered area measured from the terrain.

Material – the material from which the area is created.

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

After defining the data, the area is entered on the view by indicating or specifying the coordinates of the consecutive vertices of the polygonal contour.

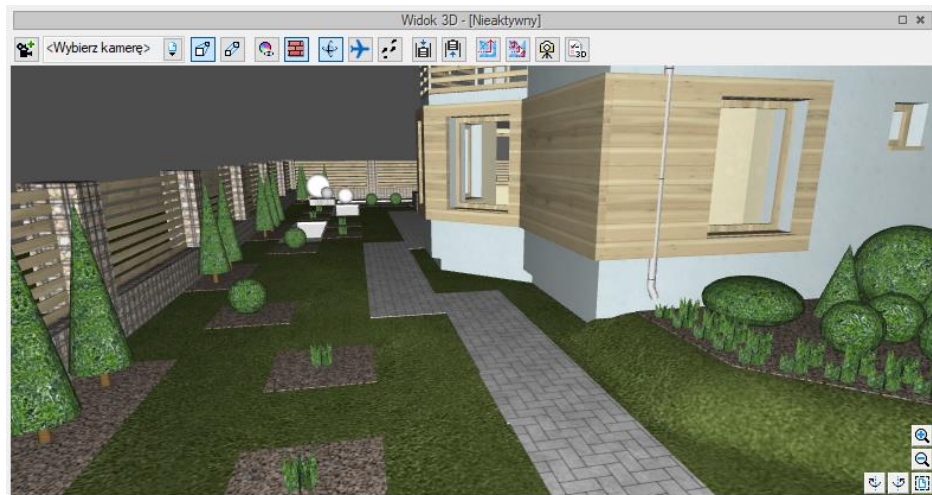




Fig. 45. A sample area as a sidewalk and flower beds

4.4.2. Entering the area with terrain reduction

The area with terrain reduction allows you to enter a horizontal area that will modify the existing one beneath the inserted area.

Activation:

- *Terrain* ribbon ⇒ logical group *Landscape architecture* ⇒  *Area with terrain reduction*
- *ArCADia-TERRAIN* toolbar ⇒  *Insert area with terrain reduction*

The called command displays the insert window.

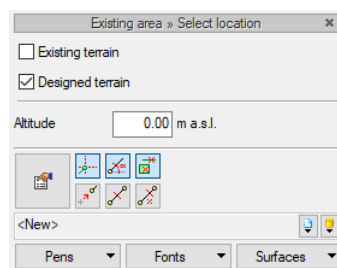


Fig. 46. The window for inserting the area with terrain reduction

Existing terrain/ Designed terrain – options available interchangeably, it means, that the area can be entered into an existing or designed terrain. It cannot be entered in both areas at the same time.

Altitude – the height of the area to which the area will be "levelled".

The properties of the entered area are analogous to the *Area* option, the difference is only that using that option while entering the area will be horizontal.

