

# Visual Arq Specifications

## INSTALLATION

- Product cd-key is required for installation and use. A license can only be used once simultaneously on the network.
- VisualARQ shows a warning message when the user doesn't have administrator permissions.
- VisualARQ shows a warning message when the installed Rhino version is not the required version.
- VisualARQ checks for updates automatically. If there is an update available, an icon appears in the Windows taskbar notification area.
- An option to disable the automatic update checking can be found in the VisualARQ section inside the Rhino Options dialog.
- The installer copies VisualARQ templates to the default Rhino template folder.
- Interface, installer, templates and toolbars are available in 6 languages: English, Spanish, French, Italian, German and Czech.
- A dialog to choose VisualARQ's language can be found in the VisualARQ section inside the Rhino Options dialog.
- VisualARQ 1.0 includes Savanna 3D. This plugin for Rhino 4.0 contains over 1000 detailed 3D models in 3DM format and can be installed from VisualARQ's CD.

## GENERAL

- VisualARQ supports Metrical and Imperial unit systems. When changing the drawing units, VisualARQ shows a message asking if you want to scale styles and profile definitions.
- VisualARQ allows you to set the default layer in create commands. The layer dialog can be found in the VisualARQ section inside the Rhino Options dialog.
- When starting the object creation commands, the current layer is switched to the target layer. When the commands end, the previously active layer becomes the current layer, unless the user changes it during the command.
- VisualARQ adds a scale icon symbol to specify the view scale in drawing units. An option to disable this scale icon can be found in the VisualARQ section inside the Rhino Options dialog.
- VisualARQ adds elevation marks to the front and side views that make it easier to work with multi-storey models. An option to disable these elevation marks can be found in the VisualARQ section inside the Rhino Options dialog.
- VisualARQ templates contain a Floor (Floor 1) that is shown in Rhino's Top view.
- VisualARQ templates have a tolerance of 1mm.
- VisualARQ templates contain a predefined library of object styles.
- VisualARQ object style libraries can be imported and exported to be used in other files. The import/export format file uses the extension .VAL.
- When importing and exporting styles, they are scaled according to the document units.
- When exporting VisualARQ styles, meshes are also included in those blocks used to create custom doors and windows.
- VisualARQ adds some Help options. These options are available from VisualARQ's drop-down menu.  
The Help options include: a User Guide in 6 languages, links to the Support section /

VisualARQ's website and an About dialog with information about License, User Name, Organization and Serial Number.

- VisualARQ allows you to work with the following parametric architectural objects: walls, columns, doors, windows, stairs, slabs and roofs.
- VisualARQ objects are shown simultaneously in 2D and 3D during their creation and editing.
- VisualARQ objects can be defined and edited at any time. Automatic recalculation adjusts them to these changes.
- VisualARQ objects are block instances. Rhino's explode command turns them into normal Rhino geometry.
- VisualARQ objects have object snaps and control points. These are activated the same way as Rhino objects control points.
- Copy commands (\_Copy, \_Array, \_Mirror, etc) work with all VisualARQ objects
- VisualARQ offers full Copy/Cut/Paste support.
- VisualARQ's commands start with va: by typing this, the complete list of commands available in the program is shown.
- VisualARQ messages in the command line appear in a different color. An option to change the color of the messages can be found in the VisualARQ section inside the Rhino Options dialog.
- VisualARQ submenu available on the drop-down Rhino menu
- VisualARQ toolbars available: Objects Toolbar, Documentation Toolbar and Tools Toolbar. Three secondary toolbars to create and edit walls, slabs and roofs can be opened from the wall, slab and roof icons, respectively.
- VisualARQ context menu available for every object (select + right click).
- VisualARQ objects (except slabs and roofs) use intuitive dialogs to be created, inserted and edited. The previews in VisualARQ's dialogs update automatically after changing the parameters of the selected object.
- VisualARQ insert dialogs can be collapsed or expanded and show the available styles, the insertion parameters and a preview of the inserted object.
- VisualARQ allows you to create object styles for every object (except slabs and roofs) with the help of a wizard that guides you through the process. These wizards include all editable parameters and a preview window to show all modifications in real time.
- VisualARQ's object style properties can be edited from the VisualARQ Style manager dialog. The edition of style properties affects all the objects belonging to that style.
- VisualARQ's object style attributes can be specified by style or by component from the VisualARQ Style manager dialog. These attributes are: Layer, Visibility, Display color, Linetype, Print width, Print color, Material, Hatch, Text style and Dimension style.
- VisualARQ's object properties can be edited from the VisualARQ Properties dialog or from the VisualARQ section inside the Rhino Properties dialog. When editing by object, only the properties of the selected objects will be modified, independently from their style properties.

