

ARCHLine.XP® 2013

**Architectural
and
Interior Design Software**

Manual

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First Edition

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Content

| | | |
|-----------|---|-----------|
| 1. | Introduction | 15 |
| 1.1. | Definition..... | 15 |
| 1.1.1. | Introduction | 15 |
| 1.1.2. | Principles | 15 |
| 1.1.3. | Manual conventions..... | 15 |
| 1.2. | Installing ARCHLine.XP | 16 |
| 1.2.1. | System requirements | 16 |
| 1.2.2. | DirectX support..... | 16 |
| 1.2.3. | Installing the software | 17 |
| 1.2.4. | Install the LAN (local area network) version | 17 |
| 1.3. | Registration | 18 |
| 1.4. | Activation | 18 |
| 1.5. | 64-bit and multi-core processor support | 20 |
| 1.5.1. | Why 64-bits?..... | 20 |
| 1.5.2. | Frequently Asked Questions about 64-bit Software..... | 20 |
| 2. | Interface | 22 |
| 2.1. | User interface components:..... | 22 |
| 2.2. | Screen menu board | 23 |
| 2.2.1. | Control tool | 23 |
| 2.2.2. | Menu board | 24 |
| 2.3. | Drawing window arrangement | 24 |
| 2.4. | Workspace skins..... | 24 |
| 2.5. | NaviBar | 24 |
| 2.5.1. | Zoom | 25 |
| 2.5.2. | Pan | 25 |
| 2.5.3. | Rotation in 3D..... | 26 |
| 2.5.4. | View tools in 3D..... | 26 |
| 2.6. | Information bar..... | 28 |
| 2.7. | Coordinate bar | 29 |
| 2.8. | Drawing Pane | 29 |
| 2.9. | Command line | 30 |
| 2.10. | Mouse..... | 31 |
| 2.10.1. | Single click with the left button..... | 31 |
| 2.10.2. | Double click with the left button | 31 |
| 2.10.3. | Single click with the right button | 32 |
| 2.10.4. | How to use the mouse when selecting commands from the menu..... | 33 |
| 2.10.5. | Using the mouse wheel | 33 |
| 2.10.6. | The shape of the cursor | 34 |
| 2.10.7. | Cursor Input Box..... | 35 |
| 2.11. | Keyboard | 36 |
| 2.11.1. | Defining values | 36 |
| 2.11.2. | Enter key | 36 |
| 2.11.3. | Special keys | 37 |
| 2.11.4. | CTRL key..... | 37 |
| 2.11.5. | SHIFT key..... | 39 |
| 2.11.6. | ESC key..... | 40 |
| 2.11.7. | ARROW keys | 40 |
| 2.11.8. | Alt key..... | 41 |
| 2.11.9. | Function keys | 41 |
| 2.11.10. | Page up - Page Down keys | 42 |
| 2.11.11. | Define keyboard shortcuts | 42 |
| 2.12. | Menus..... | 43 |
| 2.12.1. | Menu bar | 43 |
| 2.12.2. | Context sensitive menus..... | 43 |
| 2.13. | Toolbox..... | 43 |
| 2.13.1. | Short and long mouse click..... | 45 |
| 2.13.2. | Mouse handling: Long click mode..... | 45 |
| 2.13.3. | Toolbox setup | 45 |
| 2.13.4. | Toolbox working modes..... | 46 |
| 2.14. | Property manager | 47 |
| 2.14.1. | Sub-Selection with Property Manager | 49 |
| 2.14.2. | Intersection of two-or more selections | 50 |
| 2.15. | Markers..... | 50 |
| 2.15.1. | Markers' operation | 50 |
| 2.15.2. | Markers' behaviours in different views | 52 |
| 2.15.3. | Marker types and accessible commands | 52 |

| | | |
|-----------|---|------------|
| 2.15.4. | Design layered walls, slabs and roofs..... | 54 |
| 2.15.5. | Door, window 'virtual' dimensions..... | 54 |
| 2.15.6. | Marker settings..... | 55 |
| 2.15.7. | Sensible reference-markers..... | 56 |
| 2.15.8. | Smart Distance marker..... | 57 |
| 2.15.9. | Main axis markers for 3D move..... | 58 |
| 2.15.10. | Editing 3D solids..... | 59 |
| 2.16. | Toolbars..... | 61 |
| 2.16.1. | Status bar..... | 64 |
| 2.16.2. | Layer toolbar..... | 66 |
| 2.16.3. | Edit toolbar..... | 67 |
| 2.16.4. | Move toolbar..... | 68 |
| 2.16.5. | Reference toolbar..... | 68 |
| 2.16.6. | View toolbar..... | 70 |
| 2.16.7. | 3D View toolbar..... | 70 |
| 2.16.8. | 3D Mode toolbar..... | 71 |
| 2.16.9. | Design Center - F9..... | 72 |
| 2.16.10. | 2D edit toolbar..... | 75 |
| 2.16.11. | Sun setting toolbar..... | 76 |
| 2.16.12. | Quick search engine..... | 77 |
| 2.16.13. | Set toolbar..... | 77 |
| 2.17. | Welcome dialog..... | 78 |
| 2.18. | Window handling..... | 79 |
| 2.18.1. | Activate window..... | 80 |
| 2.18.2. | Close window..... | 81 |
| 2.18.3. | Modify windows..... | 81 |
| 2.18.4. | Open new window..... | 81 |
| 2.18.5. | Arrange windows..... | 82 |
| 2.19. | Screen setting..... | 82 |
| 2.19.1. | Grid settings..... | 82 |
| 2.19.2. | Angle snap..... | 83 |
| 2.19.3. | Screen properties..... | 84 |
| 2.19.4. | 3D work plane..... | 87 |
| 3. | Settings..... | 89 |
| 3.1. | Architectural settings..... | 89 |
| 3.1.1. | Units of measurement..... | 89 |
| 3.1.2. | Angle..... | 90 |
| 3.1.3. | Scale factor..... | 90 |
| 3.1.4. | Construction Grid..... | 90 |
| 3.1.5. | Setting stair standards..... | 91 |
| 3.2. | Specifying properties..... | 93 |
| 3.2.1. | General properties..... | 93 |
| 3.2.2. | Material properties..... | 96 |
| 3.2.3. | Using sets of properties..... | 106 |
| 3.2.4. | Assigning cost variables..... | 108 |
| 3.3. | Category manager..... | 113 |
| 3.4. | Managing layers..... | 114 |
| 3.4.1. | Working with layers in Layer dialog..... | 115 |
| 3.4.2. | Layer groups..... | 116 |
| 3.4.3. | Activate layers..... | 117 |
| 3.4.4. | Layer properties..... | 118 |
| 3.4.5. | Layer control mode..... | 119 |
| 3.4.6. | Move Objects to New Layer..... | 121 |
| 3.4.7. | Layer Walk tool..... | 121 |
| 3.5. | Floor and building management..... | 123 |
| 3.5.1. | Creating floors..... | 126 |
| 3.5.2. | Activating floors..... | 127 |
| 3.5.3. | Floor properties..... | 127 |
| 3.5.4. | Building properties..... | 128 |
| 3.5.5. | Floor management..... | 129 |
| 3.5.6. | Managing multiple buildings (for experienced users only)..... | 130 |
| 3.5.7. | Horizontal floor management..... | 133 |
| 4. | File management..... | 139 |
| 4.1. | Introduction..... | 139 |
| 4.1.1. | Project management..... | 139 |
| 4.1.2. | Building..... | 140 |
| 4.1.3. | Floor..... | 140 |
| 4.2. | Project management..... | 140 |

| | | |
|-----------|--|------------|
| 4.2.1. | New project..... | 141 |
| 4.2.2. | Search projects..... | 142 |
| 4.2.3. | Opening a project | 143 |
| 4.2.4. | Import and export files | 145 |
| 4.2.5. | Import file into a project | 145 |
| 4.2.6. | Saving project..... | 146 |
| 4.2.7. | Saving project as..... | 146 |
| 4.2.8. | Archive..... | 148 |
| 4.2.9. | Auto save..... | 148 |
| 4.2.10. | Project locking | 149 |
| 4.3. | Project navigator..... | 149 |
| 4.3.1. | Project navigator in details..... | 149 |
| 4.3.2. | How to use the Project Navigator? | 150 |
| 4.3.3. | Preview..... | 151 |
| 4.3.4. | Notes | 151 |
| 4.3.5. | Zones..... | 152 |
| 4.4. | Drawings..... | 155 |
| 4.4.1. | New project or drawing | 156 |
| 4.4.2. | Opening drawings..... | 156 |
| 4.4.3. | Saving drawings | 156 |
| 4.4.4. | Save drawing as | 157 |
| 4.5. | Import/Export | 157 |
| 4.5.1. | ASC Import | 158 |
| 4.5.2. | DXF/DWG import/export | 159 |
| 4.5.3. | 3DS Import | 167 |
| 4.5.4. | PDF import | 169 |
| 4.5.5. | Showroom | 170 |
| 4.5.6. | Indigo render export..... | 170 |
| 4.5.7. | Autodesk FBX export..... | 170 |
| 4.6. | Managing styles..... | 172 |
| 4.6.1. | Styles..... | 172 |
| 4.6.2. | Using styles in the property dialog..... | 172 |
| 4.6.3. | Create new style / new folder | 173 |
| 4.6.4. | How to create a new template file?..... | 173 |
| 4.6.5. | How to load / save a template file?..... | 173 |
| 4.6.6. | How to move template files to another computer?..... | 174 |
| 4.6.7. | Template preferences..... | 175 |
| 4.6.8. | Other operations with templates | 175 |
| 4.6.9. | Handling styles in the Project Navigator | 176 |
| 4.6.10. | Using styles in the Project Navigator by drag and drop | 177 |
| 4.6.11. | Template Import Wizard | 178 |
| 4.7. | Directory settings..... | 178 |
| 4.8. | Group work | 178 |
| 4.8.1. | Group work settings..... | 178 |
| 4.8.2. | Import / Export | 182 |
| 4.8.3. | Project history..... | 183 |
| 5. | Data entry..... | 185 |
| 5.1. | Defining coordinates | 185 |
| 5.1.1. | Defining points with snap grid | 186 |
| 5.1.2. | Defining points by using special points | 186 |
| 5.2. | Defining angle..... | 186 |
| 5.2.1. | Direction by triangle | 186 |
| 5.2.2. | Defining direction with the HV cursor..... | 188 |
| 5.2.3. | Defining direction with arrows | 188 |
| 5.2.4. | Defining direction with Reference toolbar | 188 |
| 5.2.5. | Quick relative polar input | 189 |
| 5.3. | AutoCAD® compatible coordinate input..... | 189 |
| 6. | Views..... | 191 |
| 6.1. | Setting view | 191 |
| 6.1.1. | 3D view graphics settings | 191 |
| 6.1.2. | 3D view graphics settings in Property grid..... | 193 |
| 6.1.3. | View toolbar..... | 196 |
| 6.1.4. | Enlarging with View menu - Zoom | 196 |
| 6.2. | Building 3D models..... | 196 |
| 6.2.1. | 2D -> 3D | 197 |
| 6.2.2. | Creating 3D models with keyboard shortcuts | 201 |
| 6.2.3. | View menu – Refresh 3D..... | 201 |
| 6.3. | 3D views | 201 |