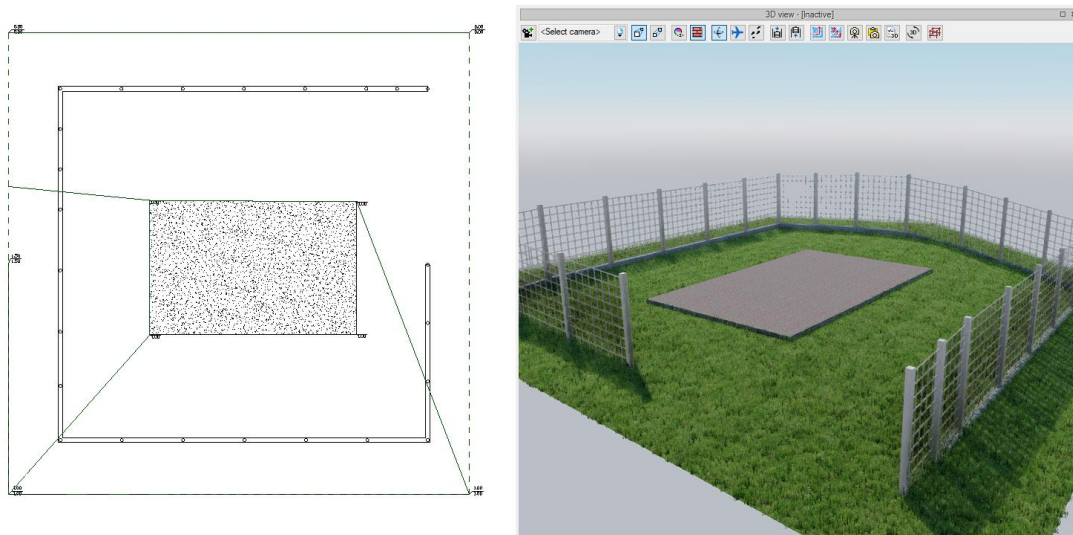


Fig. 47. The Area with terrain reduction

4.4.3. Editing the area

Regardless of how the area is being entered, it has the same modification options. The spot heights and spot heights lines introduced with the area are separate elements and should be modified independently of the area being edited. It can be moved, copied, rotated, mirrored and removed. Additionally, in the modification window there are additional options available.

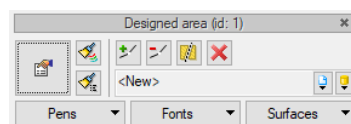


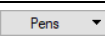




Fig. 48. The area modification window

Tab. 7 The area modification tools

	Properties	Opens the Properties window.
	Fonts and pen painter	Takes over the settings of pens (thickness and line types), and the size, and the type of the font.
	Type painter	Takes over the element type, its scheme and size and transfers it to the selected element or elements.
	Add point	Adds a point (tip) on the contour of the area, allowing to modify the contour on the view
	Remove point	Removes the selected tip of the area.
	Divide area	Splits the area into two parts by indicating the cutting line.
	Type	aved set of features common for many objects of the same type (elements template defined by the user).
	Project library	Compliant with the selected template and created together with the development of the drawing while new types are saved.

	<i>Global library</i>	The type library supplied with the program and expanded by <i>User library</i> where the user can save and store own element types created for use in future projects.
	<i>Delete marked objects</i>	Deletes selected elements.
	<i>Pens</i>	Definition of the type of line with which the inserted element is being drawn.
	<i>Fonts</i>	Definition of the size and type of the font describing the element.
	<i>Surfaces</i>	Assigning materials or textures to particular surfaces of the inserted element

4.5. Trench

4.5.1. Introduction of the trench

The trench is an option for a depression in the terrain with vertical edges. The option can be entered in the designed or existing area, this option can be found in the insertion window.

Activation:

- *Terrain* ribbon ⇒ logical group *Landscape architecture* ⇒  *Trench*
- *ArCADia-TERRAIN* toolbar ⇒  *Insert trench*

After selecting the option *Move to properties dialog box*, the *Object management: Trench* window will appear.

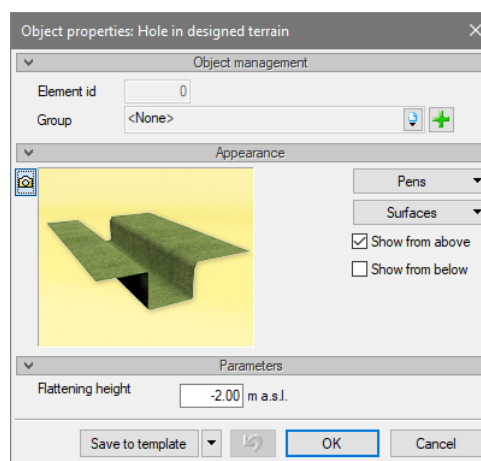


Fig. 49. The trench properties window

Object management

A panel that allows you to save an element type to the *Project Library* or *Global Library*, or to find a previously saved element in the library and use it in the current document. In addition, the group to which the element will belong can be selected or specified.

Appearance

A panel in which the pens and surfaces of an element are defined

Parameters

Flattening height – the height of the trench bottom is given in meters above sea level. This value is given globally, not from the terrain where it is located

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

The introduction of the trench consists in indicating or giving coordinates of the consecutive points of the polygonal contour.

NOTE: the trench option does not allow you to enter several elements on the top of each other. It is also impossible to put a trench on the edge of another trench.

4.5.2. Editing the trench

The entered trench can be copied, moved, rotated, reflected in the mirror and deleted, remembering that the contour of the trench cannot overlap with another trench. In addition, the trench edit window has the following modification options.

