## **Slab-Related Methods**

Slabs in VisualARQ are multi-layer horizontal elements with alignment, edge cuts, and load-bearing properties. Styles define layers; methods cover creation from curves, contour mods (add/subtract), thickness/layer configs, and checks.

AddSlabStyle

* Signature: Guid AddSlabStyle(String name, Guid profileTemplateId)
* Description: Creates a new slab style with a profile template, returns the Guid.
* Example: template\_id = va.GetRectangularProfileTemplate() # Example template style\_id = va.AddSlabStyle("MySlab", template\_id)
* Notes: Check existence with va.GetAllSlabStyleIds() (returns Guid[]); use va.GetStyleName(id) for names. Use va.IsSlabStyle(id) to verify.

AddSlabFromCurve

* Signature: Guid AddSlabFromCurve(Guid slabStyleId, Curve boundaryCurve, SlabAlignment alignment)
* Description: Creates a slab from a boundary curve with alignment using the style, returns the Guid.
* Example: curve = rs.coercecurve(rs.AddPolyline([...])) # Closed curve slab\_id = va.AddSlabFromCurve(style\_id, curve, va.SlabAlignment.Center)

AddSlabLayer

* Signature: Guid AddSlabLayer(Guid slabLayerId, String name, Double thickness)
* Description: Adds a layer to the slab style, returns the layer Guid.
* Example: layer\_id = va.AddSlabLayer(style\_id, "ConcreteLayer", 0.2)

GetAllSlabStyleIds

* Signature: Guid[] GetAllSlabStyleIds()
* Description: Returns array of all slab style Guids.
* Example: style\_ids = va.GetAllSlabStyleIds()

GetCurrentSlabStyle

* Signature: Guid GetCurrentSlabStyle()
* Description: Gets the current/default slab style Guid.
* Example: current\_id = va.GetCurrentSlabStyle()

SetCurrentSlabStyle

* Signature: Boolean SetCurrentSlabStyle(Guid slabStyleId)
* Description: Sets the current/default slab style. Returns True on success.
* Example: success = va.SetCurrentSlabStyle(style\_id)

GetSlabStyleId

* Signature: Guid GetSlabStyleId(String name)
* Description: Gets the slab style Guid by name.
* Example: style\_id = va.GetSlabStyleId("MySlab")

GetSlabContour

* Signature: Brep GetSlabContour(Guid slabId)
* Description: Gets the contour brep of a slab instance.
* Example: contour = va.GetSlabContour(slab\_id) rs.AddBrep(contour) # Visualize

SlabAddCurve

* Signature: Boolean SlabAddCurve(Guid slabId, Curve curve)
* Description: Adds a curve to the slab contour (union). Returns True on success.
* Example: success = va.SlabAddCurve(slab\_id, add\_curve)

SlabSubtractCurve

* Signature: Boolean SlabSubtractCurve(Guid slabId, Curve curve)
* Description: Subtracts a curve from the slab contour. Returns True on success.
* Example: success = va.SlabSubtractCurve(slab\_id, subtract\_curve)

GetSlabThickness

* Signature: Double GetSlabThickness(Guid slabId)
* Description: Gets the total thickness of a slab instance.
* Example: thickness = va.GetSlabThickness(slab\_id)

GetSlabLayers

* Signature: Guid[] GetSlabLayers(Guid slabStyleId)
* Description: Gets array of layer Guids in a slab style.
* Example: layers = va.GetSlabLayers(style\_id)

GetSlabLayerThickness

* Signature: Double GetSlabLayerThickness(Guid slabLayerId)
* Description: Gets the thickness of a slab layer.
* Example: thickness = va.GetSlabLayerThickness(layer\_id)

SetSlabLayerThickness

* Signature: Boolean SetSlabLayerThickness(Guid slabLayerId, Double thickness)
* Description: Sets the thickness for a slab layer. Returns True on success.
* Example: success = va.SetSlabLayerThickness(layer\_id, 0.25)