| | | |
|-----------|---|------------|
| 6.3.1. | View menu - View Properties – Define View | 202 |
| 6.3.2. | 3D view toolbar - Named views | 203 |
| 6.3.3. | Perspective view | 203 |
| 6.3.4. | Define view by two points | 206 |
| 6.3.5. | Navigation in 3D | 206 |
| 6.3.6. | Background image | 207 |
| 6.3.7. | Shadows | 207 |
| 6.3.8. | Heliodon | 212 |
| 6.3.9. | Sun settings | 213 |
| 6.3.10. | North direction | 214 |
| 6.3.11. | Walk and Fly | 214 |
| 6.4. | Hide and Isolate Objects | 215 |
| 6.5. | Section | 216 |
| 6.5.1. | Dynamic section | 217 |
| 6.5.2. | Static section - Copy section view content into a 2D window | 223 |
| 6.5.3. | Stepped section in a 3D section window | 224 |
| 6.5.4. | Cutting a 3D model | 225 |
| 6.5.5. | Dynamic section plane | 225 |
| 6.6. | Opening and wall scale factor | 227 |
| 6.7. | Hand-sketching | 229 |
| 6.7.1. | Assign to all | 229 |
| 6.7.2. | Assign | 229 |
| 6.7.3. | Delete | 229 |
| 6.7.4. | Parameters | 230 |
| 6.8. | Magnifier tool | 230 |
| 7. | Selection | 232 |
| 7.1. | Selection with the mouse | 232 |
| 7.1.1. | Selecting one object | 232 |
| 7.1.2. | Selecting more objects | 233 |
| 7.1.3. | Rectangle selection | 233 |
| 7.1.4. | Quick Class selection | 233 |
| 7.1.5. | Quick selection dialog | 234 |
| 7.2. | Selection menu | 234 |
| 7.2.1. | Enter | 235 |
| 7.2.2. | All Objects | 235 |
| 7.2.3. | Select Similar | 235 |
| 7.2.4. | Isolate | 235 |
| 7.2.5. | Selection by window | 235 |
| 7.2.6. | Selection by polygon | 235 |
| 7.2.7. | By fence | 236 |
| 7.2.8. | Selection by properties | 236 |
| 7.2.9. | Common part of selections / And relation: | 239 |
| 7.2.10. | Subtract | 239 |
| 7.2.11. | Last selection | 239 |
| 8. | Editing | 240 |
| 8.1. | General editing commands | 241 |
| 8.1.1. | Undo - Ctrl Z | 241 |
| 8.1.2. | Redo - Ctrl Y | 241 |
| 8.1.3. | Program clipboard | 241 |
| 8.1.4. | Copy bitmap to clipboard | 242 |
| 8.1.5. | Paste bitmap from clipboard | 242 |
| 8.1.6. | Snapshot | 242 |
| 8.1.7. | Move Ctrl + B | 247 |
| 8.1.8. | Copy object Ctrl + U | 247 |
| 8.1.9. | Rotate | 247 |
| 8.1.10. | Copy by matrix | 247 |
| 8.1.11. | Mirror | 249 |
| 8.1.12. | Scale | 250 |
| 8.1.13. | Align | 251 |
| 8.1.14. | Select all | 252 |
| 8.1.15. | Delete single (Ctrl + D) | 252 |
| 8.1.16. | Delete | 252 |
| 8.1.17. | Stretch | 255 |
| 8.1.18. | Offset | 255 |
| 8.1.19. | Trim | 256 |
| 8.1.20. | Break | 257 |
| 8.1.21. | Lengthen | 258 |
| 8.1.22. | Chamfer | 259 |

| | | |
|---------|---|-----|
| 8.1.23. | Fillet | 259 |
| 8.2. | Main axis markers for 3D move | 260 |
| 8.3. | Modification | 260 |
| 8.4. | Specifying properties | 260 |
| 8.5. | Modifying properties | 261 |
| 8.5.1. | Modifying the properties of certain objects | 261 |
| 8.5.2. | Copy properties | 261 |
| 8.5.3. | Layer control mode | 262 |
| 8.5.4. | Create similar | 262 |
| 8.5.5. | Layer | 263 |
| 8.5.6. | Lock architectural object in 3D | 263 |
| 8.5.7. | Substitute material | 265 |
| 8.5.8. | Explode by selection | 266 |
| 8.5.9. | Explode | 267 |
| 8.6. | Command of the Edit Toolbar | 267 |
| 8.6.1. | New | 267 |
| 8.6.2. | Open | 267 |
| 8.6.3. | Save | 267 |
| 8.6.4. | Print | 267 |
| 8.6.5. | Cut | 267 |
| 8.6.6. | Copy | 267 |
| 8.6.7. | Paste | 267 |
| 8.6.8. | Undo | 267 |
| 8.6.9. | Redo | 267 |
| 8.6.10. | Copy properties | 267 |
| 8.6.11. | Create similar | 268 |
| 8.6.12. | Delete | 268 |
| 8.6.13. | Delete between intersections | 268 |
| 8.6.14. | Trim first object | 268 |
| 8.6.15. | Trim both objects | 268 |
| 8.6.16. | Define section | 268 |
| 8.7. | Commands of the 2D edit toolbar | 268 |
| 8.7.1. | Offset | 269 |
| 8.7.2. | Trim both | 269 |
| 8.7.3. | Trim first | 269 |
| 8.7.4. | Trim multiple | 269 |
| 8.7.5. | Delete area | 269 |
| 8.7.6. | Delete between intersections | 269 |
| 8.7.7. | Break | 269 |
| 8.7.8. | Lengthen by number | 269 |
| 8.7.9. | Chamfer | 270 |
| 8.7.10. | Fillet | 270 |
| 8.8. | Commands of the Move toolbar | 270 |
| 8.8.1. | Move | 270 |
| 8.8.2. | Mirror | 270 |
| 8.8.3. | Rotate | 270 |
| 8.8.4. | Scale | 270 |
| 8.8.5. | Copy object | 271 |
| 8.8.6. | Duplicate and mirror | 271 |
| 8.8.7. | Duplicate and rotate | 271 |
| 8.8.8. | Duplicate and scale | 271 |
| 8.8.9. | Multiply | 271 |
| 8.8.10. | Array | 271 |
| 8.8.11. | Stretch | 272 |
| 8.8.12. | Move with shift and rotate | 272 |
| 8.8.13. | Duplicate with shift and rotate | 272 |
| 8.8.14. | Align | 272 |
| 8.9. | Specifying profile | 272 |
| 8.9.1. | Polygon | 272 |
| 8.9.2. | Rectangle HV | 273 |
| 8.9.3. | Rectangle | 273 |
| 8.9.4. | Circle | 273 |
| 8.9.5. | Circle 3P | 273 |
| 8.9.6. | Point of profile | 273 |
| 8.9.7. | Chain one by one | 273 |
| 8.9.8. | Select item | 273 |
| 8.9.9. | Editable profile | 274 |
| 8.9.10. | Select from list | 274 |
| 8.9.11. | Last value | 275 |

| | | |
|-----------|--|------------|
| 9. | Architecture | 276 |
| 9.1. | Wall..... | 276 |
| 9.1.1. | Wall properties..... | 276 |
| 9.1.2. | Creating walls | 284 |
| 9.1.3. | Editing walls..... | 287 |
| 9.1.4. | Modifying wall profiles..... | 295 |
| 9.1.5. | Other commands to modify walls..... | 301 |
| 9.2. | Structural and decorative objects | 307 |
| 9.2.1. | Column | 308 |
| 9.2.2. | Beam | 312 |
| 9.2.3. | Sweep - Move profile along path | 313 |
| 9.2.4. | Sweep by points in 3D | 315 |
| 9.2.5. | Place object in wall | 315 |
| 9.2.6. | Extract object from wall..... | 316 |
| 9.2.7. | Modifying column, beam and decoration | 316 |
| 9.2.8. | Place plinth | 317 |
| 9.2.9. | Define custom plinth | 317 |
| 9.2.10. | Closed chain of beams | 317 |
| 9.2.11. | Open chain of beams..... | 318 |
| 9.2.12. | Truss..... | 318 |
| 9.3. | Door, window | 320 |
| 9.3.1. | Door/window properties | 321 |
| 9.3.2. | Installing a door/window | 336 |
| 9.3.3. | Edit or modify doors/windows | 342 |
| 9.3.4. | Define custom door/window..... | 351 |
| 9.3.5. | Define custom door/window - Define by 2D hatches | 352 |
| 9.3.6. | Define custom door/window - from a 3D model | 355 |
| 9.3.7. | Door / Window wizard..... | 357 |
| 9.3.8. | Corner window..... | 370 |
| 9.3.9. | Openings in the Curtain wall..... | 376 |
| 9.3.10. | Converting object to door / window | 377 |
| 9.4. | Slab | 380 |
| 9.4.1. | Slab properties..... | 380 |
| 9.4.2. | Creating slabs..... | 385 |
| 9.4.3. | Editing commands for whole slabs | 388 |
| 9.4.4. | Editing commands for slab layers | 390 |
| 9.4.5. | Creating and editing slab holes | 391 |
| 9.4.6. | Decoration | 393 |
| 9.4.7. | Modifying slab profiles | 393 |
| 9.4.8. | Split the slab | 395 |
| 9.4.9. | Assign materials | 395 |
| 9.5. | Room book | 396 |
| 9.5.1. | Room book inside a wall and Room book wizard | 397 |
| 9.5.2. | Serial placing of more room books | 413 |
| 9.5.3. | Room book inside a free polygon | 413 |
| 9.5.4. | Modify the boundary of the room book | 413 |
| 9.5.5. | Calculate room book outside a building | 414 |
| 9.5.6. | Diagonal measuring..... | 414 |
| 9.5.7. | Room partitioning and dimensioning..... | 414 |
| 9.5.8. | Summarize flats..... | 415 |
| 9.5.9. | Show Room volume solid | 416 |
| 9.5.10. | Refresh all room book..... | 417 |
| 9.5.11. | Colouring rooms by area | 417 |
| 9.6. | Stair | 419 |
| 9.6.1. | Stair standards..... | 419 |
| 9.6.2. | Stair properties | 419 |
| 9.6.3. | Creating stairs | 424 |
| 9.6.4. | Modification of the stair geometry | 432 |
| 9.7. | Balustrades..... | 436 |
| 9.7.1. | Balustrade properties and creating balustrades | 437 |
| 9.7.2. | Creating new balusters with solid modelling | 444 |
| 9.7.3. | Modifying balustrades..... | 445 |
| 9.7.4. | Edit balustrades | 446 |
| 9.8. | Roof | 450 |
| 9.8.1. | Roof properties | 451 |
| 9.8.2. | Creating roofs | 466 |
| 9.8.3. | Modifying roof properties | 479 |
| 9.8.4. | General editing of roof geometry | 480 |
| 9.8.5. | Editing roof nodes..... | 487 |