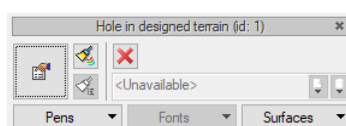




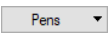



Fig. 50. The trench edit window

Tab. 8 The trench modification tools

	<i>Properties</i>	Opens the <i>Properties</i> window.
	<i>Fonts and pen painter</i>	Takes over the settings of pens (thickness and line types), and the size, and the type of the font.
	<i>Delete marked objects</i>	Deletes selected elements.
	<i>Close</i>	Exits the options without inserting an element.
	<i>Pens</i>	Definition of the type of line with which the inserted element is being drawn.
	<i>Surfaces</i>	Assigning materials or textures to the particular surfaces of the inserted element

4.6. Terrain modifications

To enter any modification, first by using spot heights and spot heights lines you enter the terrain surfaces. Only then the areas of modification can be drawn by defining whether they are entered on the existing or designed terrain. All terrain modification options *Hillock/Hole by point*, *Hillock/Hole by*

area, *Reservoir by point*, *Reservoir by area* work in the same way. After calling the command, indicate the area that will be modified. This indication is made by drawing a polygon. Then, depending on whether the option to modify by point or area is chosen, the area or the point which will be the highest or the lowest should be indicated. Then a window will be displayed in which the modification radius and its height should be specified. The set values map the deformation by showing it in the preview, thanks to which the height or e.g. rounding radius can be modified before acceptance, and confirm it only after the appropriate changes.

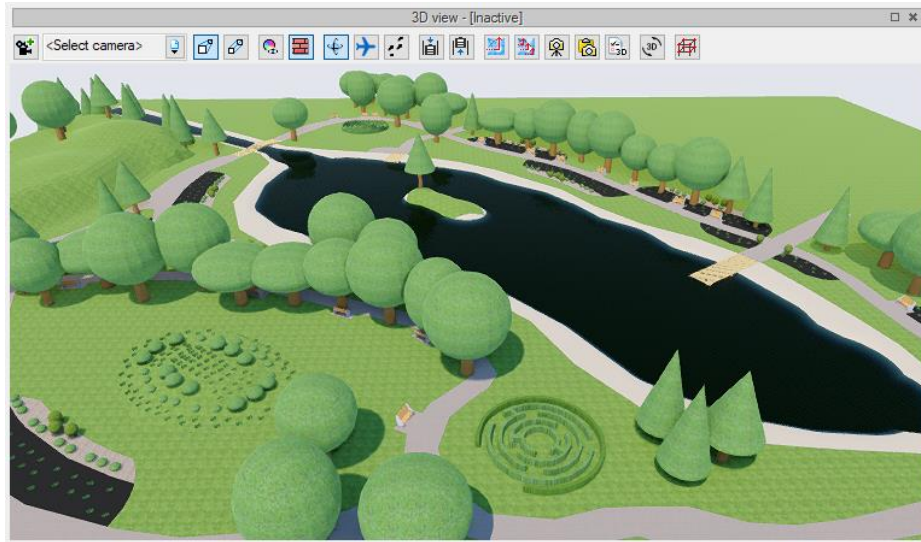



Fig. 51. A sample of the terrain deformation

4.6.1. Hillock/Hole by point

This option allows you to modify the terrain by indicating the area and then the point that will be the highest or the lowest.

Activation:

- *Terrain* ribbon ⇒ logical group *Landscape architecture* ⇒  *Hillock/Hole by point*
- *ArCADia-TERRAIN* toolbar ⇒  *Insert hillock/hole by point*

Before entering the deformation from the insertion window, the properties can be open, but no settings can be made. You can only turn on the visibility of the grid from which the area will be created. Other options will be available only after insertion.

Hillock/Hole by point is introduced by forming the polygon of modification. After its entering and confirmation of completion of entering the contour, the location of the hill / hole, i.e. the highest or the lowest point should be set. The program will display a window with a flat polygon of deformation.