GetSlabLayerOffset

* Signature: Double GetSlabLayerOffset(Guid slabLayerId)
* Description: Gets the offset of a slab layer.
* Example: offset = va.GetSlabLayerOffset(layer\_id)

GetSlabLayerType

* Signature: SlabLayerType GetSlabLayerType(Guid slabLayerId)
* Description: Gets the type of a slab layer.
* Example: type = va.GetSlabLayerType(layer\_id)

SetSlabLayerType

* Signature: Boolean SetSlabLayerType(Guid slabLayerId, SlabLayerType type)
* Description: Sets the type for a slab layer. Returns True on success.
* Example: success = va.SetSlabLayerType(layer\_id, va.SlabLayerType.Core)

GetSlabAlignment

* Signature: SlabAlignment GetSlabAlignment(Guid slabId)
* Description: Gets the alignment of a slab instance.
* Example: alignment = va.GetSlabAlignment(slab\_id)

SetSlabAlignment

* Signature: Boolean SetSlabAlignment(Guid slabId, SlabAlignment alignment)
* Description: Sets the alignment for a slab instance. Returns True on success.
* Example: success = va.SetSlabAlignment(slab\_id, va.SlabAlignment.Bottom)

GetSlabStyleEdgeCutType

* Signature: SlabStyleEdgeCutType GetSlabStyleEdgeCutType(Guid slabStyleId)
* Description: Gets the edge cut type of a slab style.
* Example: cut\_type = va.GetSlabStyleEdgeCutType(style\_id)

SetSlabStyleEdgeCutType

* Signature: Boolean SetSlabStyleEdgeCutType(Guid slabStyleId, SlabStyleEdgeCutType type)
* Description: Sets the edge cut type for a slab style. Returns True on success.
* Example: success = va.SetSlabStyleEdgeCutType(style\_id, va.SlabStyleEdgeCutType.Plumb)

IsSlab

* Signature: Boolean IsSlab(Guid id)
* Description: Checks if the Guid is a slab instance.
* Example: is\_slab = va.IsSlab(id)

IsSlabStyle

* Signature: Boolean IsSlabStyle(Guid id)
* Description: Checks if the Guid is a slab style.
* Example: is\_style = va.IsSlabStyle(id)

IsSlabLayer

* Signature: Boolean IsSlabLayer(Guid id)
* Description: Checks if the Guid is a slab layer.
* Example: is\_layer = va.IsSlabLayer(id)

IsSlabLoadBearing

* Signature: Boolean IsSlabLoadBearing(Guid slabId)
* Description: Checks if the slab is load-bearing.
* Example: load\_bearing = va.IsSlabLoadBearing(slab\_id)

SetSlabLoadBearing

* Signature: Boolean SetSlabLoadBearing(Guid slabId, Boolean load\_bearing)
* Description: Sets whether the slab is load-bearing. Returns True on success.
* Example: success = va.SetSlabLoadBearing(slab\_id, True)

DeleteStyle

* Signature: Boolean DeleteStyle(Guid styleId)
* Description: Deletes a slab style. Returns True on success.
* Example: success = va.DeleteStyle(style\_id)

RenameStyle

* Signature: Boolean RenameStyle(Guid styleId, String newName)
* Description: Renames a slab style. Returns True on success.
* Example: success = va.RenameStyle(style\_id, "NewSlabStyle")

GetStyleName

* Signature: String GetStyleName(Guid styleId)
* Description: Gets the name of a slab style.
* Example: name = va.GetStyleName(style\_id)

DeleteStyleComponent

* Signature: Boolean DeleteStyleComponent(Guid componentId)
* Description: Deletes a style component (e.g., layer). Returns True on success.
* Example: success = va.DeleteStyleComponent(layer\_id)

Enums/Options Reference for Slabs

* SlabAlignment: Top (0), Center (1), Bottom (2)
* SlabLayerType: Normal (0), Core (1)
* SlabStyleEdgeCutType: Square (0), Plumb (1), Flat (2), ByStyle (255)

## **Roof-Related Methods**

Roofs in VisualARQ are multi-slope elements with types (shed, gable, hip, composite), contours, axes, slopes, gable heights, and edge cuts. Styles define defaults; methods cover creation from curves, contour/axis/slope mods, and checks.