| | | |
|----------|---|-----|
| 9.8.6. | Editing structural nodes | 489 |
| 9.8.7. | Roof – Edit layers | 490 |
| 9.8.8. | Roof hole | 491 |
| 9.8.9. | Roof framing | 492 |
| 9.8.10. | Roof - Information | 495 |
| 9.8.11. | Dormer roof | 498 |
| 9.8.12. | Gutter and downspout | 505 |
| 9.8.13. | Roof Survey | 506 |
| 9.8.14. | Same height | 514 |
| 9.8.15. | Asymmetric Roof: Different elevation..... | 515 |
| 9.9. | Terrain | 517 |
| 9.9.1. | Terrain properties | 517 |
| 9.9.2. | Visibility on different floors | 518 |
| 9.9.3. | 3D representation | 520 |
| 9.9.4. | Opening and creating terrains | 521 |
| 9.9.5. | Terrain from file..... | 521 |
| 9.9.6. | Creating and modifying plateaus and roads | 526 |
| 9.9.7. | Vertical shift of road/discontinuity line | 529 |
| 9.9.8. | Profile section definition of road | 530 |
| 9.9.9. | Road node height edition on layout | 531 |
| 9.9.10. | Terrain zone | 531 |
| 9.9.11. | Terrain change elevation for all terrain points | 533 |
| 9.9.12. | Terrain 3D commands | 534 |
| 9.9.13. | Modify terrain | 536 |
| 9.10. | Concept 3D..... | 544 |
| 9.10.1. | Creating Building volume | 544 |
| 9.10.2. | Editing volume model | 546 |
| 9.11. | Objects and profiles | 547 |
| 9.11.1. | Object properties and placement | 547 |
| 9.11.2. | Creating objects | 553 |
| 9.11.3. | Sprites in photorealistic view | 554 |
| 9.11.4. | Modifying objects | 556 |
| 9.11.5. | Creating profiles | 558 |
| 9.11.6. | 3D Warehouse | 560 |
| 9.11.7. | Furniture by photo | 562 |
| 9.12. | Freeform surfaces..... | 566 |
| 9.12.1. | Working with Freeform Surfaces..... | 567 |
| 9.12.2. | Layout and 3D model | 567 |
| 9.12.3. | Physics | 567 |
| 9.12.4. | Grid patterns | 567 |
| 9.12.5. | Control lines | 568 |
| 9.12.6. | Cables | 568 |
| 9.12.7. | Representation | 568 |
| 9.12.8. | Thickness | 569 |
| 9.12.9. | Structure | 569 |
| 9.12.10. | Creating a Freeform Surface | 570 |
| 9.12.11. | Modifying the 3D model | 570 |
| 9.12.12. | Popup menu commands | 570 |
| 9.12.13. | Marker menu commands | 571 |
| 9.12.14. | Settings..... | 572 |
| 9.12.15. | General settings..... | 572 |
| 9.12.16. | Representation in 2D | 573 |
| 9.12.17. | Geometry | 573 |
| 9.12.18. | Representation in 3D | 573 |
| 9.12.19. | Grid Layout | 574 |
| 9.12.20. | Physics | 574 |
| 9.12.21. | Structure | 574 |
| 9.13. | Indoor Tools..... | 576 |
| 9.13.1. | Pre-defined room | 576 |
| 9.13.2. | Room Maker | 577 |
| 9.13.3. | Mood board | 592 |
| 9.13.4. | Picture on wall | 593 |
| 9.13.5. | Soft furnishing – Window decoration and blinds | 595 |
| 9.13.6. | Soft furnishing - Other..... | 606 |
| 9.13.7. | Soft furnishing – External louvre | 608 |
| 9.13.8. | Sanitary Ware | 610 |
| 9.13.9. | Electrical accessories | 614 |
| 9.13.10. | Moulding | 618 |
| 9.14. | Furniture design..... | 618 |
| 9.14.1. | Cabinet wizard | 618 |

| | | |
|------------|---|------------|
| 9.14.2. | Worktop | 633 |
| 9.14.3. | Cabinet legend | 635 |
| 9.15. | Outdoor Tools | 637 |
| 9.15.1. | External louvres | 637 |
| 9.16. | Light Sources | 641 |
| 9.16.1. | Light Source Types | 641 |
| 9.16.2. | Light browser | 641 |
| 9.16.3. | Creating a light source | 645 |
| 9.16.4. | Creating a lamp | 646 |
| 9.16.5. | Managing lamps | 646 |
| 9.16.6. | Editing lamps | 647 |
| 9.16.7. | Editing light sources | 649 |
| 9.16.8. | Representation of light sources | 650 |
| 9.16.9. | Automatic light management | 651 |
| 9.16.10. | Lights on the rendered images | 652 |
| 9.16.11. | Light sources – compatibility | 652 |
| 9.16.12. | Light sources - Selection | 653 |
| 9.17. | Modelling tools | 654 |
| 9.17.1. | Loft | 654 |
| 9.17.2. | Smart Object Parts | 662 |
| 9.17.3. | Furniture Assembly | 671 |
| 10. | Dimension | 676 |
| 10.1. | Dimension properties | 676 |
| 10.1.1. | General dimension properties, text, arrowhead | 677 |
| 10.1.2. | Text parameters | 678 |
| 10.1.3. | Format parameters | 680 |
| 10.2. | Creating dimensions | 682 |
| 10.2.1. | Quick dimensioning | 682 |
| 10.2.2. | Wall dimensioning | 683 |
| 10.2.3. | Distance dimensioning | 685 |
| 10.2.4. | Elevation on floor plan | 689 |
| 10.2.5. | Elevation on section | 690 |
| 10.2.6. | Door/Window | 691 |
| 10.2.7. | Deleting door/window dimension | 691 |
| 10.2.8. | Labels | 692 |
| 10.2.9. | Aligned | 692 |
| 10.2.10. | Length (horizontal, vertical) | 692 |
| 10.2.11. | Length aligned | 692 |
| 10.2.12. | Angle | 693 |
| 10.2.13. | Angle (Horizontal) | 693 |
| 10.2.14. | Angle (Vertical) | 693 |
| 10.2.15. | Parallel lines | 694 |
| 10.2.16. | Arc - Dimension | 694 |
| 10.2.17. | Diameter | 694 |
| 10.2.18. | Diameter at given angle | 694 |
| 10.2.19. | Arc length | 695 |
| 10.2.20. | Area | 695 |
| 10.2.21. | Aligned 3D | 696 |
| 10.2.22. | Length 3D | 696 |
| 10.3. | Modify dimensions | 696 |
| 10.3.1. | Moving | 697 |
| 10.3.2. | Moving dimension string | 697 |
| 10.3.3. | Deleting dimension string | 697 |
| 10.3.4. | Moving a part | 697 |
| 10.3.5. | Moving text | 698 |
| 10.3.6. | Inserting dimension | 698 |
| 10.3.7. | Deleting dimension | 698 |
| 10.3.8. | Aligning | 698 |
| 10.3.9. | Parallel distance | 699 |
| 10.3.10. | Stretching | 699 |
| 10.3.11. | Transforming with object | 699 |
| 10.3.12. | Format text | 700 |
| 10.3.13. | Second text | 700 |
| 10.3.14. | Delete from extension line | 700 |
| 10.3.15. | Quick graphical editing of dimensioning | 701 |
| 10.3.16. | Dimension - Remove associativity | 701 |
| 11. | 2D objects | 702 |
| 11.1. | Point | 702 |