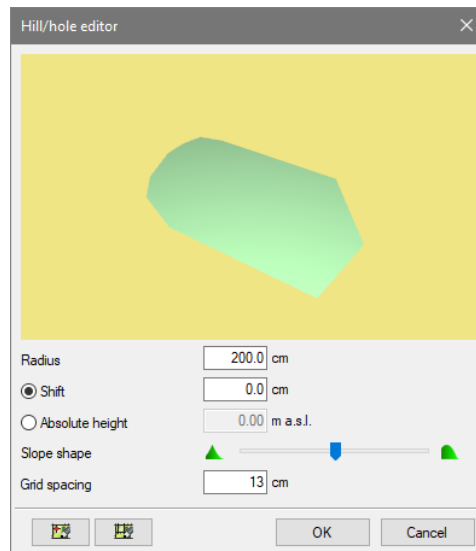


Fig. 52. The hillock/hole by point entry window

Radius – the radius of the entered modification. The larger the radius is, the smoother the deformation will look. However, the size of the area to be drawn should be taken into account, so that it is not smaller than the given radius, otherwise vertical walls will form on the edges and not a gently slope.

Shift – the height of the hillock/hole. The offset value is given from the current altitude, even if already modified. If a positive value is given, the program on the preview will show the hill, if the given value is negative, then there will be an immersion in the terrain.

Absolute height – the height of the hillock/hole. The value is given in meters above sea level, i.e. the absolute value. Whether a hillock or a hole will be created from the entered data depends on the previously drawn terrain.

Slope shape – a slider of "rounding" the slope of the terrain. The closer the slider will be to the left, the terrain slope will be steeper. The closer the slider will be to the right side, the more gentle the slope.

Grid spacing – the polygon of modification is divided by a grid which, depending on the given data, is deformed. The smaller the grid, the smoother landfall transitions, but the longer their conversion. The default grid spacing is set as the most economical, so that the terrain will be quickly modified and shown quite smoothly.

Next edit in the point – the option allowing for indicating the next point for the current modification area.

Next edit by area – the option allowing for indicating the next area for the current modification polygon.

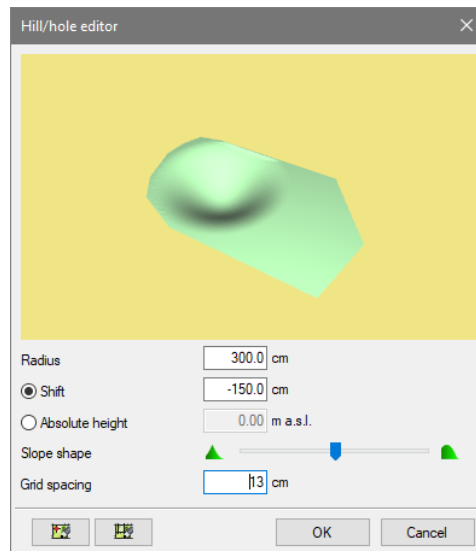


Fig. 53. The hillock/hole by point entry window

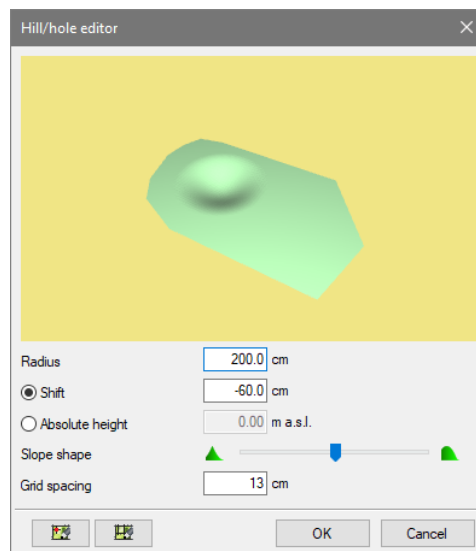


Fig. 54. The next edition of the modification polygon through the next point

4.6.2. Hillock/Hole by area

The *Hillock/Hole by area* option works similarly to the one described above.

Activation:

- *Terrain* ribbon ⇒ logical group *Landscape architecture* ⇒  *Hillock/Hole by area*
- *ArCADia-TERRAIN* toolbar ⇒  *Insert hillock/hole by area*

In this option as well, no data can be defined before entering. After specifying the modification contour, you enter the area that will be the top of the hill or the bottom of the hollow. The second polygon will be horizontal, the drop will be generated between the two drawn areas, starting with the one that is inside. Therefore, if too large a deformation radius is set, there may not be enough room for a gentle slope.