## **OBJECTS**

### **Walls:**

- As in Rhino elements, VisualARQ walls are based on NURBS curves.
- Automatic join and intersections calculations.
- Control points and control arrows can be used to extend walls ends and height.
- Walls can be extended to walls with different elevations and heights.

- Dynamic dimensions show information about the object under the cursor when no command is active. (tbSmartInfo command to turn this feature on or off).
- Shape flexibility in wall outline:
  - Command to create walls from curves of any shape, as long as they are planar and open. The walls created with this operation are not only parametric like any other VisualARQ wall, but they are also editable using the control points of their base line.
  - Command to change the wall base curve.
  - Command to create a wall from a solid and a curve (used as baseline). The wall created with this operation is not parametric, but it can be deformed through the base curve's control points using Rhino UDT technology.
  - Command to extend walls to a surface. The wall top extension is associative until the original surface is deleted. "Unextend" option available.
  - Commands to do boolean operations with walls: add, subtract and extract solids. The solids must intersect with one or more points on the wall where they will be added.
- Insertion options and parameters of walls: Style, Alignment and Height
- Style properties of walls: Attributes, Name, Components, Geometry and Reinforcements
- Object properties of walls: Style, Geometry, Location, Intersections, Reinforcements
- Options to select walls:
  - Command to select all connected walls to the specified walls.
  - Command to select all doors or windows in the specified walls.
- Other wall options:
  - Command to split a wall by a specified point
  - Command to reverse the wall direction: the start point becomes the final point, the inner part becomes the outer part, and vice versa.

### **Columns:**

- Columns can be inserted inside or outside a wall: Intersection with walls is automatically calculated in Plan and Model view.
- Column's shape is defined by a profile: Parametric profile library included
- Columns only have one control point, which is always the same as its insertion point. This point corresponds to the alignment chosen during insertion, and can only be used to move the column (not to scale it).
- Insertion options and parameters of columns: Style, Height, Insert Point, Insert Mark, Offset (x/y) and Profile sizes.
- Style properties of columns: Attributes, Name, Shape (Profile), Sizes and Coating
- Object properties of columns: Style, Geometry, Profile and Location

### **Doors and Windows:**

- Doors and windows can only be inserted in a wall to which they are anchored. Their openings are generated automatically in the wall they are inserted and update automatically after any modification.
- Opening's shape is defined by a profile: Parametric profile library included.
- Doors and windows have five control points that can only be used to move them (they do not scale them).
- Option to define a custom door/window style using a 3D block for the Model and a 2D block for the Plan view. A custom profile is also needed to define the shape of the rough opening in the wall.

- Command to array doors/windows inside a wall.
- Insertion options and parameters of doors and windows: Style, Offset or Insert Point options, Alignment, Elevation, %Aperture, Profiles
- Style properties of doors and windows: Attributes, Name, Opening type (swing or sliding), Shape (Profile), Frame, Stop, Leaves and Custom Blocks. Windows also have Glass and Sill.
- Object properties of doors and windows: Style, Geometry, Profile, Location, Opening and Reference.