| | | |
|----------|--|-----|
| 11.1.1. | Point properties..... | 702 |
| 11.1.2. | Creating points..... | 703 |
| 11.2. | Line..... | 704 |
| 11.2.1. | Line properties..... | 705 |
| 11.2.2. | Creating lines..... | 708 |
| 11.2.3. | Modify line | 713 |
| 11.2.4. | 3D extension of line nature objects..... | 714 |
| 11.3. | Polyline | 715 |
| 11.3.1. | Polyline properties | 716 |
| 11.3.2. | Creating polylines | 717 |
| 11.3.3. | Modify polyline..... | 720 |
| 11.3.4. | Modify Spline | 722 |
| 11.4. | Circle and arc | 723 |
| 11.4.1. | Circle and arc properties..... | 724 |
| 11.4.2. | Creating circles..... | 725 |
| 11.4.3. | Creating arcs | 727 |
| 11.4.4. | Modify Circle and Arc..... | 729 |
| 11.5. | Ellipse and Elliptic arc..... | 731 |
| 11.5.1. | Ellipse and elliptic arc properties | 731 |
| 11.5.2. | Creating ellipse..... | 732 |
| 11.5.3. | Editing Ellipse and elliptic arc | 733 |
| 11.6. | Text..... | 734 |
| 11.6.1. | Text properties..... | 734 |
| 11.6.2. | Creating texts | 736 |
| 11.6.3. | Modify texts | 744 |
| 11.7. | Hatch | 745 |
| 11.7.1. | Hatch properties | 745 |
| 11.7.2. | Hatch types..... | 751 |
| 11.7.3. | Creating hatch | 753 |
| 11.7.4. | Editing hatch..... | 756 |
| 11.8. | Raster images | 760 |
| 11.8.1. | Insert raster image..... | 760 |
| 11.8.2. | Image manager..... | 761 |
| 11.8.3. | Save as raster image..... | 763 |
| 11.8.4. | Editing raster images | 763 |
| 11.8.5. | Image editor..... | 768 |
| 11.8.6. | Google Earth Plugin..... | 774 |
| 11.9. | 2D group..... | 776 |
| 11.9.1. | Group properties..... | 778 |
| 11.9.2. | Creating group..... | 780 |
| 11.9.3. | Creating group from architectural objects | 781 |
| 11.9.4. | Insert group | 782 |
| 11.9.5. | Group options | 785 |
| 11.9.6. | Create local group | 788 |
| 11.9.7. | Create hatch pattern | 789 |
| 11.9.8. | Define line type pattern..... | 789 |
| 11.9.9. | Create line type..... | 790 |
| 11.9.10. | Activate..... | 793 |
| 11.9.11. | Close group | 793 |
| 11.9.12. | Copy geometry to groups | 793 |
| 11.9.13. | Continue tiling popup menu | 794 |
| 11.10. | Detailed view | 794 |
| 11.11. | External references..... | 794 |
| 11.11.1. | Load external reference..... | 795 |
| 11.11.2. | External reference manager | 795 |
| 11.11.3. | XREF Shortcut menu..... | 797 |
| 11.11.4. | Move external reference command | 798 |
| 11.12. | Attaching photo and description to objects | 798 |
| 11.12.1. | Attaching photo and description to objects | 799 |
| 11.12.2. | Viewing attached photos and descriptions..... | 799 |

12. Inquiry 800

| | | |
|---------|-------------------------|-----|
| 12.1. | Query information | 800 |
| 12.1.1. | Entity Info..... | 800 |
| 12.1.2. | 3D object info..... | 801 |
| 12.1.3. | List of Objects | 801 |
| 12.1.4. | Perimeter..... | 802 |
| 12.1.5. | Length by chain | 802 |
| 12.1.6. | Distance..... | 803 |
| 12.1.7. | Querying angle | 803 |

| | | |
|------------|---|------------|
| 12.1.8. | Measured angle | 803 |
| 12.1.9. | Coordinate | 803 |
| 12.2. | Quantity Take-Off | 803 |
| 12.2.1. | Graphic list..... | 804 |
| 12.2.2. | List by selection | 805 |
| 12.2.3. | Building list | 805 |
| 12.2.4. | Room book consignment | 807 |
| 12.2.5. | Tiling list..... | 809 |
| 12.2.6. | Terrain consignment | 810 |
| 12.3. | Legend of materials | 810 |
| 13. | Rendering | 812 |
| 13.1. | Introduction | 812 |
| 13.1.1. | 64 bit rendering support..... | 812 |
| 13.1.2. | More about rendering | 812 |
| 13.1.3. | Usage of rendering | 812 |
| 13.1.4. | Rendering Settings | 813 |
| 13.1.5. | Render modes | 818 |
| 13.1.6. | Render list – batch render | 818 |
| 13.2. | DirectX 3D | 820 |
| 13.2.1. | DirectX settings..... | 821 |
| 14. | Printing..... | 824 |
| 14.1. | Plot Layout..... | 824 |
| 14.1.1. | Prepare plot layout..... | 824 |
| 14.1.2. | Project Navigator – Drag and Drop drawings | 825 |
| 14.1.3. | Import drawing | 826 |
| 14.1.4. | Modify properties of drawing | 827 |
| 14.1.5. | Copy with rectangle/polygon..... | 827 |
| 14.1.6. | Paste on layout..... | 827 |
| 14.1.7. | Edit drawing parts | 829 |
| 14.1.8. | Open plot stamp | 831 |
| 14.1.9. | Fill/modify plot stamp | 832 |
| 14.1.10. | Refresh Layout | 832 |
| 14.1.11. | Refresh One by One..... | 833 |
| 14.2. | Print to printer | 833 |
| 14.3. | Printing directly in PDF format | 838 |
| 14.4. | Printing the Image 3D image window | 839 |
| 14.5. | Print queue | 839 |
| 14.5.1. | Current job list | 840 |
| 14.5.2. | Print preview | 840 |
| 14.5.3. | Print job information..... | 841 |
| 14.5.4. | Controllers | 841 |
| 14.5.5. | Start printing | 841 |
| 15. | Add-On | 842 |
| 15.1. | Tiling | 842 |
| 15.1.1. | Tiling Properties..... | 843 |
| 15.1.2. | Background area | 843 |
| 15.1.3. | Add New Background Area | 844 |
| 15.1.4. | Decors and Borders..... | 844 |
| 15.1.5. | Edit Background Area..... | 845 |
| 15.1.6. | Move Background Area | 845 |
| 15.1.7. | Copy Background Area..... | 846 |
| 15.1.8. | Delete Background Area..... | 846 |
| 15.1.9. | Subtract Tiles..... | 846 |
| 15.1.10. | Subtract Other Area..... | 846 |
| 15.1.11. | Tiling..... | 846 |
| 15.1.12. | Add Tiles..... | 847 |
| 15.1.13. | Add One Tile..... | 850 |
| 15.1.14. | Add Custom Tile | 850 |
| 15.1.15. | Tile Properties | 851 |
| 15.1.16. | Redistribute Tiles..... | 852 |
| 15.1.17. | Move Tiles | 852 |
| 15.1.18. | Copy Tiles..... | 852 |
| 15.1.19. | Delete Tiles..... | 852 |
| 15.1.20. | Delete Tiles of Same Type | 852 |
| 15.1.21. | Modify material of background areas and tiles | 852 |
| 15.1.22. | Modify Material | 852 |

| | | |
|----------|---|-----|
| 15.1.23. | Reposition Material | 853 |
| 15.1.24. | Resize material | 853 |
| 15.1.25. | Tiling - Show tile name on tiles | 853 |
| 15.1.26. | Tiling on any 3D surfaces | 854 |
| 15.1.27. | Copy tiling between surfaces | 856 |
| 15.1.28. | Listing tiles | 857 |
| 15.1.29. | Tile Patterns | 858 |
| 15.2. | Drawing comparison | 869 |
| 15.2.1. | Comparison of two floor plans | 869 |
| 15.2.2. | Comparison of two 2D/3D drawings | 870 |
| 15.3. | Calibration and vectorization | 871 |
| 15.3.1. | Calibrate Raster - Fast | 873 |
| 15.3.2. | Calibrate Raster - New | 874 |
| 15.3.3. | Calibrate Raster - Continue | 875 |
| 15.3.4. | Vectorization of images | 875 |
| 15.4. | Inserting 3D model in photo's context | 877 |
| 15.4.1. | Method I – Estimation | 878 |
| 15.4.2. | Method II. - – Known Distances | 878 |
| 15.4.3. | Create photorealistic image | 881 |
| 15.5. | Reconstruction – Survey | 883 |
| 15.5.1. | Specifying room properties | 883 |
| 15.5.2. | Survey | 884 |
| 15.5.3. | Edit and modify rooms | 895 |
| 15.6. | Reconstruction - Photogrammetry | 899 |
| 15.6.1. | Introduction | 899 |
| 15.6.2. | Define orthogonal view | 901 |
| 15.6.3. | Find edges – General | 902 |
| 15.6.4. | Find HV edges | 903 |
| 15.7. | Animation | 903 |
| 15.7.1. | Creating animation by path | 904 |
| 15.7.2. | Create animation | 910 |
| 15.7.3. | Virtual reality | 912 |
| 15.7.4. | Solar access protection | 914 |
| 15.7.5. | Shadow animation | 918 |
| 15.8. | Virtual Staging | 919 |
| 15.8.1. | Importing raster image | 919 |
| 15.8.2. | Setting up reference 3D model | 919 |
| 15.8.3. | Setting up perspective | 920 |
| 15.8.4. | Refining perspective | 921 |
| 15.8.5. | Rendering | 921 |

1. Introduction

1.1. Definition

ARCHLine.XP® is a Building Information Modeller, which supports the creation of planning- and implementation documentation, tender plans, interior design plans, calculation of energy performance of buildings, and quantity take-offs.

1.1.1. Introduction

This manual provides detailed information on ARCHLine.XP® installation, basic principles and commands.

This documentation represents all the functionality of ARCHLine.XP®. Functionality that is specific to Studio, Standard, Interior or other versions is marked.

There are several tutorials that help you to increase your working knowledge. These tutorials are available on the Internet in downloadable PDF format from the www.archlinexp.com web site.

You can also find the Training - Video Tutorials on that web site. This video series helps to learn how to use the program from the beginning till the advanced functions.

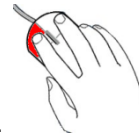
1.1.2. Principles

ARCHLine.XP® provides a very advanced designing tool for the architect and interior designer that is efficient in executing even the most complicated drawing tasks, and as an easy-to-use tool assists better productivity in design work from the early stages of a construction project through the project lifecycle to the construction documentation. The program facilitates planning in a highly-standard, technically correct, exigent way, supports 3D modelling, photorealistic visualization and does all this focusing on the architects and interior designer approach.

ARCHLine.XP® stores all model information in one database, so you are able to work on floor-plans, views and sections even with your colleagues together. Every part of your project updates automatically, so that the plan and the documentation are one coherent unit through the lifecycle of it.

1.1.3. Manual conventions

- ❖ In the text, Menus, commands, keys, and controls will be highlighted in *italic*.