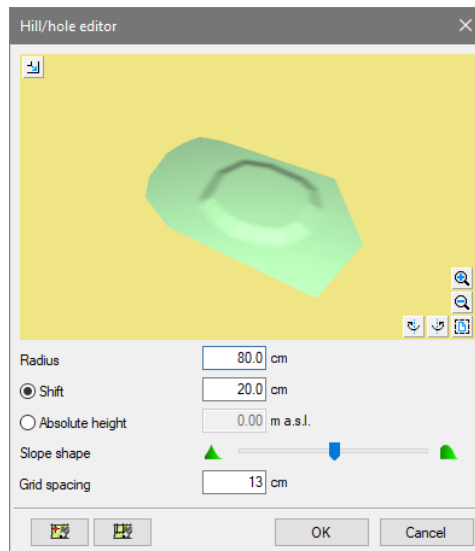


Fig. 55. A sample of entering the hill by area

Radius – the radius of the entered modification. The larger the radius is, the smoother the deformation will look.

Shift – the height of the hillock/hole. The offset value is given from the current altitude, even if already modified. If a positive value is given, the program on the preview will show the hill, if the given value is negative, then there will be an depression in the terrain.

Absolute height – the height of the hillock/hole. The value is given in meters above sea level, i.e. the absolute value.

Slope shape – a slider of "rounding" the slope of the terrain. The closer the slider will be to the left, the terrain slope will be steeper. The closer the slider will be to the right side, the more gentle the slope.

Grid spacing – the polygon of modification is divided by a grid which, depending on the given data, is deformed. The smaller the grid, the smoother landfall transitions, but the longer their conversion. The default grid spacing is set as the most economical, so that the terrain will be quickly modified and shown quite smoothly.

Next edit in the point – the option allowing for indicating the next point for the current modification area.



Next edit by area- the option allowing for indicating the next area for the current modification polygon.

4.6.3. The reservoir by point

The option is analogous to *Hillock/Hole by point*. The difference between the options is that when entering the **Reservoir**, the **Water level** which is available in the insertion window needs to be set. This is set as the absolute value.

NOTE: if the water level is set too high, no water will be introduced. The water level should be lower than the surrounding terrain.

Activation:

- *Terrain* ribbon ⇒ logical group *Landscape architecture* ⇒  *Reservoir by point*
- *ArCADia-TERRAIN* toolbar ⇒  *Insert reservoir by point*

There are no modification options available in the properties window before inserting the reservoir.

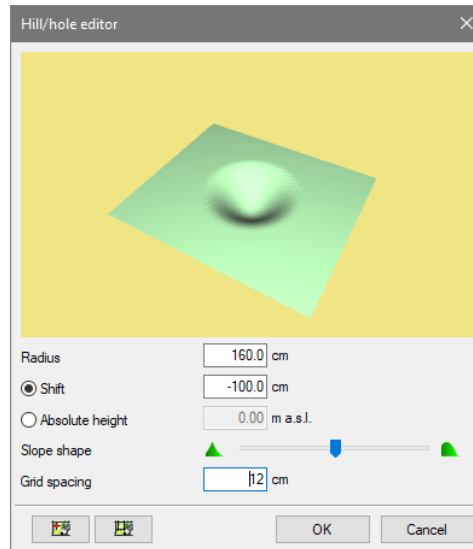


Fig. 56. Entering the pond

Radius – the radius of the entered depression.

Shift – the height of the bottom of the reservoir. The offset value is given from the current altitude, even if already modified. It should be remembered that a negative value needs to be given.

Absolute height – the bottom level of the reservoir. The value given in meters above sea level, it means the absolute value should be smaller than the height of the surrounding area.

Slope shape – a slider of "rounding" the slope of the depression. The closer the slider will be to the left, the terrain slope will be steeper. The closer the slider will be to the right side, the more gentle the slope.

Grid spacing – the polygon of modification is divided by a grid which, depending on the given data, is deformed. The smaller the grid, the smoother landfall transitions, but the longer their conversion. The default grid spacing is set as the most economical, so that the terrain will be quickly modified and shown quite smoothly.

Next edit in the point – the option allowing for indicating the next point for the current modification area.