AddRoofStyle

* Signature: Guid AddRoofStyle(String name)
* Description: Creates a new roof style and returns its Guid.
* Example: style\_id = va.AddRoofStyle("MyRoof")
* Notes: Check existence with va.GetAllRoofStyleIds() (returns Guid[]); use va.GetStyleName(id) for names. Use va.IsRoofStyle(id) to verify.

AddRoofFromCurve

* Signature: Guid AddRoofFromCurve(Guid roofStyleId, Curve boundaryCurve)
* Description: Creates a roof from a boundary curve using the style, returns the Guid.
* Example: curve = rs.coercecurve(rs.AddPolyline([...])) # Closed curve for boundary roof\_id = va.AddRoofFromCurve(style\_id, curve)

GetAllRoofStyleIds

* Signature: Guid[] GetAllRoofStyleIds()
* Description: Returns array of all roof style Guids.
* Example: style\_ids = va.GetAllRoofStyleIds()

GetCurrentRoofStyle

* Signature: Guid GetCurrentRoofStyle()
* Description: Gets the current/default roof style Guid.
* Example: current\_id = va.GetCurrentRoofStyle()

SetCurrentRoofStyle

* Signature: Boolean SetCurrentRoofStyle(Guid roofStyleId)
* Description: Sets the current/default roof style. Returns True on success.
* Example: success = va.SetCurrentRoofStyle(style\_id)

GetRoofStyleId

* Signature: Guid GetRoofStyleId(String name)
* Description: Gets the roof style Guid by name.
* Example: style\_id = va.GetRoofStyleId("MyRoof")

GetRoofContour

* Signature: Brep GetRoofContour(Guid roofId)
* Description: Gets the contour brep of a roof instance.
* Example: contour = va.GetRoofContour(roof\_id) rs.AddBrep(contour)

SetRoofContour

* Signature: Boolean SetRoofContour(Guid roofId, Brep brep)
* Description: Sets the contour for a roof instance. Returns True on success.
* Example: new\_brep = ... # Create or modify brep success = va.SetRoofContour(roof\_id, new\_brep)

GetRoofAxis

* Signature: Boolean GetRoofAxis(Guid roofId, Curve axis)
* Description: Gets the axis curve of a roof (out param axis). Returns True on success.
* Example: axis = None # Out param success = va.GetRoofAxis(roof\_id, axis) if success: rs.AddCurve(axis)

SetRoofAxis

* Signature: Boolean SetRoofAxis(Guid roofId, Curve axis)
* Description: Sets the axis curve for a roof. Returns True on success.
* Example: new\_axis = rs.coercecurve(rs.AddLine(...)) success = va.SetRoofAxis(roof\_id, new\_axis)

GetRoofType

* Signature: RoofType GetRoofType(Guid roofId)
* Description: Gets the type of a roof instance.
* Example: type = va.GetRoofType(roof\_id)

SetRoofType

* Signature: Boolean SetRoofType(Guid roofId, RoofType type)
* Description: Sets the type for a roof instance. Returns True on success.
* Example: success = va.SetRoofType(roof\_id, va.RoofType.Gable)

GetRoofSlope

* Signature: Double GetRoofSlope(Guid roofId, Int32 slopeId)
* Description: Gets the slope value by slope ID.
* Example: slope = va.GetRoofSlope(roof\_id, 0) # First slope

SetSlope

* Signature: Boolean SetSlope(Guid roofId, Int32 slopeId, Double slope)
* Description: Sets the slope value by slope ID. Returns True on success.
* Example: success = va.SetSlope(roof\_id, 0, 30.0) # Degrees?