- ❖ "Click the mouse" always means **left-click** unless otherwise stated.
- ❖ "Double Click the mouse" always means press quickly twice the **left** button of the mouse.
- ❖ **SHIFT-click** means when you hold down the **Shift** key while you click with your mouse.
- ❖ **CTRL-click** means when you hold down the **Ctrl** key while you click with your mouse.
- ❖ "Drag the mouse" means **click** the mouse and move it while holding the button depressed. Release the mouse button when the desired effect has been achieved.
- ❖ When describing keyboard operations, **CTRL-key** always means hold down the **Ctrl** key while pressing the designated key.

1.2. Installing ARCHLine.XP

ARCHLine.XP® is available either on DVD or via Internet download. Please follow the appropriate instructions.

1.2.1. System requirements

To run ARCHLine.XP® the following software and hardware conditions are needed:

For PC Users:

Microsoft Windows 32 bit or 64 bit versions: Windows XP SP3 (Home or Professional Edition) or Windows 7 or Windows 8. (Windows Vista is NOT recommended.),

Intel Core 2 or AMD Phenom processor or better,

1.5 GB available hard disk space on the installation drive and at least an additional 1.5 GB free space on the system drive (this is the C:\ drive in most cases),

Minimum 4 GB RAM,

Video card with DirectX 9.0c support. Suggestion: NVIDIA 6600 or higher or ATI X 600 series or higher with minimum 256 MB dedicated memory,

Integrated Intel video cards are NOT recommended, except Intel HD Graphics 2000 or better!

SVGA graphical visualization with 1024x768 resolution or higher,

2 button, scroll-wheel mouse,

For MAC Users:

Intel powered MAC, running MAC OS X v10.5.8 "Leopard" or MAC OS X v10.6.3 or later,

[Boot Camp](#) or [Parallels Desktop](#) 6 and later* or [VMware Fusion 6](#) and later*,

At least [Microsoft Windows](#) XP with SP3, installed on a virtual hard disk or a physical Boot Camp partition with all necessary drivers,

Minimum 2GB RAM or more (at least 1.5 GB for the virtualization), **

1.5 GB or additional free hard disk space on the virtual or physical hard disk,

2 button, scroll-wheel mouse,

For the latest system requirements please visit <http://www.archlinexp.com/interior/system> web site.

1.2.2. DirectX support

ARCHLine.XP® requires DirectX support on version 9.0.c level.

DirectX is included as an important part of the Windows operating system. Most of the installed Windows operating system contains the appropriate version of DirectX.

If for any reason your computer is not compatible with DirectX version 9.0.c follow the guide below.

How to download and install DirectX?

Please visit the website <http://support.microsoft.com/kb/179113>

Before you can update the graphics driver, you need to know what kind of graphics card you have. For more information about how to find out what graphics card you have in your PC, do the following.

The easiest way is to run the DirectX Diagnostic Tool:

- Click "Start."
- On the "Start" menu, click "Run."
- In the "Open" box, type "dxdiag" (without the quotation marks), and then click "OK."
- The DirectX Diagnostic Tool opens. Click the "Display" tab.

- On the "Display" tab, information about your graphics card is shown in the "Device" section. You can see the name of your card, as well as how much video memory it has.

Once you know the kind of graphics card you have, visit the manufacturer's website to download the latest driver. Here are links for downloading drivers from the most common graphics card manufacturers:

NVIDIA: <http://www.nvidia.com/content/drivers/drivers.asp>

ATI from AMD: <http://ati.amd.com/support/driver.html>

Intel: <http://support.intel.com/support/graphics/>

1.2.3. Installing the software

Installing ARCHLine.XP is really simple and straight forward. It only takes a couple of minutes and you are ready to go. There is no need for any code during the installation of ARCHLine.XP. The software is installed as trial version automatically.

You can install a 32-bit version of ARCHLine.XP on a computer running a 32-bit or 64-bit version of Windows operating system.

You can install a 64-bit version of ARCHLine.XP on a computer running a 64-bit version of Windows operating system. See the notes on Chapter 64-bit support.

If you run the ARCHLine.XP first time after install, you will be asked to use the software as Architecture or Interior Design version. Choose it according to your purchased version or as a focus of your interest if you use the software in trial mode.

Go to the website <http://www.archlinexp.com/interior/download> or <http://www.archlinexp.com/downloads> and follow the instruction to download the installation set to your computer. Click the download link provided by email. When prompted, click "Open" or "Run" if you want to install the program immediately. The installation wizard will launch. Follow the guided prompts on the installation wizard.

After having installed the software press the Finish button. The program can be launched from the Start menu.

1.2.4. Install the LAN (local area network) version

In the case of network version the user needs only one USB hard lock. Using this hard lock the defined number of programs can be loaded through your local network according to the contract you signed. Follow these steps:

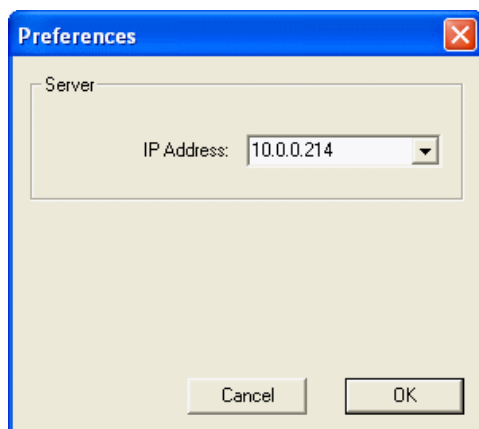
- ❖ Install the hard lock according to chapter *Installing the hard lock* on the computer that is going to be the server of ARCHLine.XP® program.
- ❖ Insert the hardlock into the USB port of this computer.
- ❖ Install the **AlServer** program on this computer.
- ❖ Install one by one the ARCHLine.XP® program on the computers of your network.

Install the AL-server

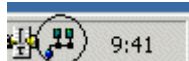


You need to log in as **Administrator!**

- Insert ARCHLine.XP® CD-ROM into the CD reader.
- Select the AL-server folder on the CD with the help of the explorer; double click on the **Setup.exe** file within the folder. The system starts installing the AL-server program.
- Choose the **Software** install option. If you want to install debug functions choose **Custom** option.
- If the installation was successful click on the **Start menu - Programs - Quick launch - AlserverXP** icon. This is necessary only for the first launch.
- Select the appropriate IP address from the appearing dialog. If there are more than one IP addresses in the table, contact the administrator.



After this the Alserver becomes activated, its icon appears on the Quick launch:



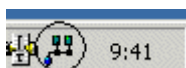
If LAN hardlock is not inserted in the USB port, Alserver will not be running!

Install ARCHLine.XP®

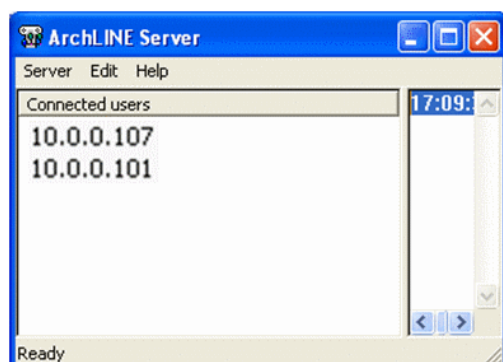
Follow the section 1.2.3.

If you have finished installation and launched ARCHLine.XP® on the computers, return to the computer on which the Alserver program is running.

Double click on the icon of the Quick launch:



In the appearing dialog you can see how many ARCHLine.XP® programs are running, and on which computers.



1.3. Registration

You can find your unique serial code inside the ARCHLine.XP package—or in a confirmation e-mail if you purchased and downloaded ARCHLine.XP online.

You have 30 days after installing ARCHLine.XP to register your serial code. If this 30-day period expires before you complete registration, some ARCHLine.XP features will stop working until you enter your serial code (demo mode).

To registrate the software, open the dialog by clicking the Help menu, and then clicking „Buy now...” Type your ARCHLine.XP serial code. Click Ok, and then follow the instructions. ARCHLine.XP must be restarted in order to complete the process.

1.4. Activation

You have to activate ARCHLine.XP once or periodically according to your Perpetual or Subscription financial model. To activate the software, open the dialog by clicking the Help menu, and then clicking „Activate Product”.

Activation requires an Internet connection to connect to the ARCHLine.XP web server on the Internet.

If you have Internet connection you can select the **Activation via Internet** option and then follow the instructions.

Attention! The Serial code is NOT the same as Activation code!

If you have no Internet connection select the **Activation via e-mail** option, or call the phone number below the button.

Type your ARCHLine.XP activation code obtained from your provider. Click Ok, and then follow the instructions.

If you have no connection then you can choose the option to activate by telephone.

Frequently Asked Questions

Is product activation the same as registration?

No. They are different procedures, but linked to each other. Registration is a separate process where you register your unique serial code which prevents unauthorized use of your license by another person. The activation verifies that your serial code is valid and the software has been activated only on eligible computers.

I have entered my serial code but I cannot press the OK button to do registration. Why is the application not being registered?

Verify your serial code once again. The ARCHLine.XP cannot accept serial codes for 2012, 2011 or earlier releases. The OK button will be active only if you type the appropriate 16 digit serial code accurately.

How often will the software connect to the activation server via the Internet?

ARCHLine.XP connects to its activation server when it is first installed, when it is registered and activated. You can enable or disable Internet connection to activation server by clicking the Help menu and then clicking „Check for Updates“. If you have no Internet connection you have to register and activate manually by phone or by e-mail. However if you disable Internet connection you will not receive notification of important updates.

Does the internet connection speed affect activation? Will dial-up access work?

The amount of data transferred during activation is very small. Any stable internet connection will work. Slower connections such as dial-up access may take slightly longer to complete the activation steps.

During activation what information is passed to the server?

No personal information or information about your computer configuration is transferred. There is a one-way hash* of some machine configuration data, your serial code, and the optional email address sent to the server. If you do not provide the optional information (email address and registration information) then no personal information will be transferred.

*One-way Hash: Codes that identify parts of the computer are put through a special function that turns the codes into a code number that is unique to your computer but cannot be deciphered to determine what those components are. Only this hash value is sent to the activation server and not the details on the computer parts.

Can I move my license to another computer?