Next edit by area – the option allowing for indicating the next area for the current modification polygon.



Fig. 57. A sample of the entered reservoir as a pond

4.6.4. The reservoir by area

The option analogous to the reservoir by point, only instead of the lowest point, the area of the bottom of the reservoir is shown.

Activation:

- *Terrain* ribbon ⇒ logical group *Landscape architecture* ⇒  *Reservoir by area*
- *ArCADia-TERRAIN* toolbar ⇒  *Insert reservoir by area*

After calling the command, the modification area is drawn, then the area, which is the bottom. The modification data should be entered in the window that appears.

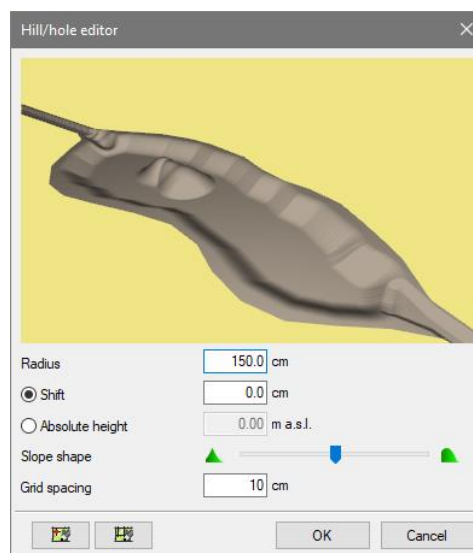


Fig. 58. A sample of the reservoir entered by area

Radius – the radius of the slope of the reservoir determined from the internal area. The radius should not be bigger than the outer area.

Shift – the height of the bottom of the reservoir, it means the horizontal area designated for modification. The offset value is given from the current altitude.

Absolute height – the bottom level of the reservoir given in meters above sea level.

Slope shape – a slider of "rounding" the slope of the terrain. The closer the slider will be to the left, the terrain slope will be steeper. The closer the slider will be to the right side, the more gentle the slope.

Grid spacing – the polygon of modification is divided by a grid which, depending on the given data, is deformed. The smaller the grid, the smoother landfall transitions, but the longer their conversion.

Next edit in the point – option allowing for indicating the next point for the current modification area.

Next edit by area – option allowing for indicating the next area for the current modification polygon.

4.6.5. Editing the hillock, hole and reservoir

The areas of modification can be copied, moved, rotated, mirrored and deleted. However, it should be remembered that their contours cannot overlap or go in one point or line.

After selecting the hillock, the bottom of the reservoir, the following options are available in the edit window.

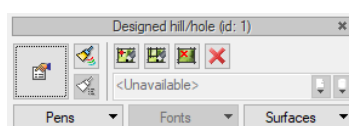







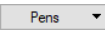
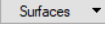


Fig. 59. The modified terrain editing window

Tab. 9 Tools for modification of a hillock, hole and reservoir

	<i>Properties</i>	Opens the <i>Properties</i> window.
	<i>Fonts and pen painter</i>	Takes over the settings of pens (thickness and line types), and the size, and the type of the font.
	<i>Edit in the point</i>	The option allows you to add a point that will be a hill or depression in the selected terrain deformation.
	<i>Edit area</i>	The option allows you to modify the terrain with an area.
	<i>Reset area</i>	Removes hills and holes from terrain deformation, but leaves an external deformation polygon.
	<i>Delete marked objects</i>	Deletes selected elements.
	<i>Close</i>	Exits the options without inserting an element.
	<i>Pens</i>	Definition of the size and type of the font describing the element.
	<i>Surfaces</i>	Assigning materials or textures to the particular surfaces of the inserted element

5. LISTS

The ArCADia–LANDSCAPE ARCHITECTURE module inserts a list of plants and fences into the project view.

5.1. Plant list

The plant list counts the introduced plants by dividing them by groups or types of elements.

Activation:

- *Terrain* ribbon ⇒ logical group *Landscape architecture* ⇒  *Plant list*
- *ArCADia-TERRAIN* toolbar ⇒  *Insert plant list*

After selecting the option *Move to properties dialog box*, the *Object management: Plant list* window will appear.