### **Stairs:**

- Stairs can be straight or can have stair flights with different directions, joined with landings.
- Stairs have as many control points as stair flights, plus the insert point. These control points allow to edit the stair flights direction and length.
- Insertion options and parameters of stairs: Style, Alignment, Height, Width, Tread count, Tread, Riser and Spiral staircase option.
- Style properties of stairs: Attributes, Name, Stair Type and Steps
- Object properties of stairs: Style, Geometry, Location, Steps and Flight/Landing parameters

### **Slabs and Roofs:**

- As opposed to all other VisualARQ objects, slabs and roofs do not use insert or dialog boxes and do not belong to any style.
- Slabs and roofs are directly created and defined from a selected boundary (any type of closed planar curve)
- Commands to do boolean operations with slabs and roofs: add, subtract and extract boundaries. The boundaries do not have to be in the slab/roof plane but they have to be closed and planar curves.
- Command to change the slab's thickness
- Command to change the roof's slope angle

## **DOCUMENTATION TOOLS**

### **Spaces:**

- Command to create one or multiple spaces. The information of the spaces (name, area, perimeter, etc) is displayed in a label and their geometry marked with a hatch pattern.
- Spaces can be created by picking an interior point (of a closed boundary made of walls and/or columns), from a curve or from a flat surface. They all work by floors.
- Spaces created with pick point option can be updated with VisualARQ's Update command. Spaces created from curves and surfaces can be updated using the command vaSpaceSetContour.
- Spaces are also linked to VisualARQ's tables.
- Spaces have two control points: one for the hatch pattern that marks the space and one for the label that shows the information. Both control points are used to move the space's elements.
- Insertion options and parameters of spaces: Name and Type of area (usable or built)
- Style properties of spaces: Attributes, General, Name, Area and Perimeter.

### **Tables:**

- VisualARQ includes two predefined table styles to quantify Openings and Spaces, but new table styles can be created to quantify any VisualARQ object.

- Tables are linked to the model: when the model is edited the information shown inside the table can be updated using the update command.
- Tables have five control points: All of them are used to move the table (they do not scale it).
- Insertion options and parameters of tables: Style (when inserting a table, only its Style can be chosen; the parameters that define the features of a table correspond to a table style).
- Style properties of tables: Attributes and Apply to.
- Object properties of tables: None

### **Opening elevations:**

- Command to create 2D drawings of all the selected openings (doors and windows) of a model.
- Opening elevations are displayed in the Plan view with their main dimensions and with a reference that identifies their location in the model.
- Opening elevations and opening references are created by default in the Documentation layer.
- Opening references can be edited or deleted from the VisualARQ Properties section (inside Rhino Properties dialog box).
- Opening elevations are also linked to VisualARQ's tables.

### **Sections:**

- Command to automatically create sections and elevations of the project:  
The 2D drawing created with this operation shows the projection of the selected 3D objects, as well as a cutting line and a section reference text displayed in the Plan view.
- Sections are linked to the model:  
When moving the section cutting line the 2D drawing updates automatically.  
When editing/deleting any of the selected objects, the 2D drawing can be updated using VisualARQ's update command.

### **Floors:**

- The Floor Manager allows to create and control floors at different levels. The dialog box is built in Rhino Options (Document Properties > VisualARQ > Floors). It is accessed through VisualARQ menu (Floors > Floor Manager) or through the "Floor Manager" icon in "Documentation Tools" toolbar.
- Command to set the current floor within a view window. The plan representation displays the objects which affect the floor shown in every view.
- Viewport context menu to select the floor you want to display on that viewport. When picking a floor in a viewport, the floor name is shown in the viewport title.
- Provisional command to create a plan view: the 2D drawings created with this operation can be used to compose the different layouts.

## **TOOLS**

- Command to create custom profiles that can be used for creating custom columns, doors and windows. These profiles are not parametric.
- Command to edit the Object and Style Properties of the selected objects (using VisualARQ's Object Properties dialog and VisualARQ's Style Properties dialog).
- Command to update the changes applied to one or more objects, in those cases when the update process is not automatic (automatic update usually slows down the software performance, so non-automatic update is used to avoid this).

## **RENDER**

- VisualARQ's material manager supports materials of all render engines that are compatible with Rhino.
- VisualARQ object material assignment works as in Rhino.
- Material assignment to the different components of a VisualARQ object is also possible by editing the component's Attribute "Material" from the Style Properties dialog.