Yes, this can be done easily. ARCHLine.XP's license specifically authorizes you to use the software on more than one computer if you are using hard lock protection. For example, you can install ARCHLine.XP's on your office computer and your laptop. Simply install the software on the other machine and click on the "Buy now" and later the "Activate product" button. You have to enter the same serial code and activation code. The software will run properly on that computer where you plug in the Hard lock protection

If you are using software protection without hard lock device you can use the software on one computer only. If you wish to move the software to another computer you should use the Activation via e-mail option to receive a new activation code valid for the computer where you move your license. Activating it on the second computer will automatically deactivate the license for the first computer.

What is the serial code for?

The serial code uniquely identifies your license. You will need the serial code if you ever need to reactivate your software (such as after a disk reformat and reinstall or moving the software to a new machine). The serial code will not change when you reactivate your software. We suggest that you write the serial code down in some permanent location.

What is the email address for and is it mandatory?

The email address on the activation dialog is mandatory if you choose the Activation via email button. You will be able to activate without email address if you choose activation via phone. Your email address will not be sold or provided to any third party.

What if I have forgotten my serial code?

During a registration the previously provided serial code is required. If the serial code has been lost and cannot be recovered (because an email address was not provided, or the email address is no longer valid) please contact us via our support form. We will be happy to reset your password.

Will changes to my computer cause my application to stop working?

There are no changes that will cause a permanent disabling of the software. Major changes (disk reformat being one such major change) will mean that you need to reactivate the software. If you have your serial code, this will be a fast and easy process.

I wish to do an online activation but my firewall is set up to block such requests. What are the firewall settings?

The following is the information that you need to setup your firewall:

Server IP address: archlinexp.com

Port: 80 (Standard HTTP)

Domain: archlinexp.com

Why does ARCHLine.XP revert to demo mode?

There might be several reasons:

You forgot to register your serial code.

You forgot to activate your license within the allowed time.

You forgot to plug in your hard lock.

1.5. 64-bit and multi-core processor support

Beginning with Version 2013 release, CadLine offers both 32 and 64-bit versions of ARCHLine.XP application.

1.5.1. Why 64-bits?

Modern software development and data processing is running up against a built-in memory limitation. 32-bit versions of Microsoft Windows can only allocate a maximum of 2 GB of memory to each running process, regardless how much real or virtual memory is available on a particular machine. It means that large projects over this limit cannot be open at all.

64-bit system is not subject to the same memory limitation. Currently, the 64-bit version of Microsoft Windows 7 operating system supports up to 192 GB of installed memory. In practice, the maximum size of a large project is limited only by this huge amount of installed physical memory.

1.5.2. Frequently Asked Questions about 64-bit Software

Below are answers to the most frequently asked questions about 32-bit vs. 64-bit software.

Will a 32-bit application run on a 64-bit version of Windows?

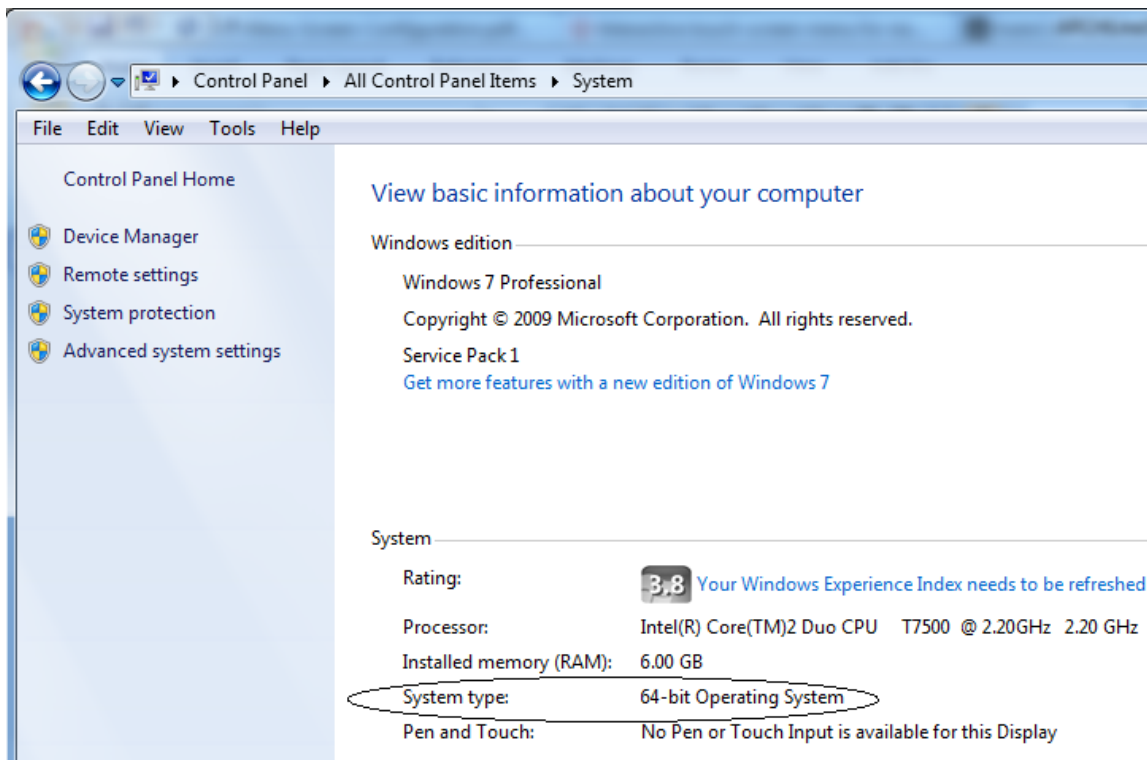
Yes.

Will a 64-bit application run on a 32-bit version of Windows?

No.

How can I tell if my system is running a 32 or 64-bit version of Windows?

Open the Windows Control Panel, Select Classic View (Vista) or Icons (Windows 7), then open the System icon. The line labelled System type will specify either "32-bit Operating System" or "64-bit Operating System."

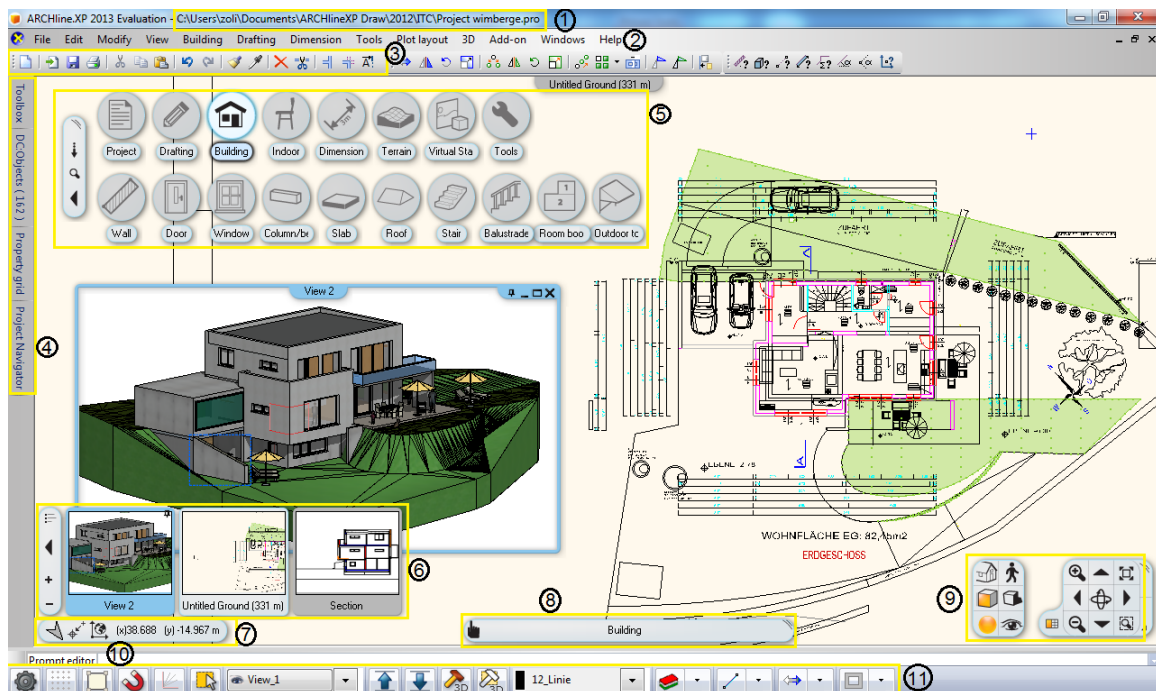


My system is running a 64-bit version of Windows. Should I use 32-bit or 64-bit software applications?

It depends. A 64-bit application will require more memory to open the same file than a 32-bit application, because the structures automatically become larger. The memory consumption grows by about 30 to 50%. If you have more memory the 64-bit version is recommended to install.

2. Interface

ARCHLine.XP comes with improved modern user interface. OpenGL and DirectX graphic engines are equally supported.