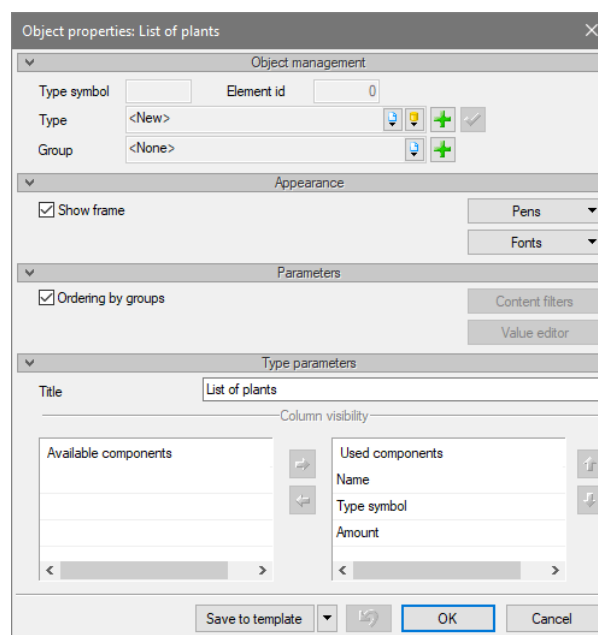


Fig. 60. The properties window of the plant list

Object management

A panel that allows to save an element type to the *Project Library* or *Global Library*, or to find a previously saved element in the library and use it in the current document. The name of the list and the visibility of the columns will be saved. In addition, the group to which the element will belong can be selected or specified.

Appearance

The panel in which the pens and fonts of the list are defined as well as frames displayed.

Parameters

Ordering by groups – the option allows to segregate plants by the groups in which they were introduced. Excluding the ordering of the plants in the list they are entered in alphabetical order sorting the names of plants, if they are different from each other.

Type parameters

The panel that allows you to define the name of the list, the number and quality of table columns.

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

The list is entered by point.

List of plants

Name	Type symbol	Amount
Deciduous trees		
Elm		10
Maple		21
Plant		22
Evergreen shrub		
Plant		148
Evergreen trees		
Plant		8
Spruce		17
Flowers		
Flowers		355

Fig. 61. A sample list of plants

5.2. Fences List

The fence list sets lengths, number of posts and type of infill by entering this data into the table.

Activation:

- *Terrain* ribbon ⇒ logical group *Landscape architecture* ⇒  *Fence list*
- *ArCADia-TERRAIN* toolbar ⇒  *Insert fence list*

After selecting the option *Move to properties dialog box*, the *Object management: Fence List* window will appear.

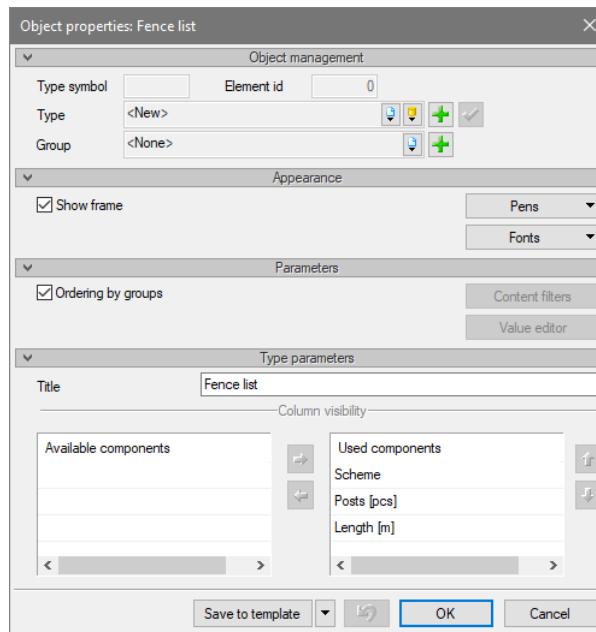


Fig. 62. The properties window of the fence list

Object management

A panel that allows to save an element type to the *Project Library* or *Global Library*, or to find a previously saved element in the library and use it in the current document. The name of the list and the visibility of the columns will be saved. In addition, the group to which the element will belong can be selected or specified.

Appearance

The panel in which the pens and fonts of the list are defined as well as frame are displayed.

Parameters

Ordering by groups – the option allows you to segregate fences by the groups in which they were introduced.