GetRoofSlopes

* Signature: Double[] GetRoofSlopes(Guid roofId)
* Description: Gets array of all slope values for a roof.
* Example: slopes = va.GetRoofSlopes(roof\_id)

GetRoofSlopeAreas

* Signature: Double[] GetRoofSlopeAreas(Guid roofId)
* Description: Gets array of slope areas for a roof.
* Example: areas = va.GetRoofSlopeAreas(roof\_id)

GetRoofGableHeight

* Signature: Double GetRoofGableHeight(Guid roofId)
* Description: Gets the gable height of a roof.
* Example: height = va.GetRoofGableHeight(roof\_id)

SetRoofGableHeight

* Signature: Boolean SetRoofGableHeight(Guid roofId, Double height)
* Description: Sets the gable height for a roof. Returns True on success.
* Example: success = va.SetRoofGableHeight(roof\_id, 2.0)

GetRoofSlabEdgeCutType

* Signature: SlabStyleEdgeCutType GetRoofSlabEdgeCutType(Guid roofId)
* Description: Gets the slab edge cut type of a roof instance.
* Example: cut\_type = va.GetRoofSlabEdgeCutType(roof\_id)

SetRoofSlabEdgeCutType

* Signature: Boolean SetRoofSlabEdgeCutType(Guid roofId, SlabStyleEdgeCutType type)
* Description: Sets the slab edge cut type for a roof instance. Returns True on success.
* Example: success = va.SetRoofSlabEdgeCutType(roof\_id, va.SlabStyleEdgeCutType.Plumb)

GetRoofStyleThickness

* Signature: Double GetRoofStyleThickness(Guid roofStyleId)
* Description: Gets the thickness of a roof style.
* Example: thickness = va.GetRoofStyleThickness(style\_id)

GetRoofStyleSlabEdgeCutType

* Signature: SlabStyleEdgeCutType GetRoofStyleSlabEdgeCutType(Guid roofStyleId)
* Description: Gets the default slab edge cut type of a roof style.
* Example: cut\_type = va.GetRoofStyleSlabEdgeCutType(style\_id)

SetRoofStyleSlabEdgeCutType

* Signature: Boolean SetRoofStyleSlabEdgeCutType(Guid roofStyleId, SlabStyleEdgeCutType cutType)
* Description: Sets the default slab edge cut type for a roof style. Returns True on success.
* Example: success = va.SetRoofStyleSlabEdgeCutType(style\_id, va.SlabStyleEdgeCutType.Flat)

IsRoof

* Signature: Boolean IsRoof(Guid id)
* Description: Checks if the Guid is a roof instance.
* Example: is\_roof = va.IsRoof(id)

IsRoofStyle

* Signature: Boolean IsRoofStyle(Guid id)
* Description: Checks if the Guid is a roof style.
* Example: is\_style = va.IsRoofStyle(id)

DeleteStyle

* Signature: Boolean DeleteStyle(Guid styleId)
* Description: Deletes a roof style. Returns True on success.
* Example: success = va.DeleteStyle(style\_id)

RenameStyle

* Signature: Boolean RenameStyle(Guid styleId, String newName)
* Description: Renames a roof style. Returns True on success.
* Example: success = va.RenameStyle(style\_id, "NewRoofStyle")

GetStyleName

* Signature: String GetStyleName(Guid styleId)
* Description: Gets the name of a roof style.
* Example: name = va.GetStyleName(style\_id)

DeleteStyleComponent

* Signature: Boolean DeleteStyleComponent(Guid componentId)
* Description: Deletes a style component (if any, e.g., layers if multi-layer roofs).
* Example: success = va.DeleteStyleComponent(component\_id)

Enums/Options Reference for Roofs

* RoofType: Shed (0), Gable (1), Hip (2), Composite (3)
* SlabStyleEdgeCutType: Square (0), Plumb (1), Flat (2), ByStyle (255) # Shared with slabs