2.1. User interface components:

- | | |
|----------------------------------|---|
| 1. Application Title: | Displays the name of the current project. |
| 2. Menu bar: | Collection of ARCHLine.XP commands. Commands in the menu bar can be accessed through shortcuts. |
| 3. Quick access toolbars: | The Quick Access Toolbar is a system toolbar that contains a set of commands. You can move the Quick Access Toolbar freely on other location |
| 4. Tool Palettes: | It contains the Toolbox, Design Centre, Project Navigator and Properties Panel. |
| 5. Screen menu board: | touch-screen like menu display |
| 6. Project container: | List of all drawings within the current project. Click one of the objects in the list to open a drawing. |
| 7. Input board: | View the coordinate values of your cursor, |
| 8. Help: | First line information related to the current command |
| 9. Navigation centre: | Quick screen controls for zoom, pan, and rotation commands. |
| 10. Command line: | Execute a command by entering at the command line panel and pressing ENTER. When Dynamic Input is on you can enter command or value in a pop up window that is displayed over the cursor. |
| 11. Status bar: | Collection of the most frequently used commands in ARCHLine.XP. |

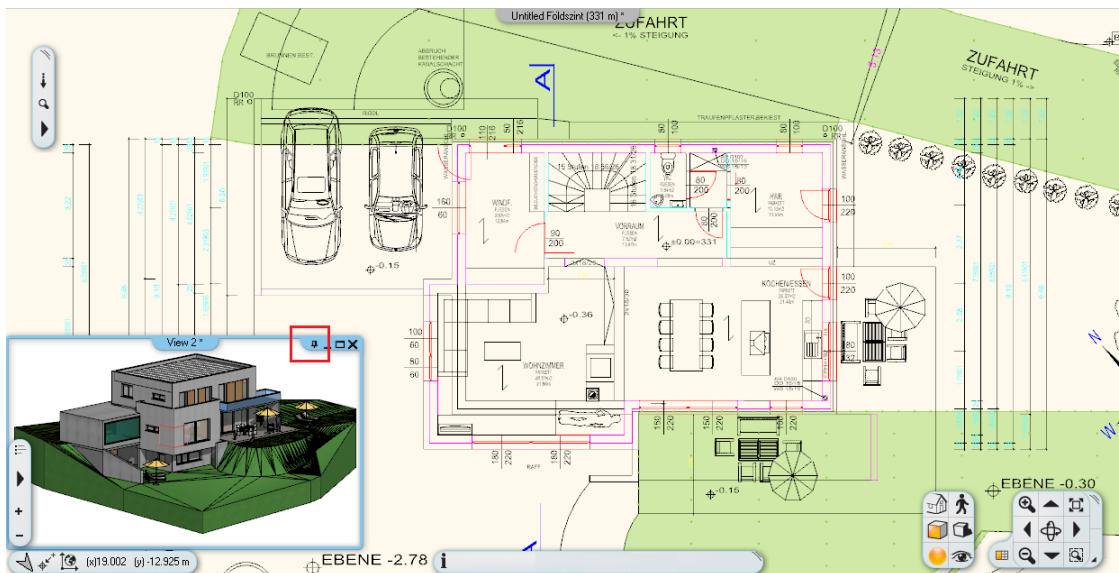
The objects 3,4,5,8,9,10 can be moved to any position, so the whole interface can be rearranged according to the user's needs.

ARCHLine.XP® drawing window is divided into workspaces and comes with following property:

Always on Top

Always On Top is an innovative utility which forces selected window to stay on top relative to other workspaces. *Always On Top* allows controlling windows' 'behaviour' by means of extra button placed near the standard Minimize/Restore/Close group that results in greater workspace e.g. for your floor plan and its accuracy.





2.2. Screen menu board

Screen menu board is an easy to use touch-screen like menu display.

Using the Screen menu board you can memorize the most frequently used commands, without mastering the complete software.

The screen menu board shows categories such as Drafting, Building etc. Categories have objects within them. When a category is selected, the objects within that category will display.

Screen menu board is an equivalent tool with the Toolbox menu used in the earlier ARCHLine.XP releases.



Further commands related to Screen menu board:

Mouse right click -> Open Properties dialog of the selected object

CTRL + Mouse left click > the command will select all of the objects with the same type in the drawing regardless of their properties.

Components

2.2.1. Control tool

You find the control tool on the left side. Control tool enables to move, hide and show the Screen menu board.



2.2.2. Menu board

Screen menu board consists of three levels. The top level contains the main categories such as Project, Drafting, Building, etc. You can open and browse on the sub menus with simply moving the mouse over it or with a mouse left click.

How to use it:

Hiding

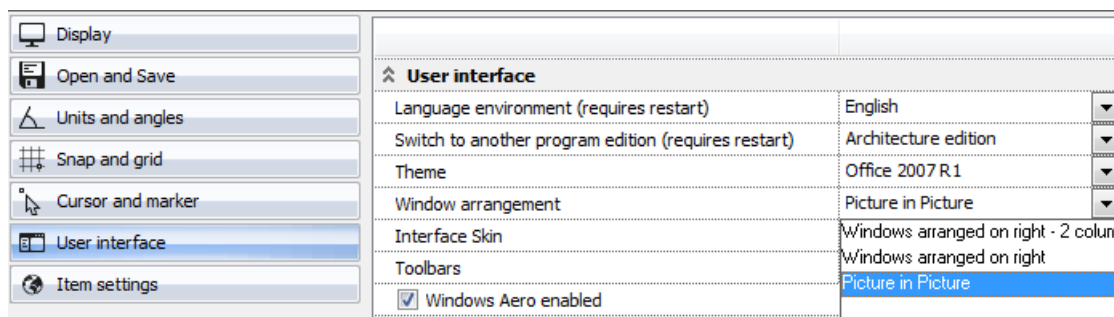
Clicking on an object the related command is executed and the menu board automatically disappears. Closing the command the menu board comes up again.

Close the menu board

You can manage the menu board as a pop-up menu or you can switch it off if you wish to work without it.

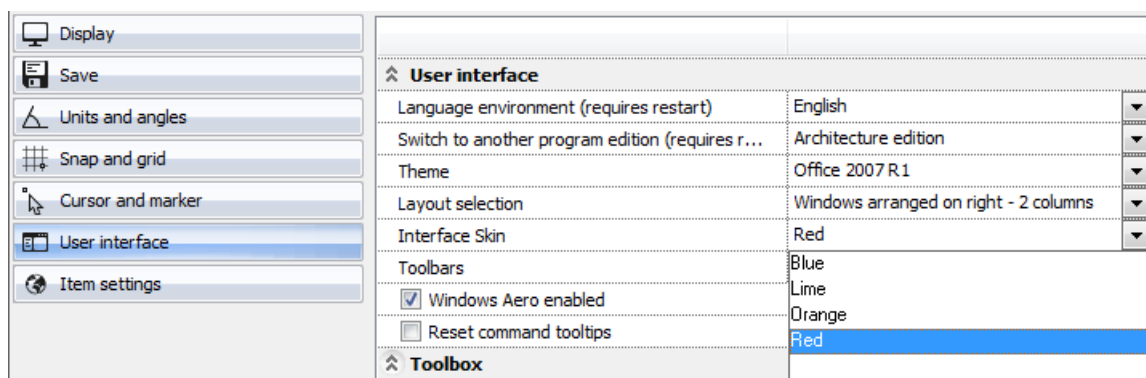
2.3. Drawing window arrangement

The Drawing Window in ARCHLine.XP is the area where you draw. It is divided into work spaces known as 2D Floor plan, 3D model, Section, Animation and Printing Layout. You work always in the active one and you can switch between them. You can choose among three drawing window arrangement styles or switch the active work spaces into full size view.



2.4. Workspace skins

You can customize the graphical appearance of ARCHLine.XP workspace layout choosing among different colour models.



2.5. NaviBar

ARCHLine.XP comes with a navigation bar on the bottom right side of the screen. You find here the tools to navigate on the work spaces with the zoom and pan commands, as well as rotation in 3D model.

The NaviBar's appearance in the 2D (2D floor plan, Printing Layout) and 3D (3D model, Section) is different.

You can navigate with simple left mouse clicks or by dragging in some cases like zooming, panning or rotating. If you wish to zoom, pan or rotate continuously than you have to click on the appropriate command, hold down the mouse button and move the mouse.

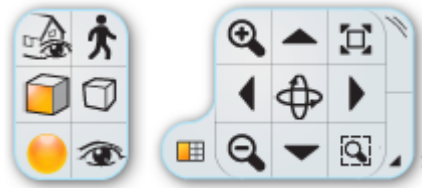
2D Navibar

When your active view has 2D content (2D floor plan, Printing Layout), the Navibar displays one group of commands.



3D Navibar

When your active work space has 3D content (3D model, Section), the Navibar displays a second group of commands. This second group contains useful commands which facilitate setting up the view of the 3D model as 3D view, Walk, 3D visual styles, Shadow, Rendering and Perspective view.



Move the Navibar

You can move the navbar on any other place on the workspace that is best for you. To move the navbar, move the mouse over the grip point on the right side and left click and drag it to where you want to place it and release the mouse button.

Restore

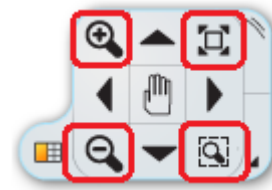
You can restore the navbar to its factory default state with a mouse right button click on the grip point.

Close the Navibar

To close the Navigation Wheel click on the little triangle on the bottom left corner.

2.5.1. Zoom

You can zoom the drawing with this tool. It contains the following commands:



Zoom in, out

Click on the Magnifier with plus or minus sign icon to zoom in or out.

Zoom all

Click on the icon with four small arrows to see all the entities in the drawing.

Zoom Window

You are prompted to pick two corners of a box on the current window in order to enlarge that area to fill the window.

2.5.2. Pan

You can pan the drawing dynamically with this tool. The arrows show the pan direction.



Dynamic pan

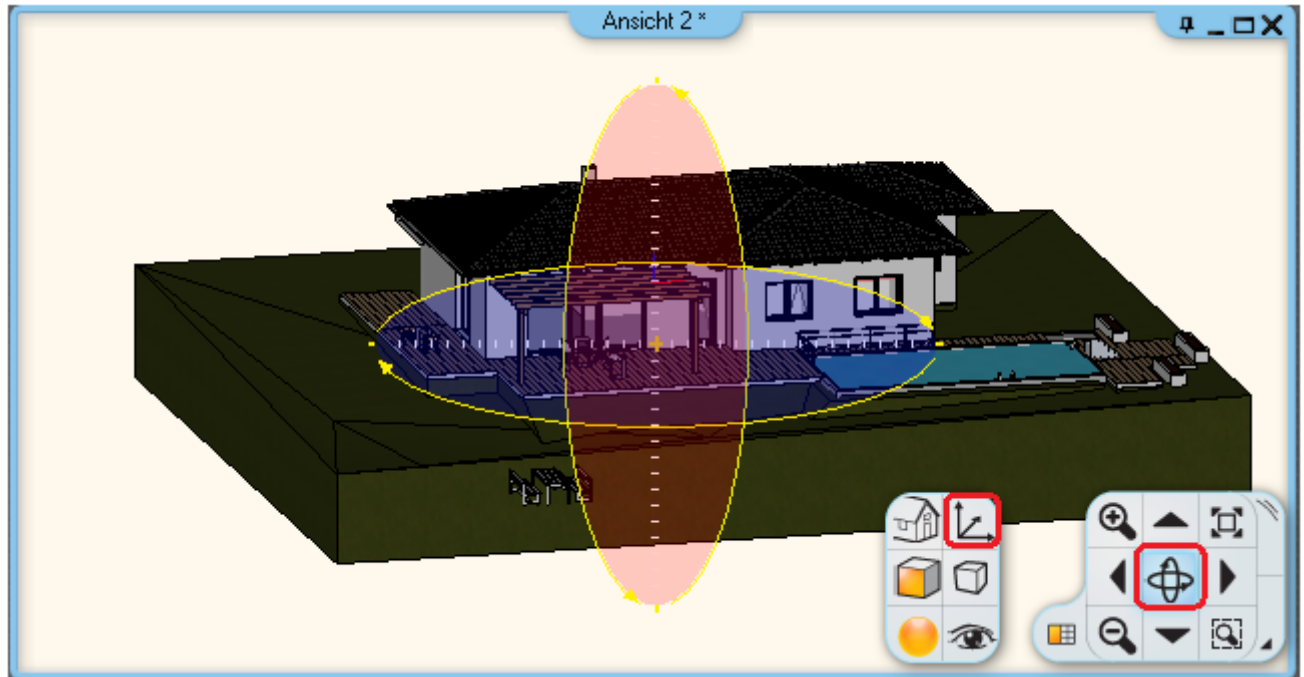
Hold down the Hand pan button and move your mouse to use dynamic pan.