Type parameters

The panel that allows to define the name of the list, the number and quality of table columns.

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

The list is entered by point.

Fence list

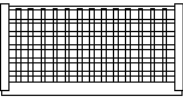
Scheme	Posts [pcs]	Length [m]
Ungrouped		
	52	97.52

Fig. 63. A sample list of the fencing data

5.3. Areas list

The option introduces on the view a table counting the areas entered into the project, dividing them into groups, sorting them by names or symbols types. If the areas when being entered or edited were saved to the library, then the contents of the table can be sorted by type.

Activation:

- *Terrain* ribbon ⇒ logical group *Landscape architecture* ⇒  *Area list*
- *ArCADia-TERRAIN* toolbar ⇒  *Insert area list*

After selecting the option *Move to properties dialog box*, the *Object management: Area list* window will appear.

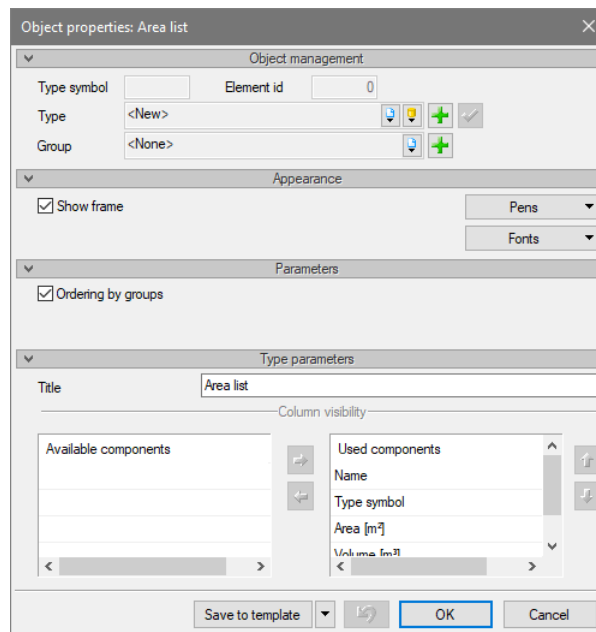


Fig. 64. The list properties window

Before inserting the list, some options in the properties window are grayed out, after being inserted they are become available.

Object management

A panel that allows to save an element type to the *Project Library* or *Global Library*, or to find a previously saved element in the library and use it in the current document. The name of the list and the visibility of the columns will be saved. In addition, the group to which the element will belong can be selected or specified.

Appearance

The panel in which the pens and fonts of the list are defined as well as frame are displayed.

Parameters

Ordering by groups – the option allows you to segregate areas by the groups in which they were introduced. Turning off the assigned areas they will be shown in the list alphabetically.

Type parameters

The panel that allows to define the name of the list, the number and quality of table columns.









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





The list is entered by indicating the point.

5.4. List editing

Modifications of lists is mainly based on the definition of their appearance and content, which is defined in the properties windows of each list. Other modification options that may be different for each list are also available from the editing window.

Tab. 10 List modification tools

	<i>Properties</i>	Opens the <i>Properties</i> window.
	<i>Fonts and pen painter</i>	Takes over the settings of pens (thickness and line types), and the size, and the type of the font.
	<i>Type painter</i>	Takes over the table type its amount and type of columns and name.
	<i>Save to the text editor file (RTF)</i>	Exports the list to a file in RTF format, opened by default in the ArCADia-TEXT browser, which will allow you to edit the list, print and save it.
	<i>Saving to the spreadsheet file (CSV)</i>	Saves the list to a file in CSV format. The list will be saved on the disk and the default software supporting the CSV format will be opened, if installed.
	<i>List filter manager</i>	Displays a window in which a filter of objects or types is selected, which changes the content and segregation of elements in the list.
	<i>Delete marked objects</i>	Deletes the selected elements.
	<i>Type</i>	Saved set of features (number and type of columns of the list) selected from the library or saved by the user.

	<i>Project library</i>	Consistent with the selected template and created along with the development of the drawing when saving next types.
	<i>Global library</i>	Type library supplied with the program and expanded by <i>the User library</i> where you can save own types of elements for their use in next projects.
	<i>Pens</i>	Definition of the type the line used for drawing the introduced element.
	<i>Fonts</i>	Definition of the size and the type the font describing the element.