Pan left, right

Click on the Pan left icon to pan your drawing to the left or to the right.

Pan upwards, downwards

Click on the Pan upwards icon to pan your drawing upwards or downwards.

2.5.3. Rotation in 3D

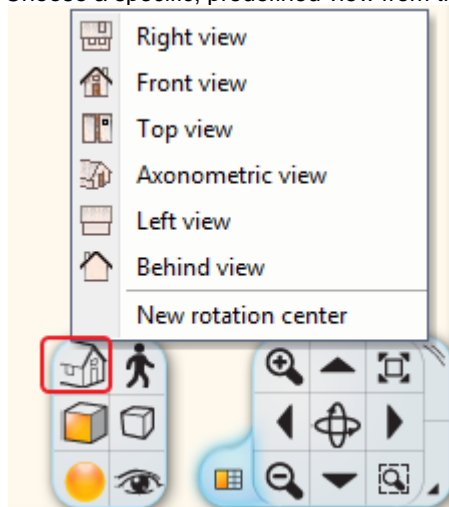
You can rotate the 3D view with the 2 ellipses icon. The ellipses on the drawing area show the rotating direction. The axis icon on the left side helps to pick a new rotation centre point.

2.5.4. View tools in 3D

The NaviBar contains some useful commands which facilitate setting up the view of the model.

Views

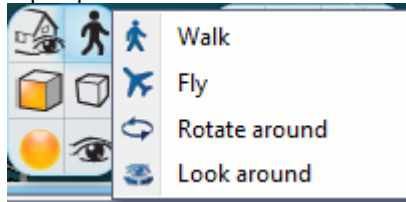
Choose a specific, predefined view from the views list. You can also define a new rotation center here.

**Walk / Fly / Rotate around / Look around**

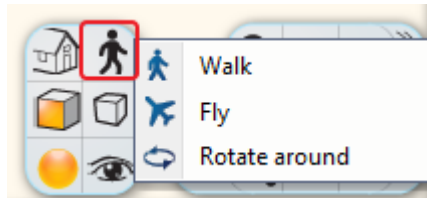
You can choose from Walk / Fly / Rotate around / Look around modes from Walk and Fly list. With the help of these tools you can move around in the 3D model as you walk around in 3D space in real life. Rotate around command rotates the 3D model around the rotation center with a continuous speed. Look around command rotates the camera around with a

continuous speed. The speed of walk / fly / rotation can be set in File menu – Options – Display tab – Camera settings. These options can be seen when a 3D window is active. The same commands and settings are available in the View menu.

In perspective view:

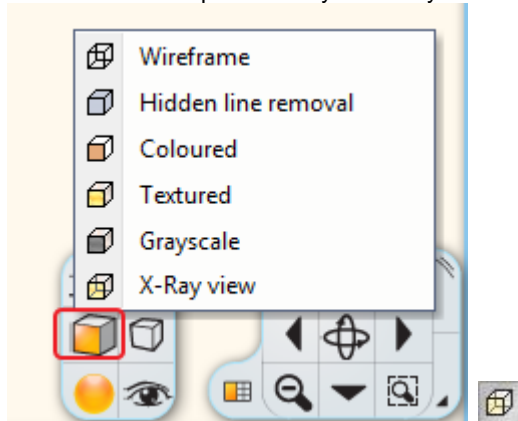


In axonometric view:



3D mode tools

Choose a visual style from the 3D mode list. This will change the appearance of the 3D model. You can select one from Wireframe to transparent X-ray visual style.



Shadow switch

Click on Shadow switch to turn shadows on/off. The shadows will be visualized based on the Sun settings.



Rendering

Click on rendering to set the properties of the rendered image.



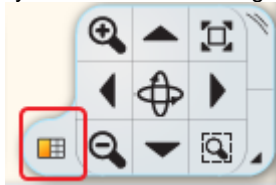
Perspective view

Click on Perspective view to set the camera in the 3D model. You will see the model in perspective through the camera.



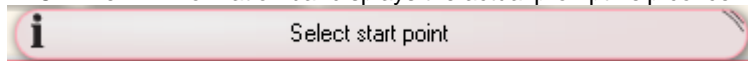
Enlarge active window

Click on Enlarge active window to enlarge the selected active window. All inactive windows will be organized automatically by the software to the right side of the workspace.



2.6. Information bar

ARCHLine.XP Information bar displays the actual prompt help concerning the command to be executed actually.



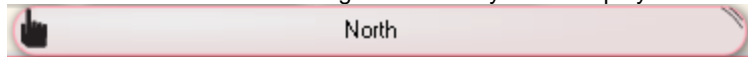
By default you find it in the middle bottom part of the drawing window. It consists of 3 parts: Information button; Message field; Grip point.

Information button

You find the information button on the left side of the information bar. The information button can display two icons.

Interactive Help – You can click on the button when displays the ‘i’ letter, and the program will open the interactive online help.

Control tool info – When you move the mouse over the Drawing Pane, Coordinate bar, Navibar and Bubble menu the icon in the information bar changes to hand style and displays the name of the tool under the mouse actually.

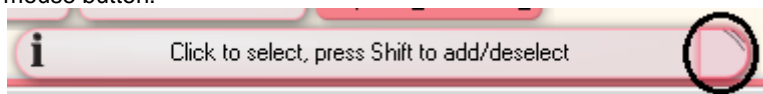


Message field

ARCHLine.XP Information bar displays the actual prompt help concerning the command to be executed actually or the Control Tool Info.

Move the Information bar

You can move the information bar on any other place on the workspace that is best for you. To move the information bar, move the mouse over the grip point on the right side and left click and drag it to where you want to place it and release the mouse button.

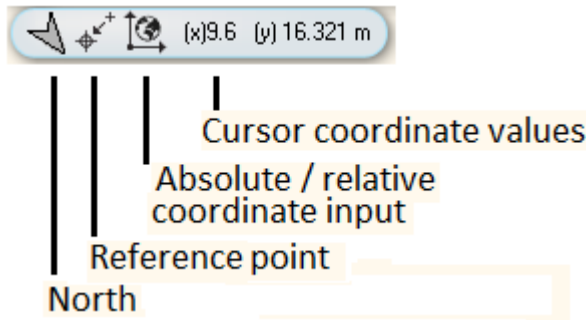


The program saves the new place even when you restart it.

Restore

You can restore the information bar to its factory default state with a mouse right button click on the grip point.

2.7. Coordinate bar



The coordinate bar displays the North direction; the reference point command icon, the absolute or relative coordinate's mode icon and the current cursor coordinate values. You can click on each of them to edit the relevant information.

North

Displays and specifies the north direction. If you click on the North icon you can change the Geographic location, the date and the North direction.

Reference point

The selected point becomes the reference point for next input. It replaces the last input point.

Relative / absolute coordinate input

There are two modes to enter coordinates in ARCHLine.XP: Absolute or Relative coordinates. Absolute coordinates uses the Cartesian System to specify a position in the X, Y to locate a point from the 0, 0 origin. Relative coordinates are interpreted from the last input point. As relative coordinates much more frequently used than absolute, the default setting is relative. You find the Relative Input icon to change between absolute / relative mode on the left side.

Display coordinate info

The coordinate bar displays the coordinate values of the cursor in absolute or relative coordinate's mode.

Command input

If you click on the coordinate info field you can type the coordinates of the point you want, like: X space Y. The X-value and Y-value is interpreted in the current input mode as absolute or relative coordinates

Example:

You are in absolute coordinate's mode and in cm unit.

If you type 20 8 for a position, ARCHLine.XP will locate the next point on 20 cm along the X-axis and 8 cm along the Y-axis. Press ENTER to activate the input.

ARCHLine.XP draws the objects in their real size. ARCHLine.XP offers the following units to input a value: mm, cm, m (metric) and inch (imperial). If you have 1 m length wall and your current unit is cm, then draw it as 100 cm length. ARCHLine.XP uses scale for plotting only. ARCHLine.XP drawing sheet is a limitless area.

2.8. Drawing Pane

A Drawing pane helps you find a drawing belonging to the actual project. The drawing pane contains three parts as Control bar, Drawing Selector and Pager.



Click on the drawing image you wish to display on the screen.

Control bar

The left side control bar enables to display the workspace list, show and hide the drawing pane and resize it.



Workspace list

You can use the workspace list icon to switch between the drawings of the project too.



It displays all workspace names in alphanumeric list.

Show / Hide

You can show / hide the Drawing Selector and Pager.



Size up / down

You can resize the Drawing Selector and Pager.



Pager

The Pager becomes visible when the number of drawings exceeds 8. Clicking on the pager the Drawing Selector displays the next or the previous drawing in the list.

2.9. Command line

You can input values, texts or formulas by which you can use trigonometrically and arithmetical operators in two ways:

Command line Input field

If you click on the Command line, then you can use the Input field to take in the values. You can activate the typed value with the Enter button.

Command line is present on the screen when you activate the Window menu – Toolbar – Command line option.

Dynamic input field

When you are in a command and the program is waiting for next input, pressing any key the input field appears on the drawing area near to the cursor actual location.

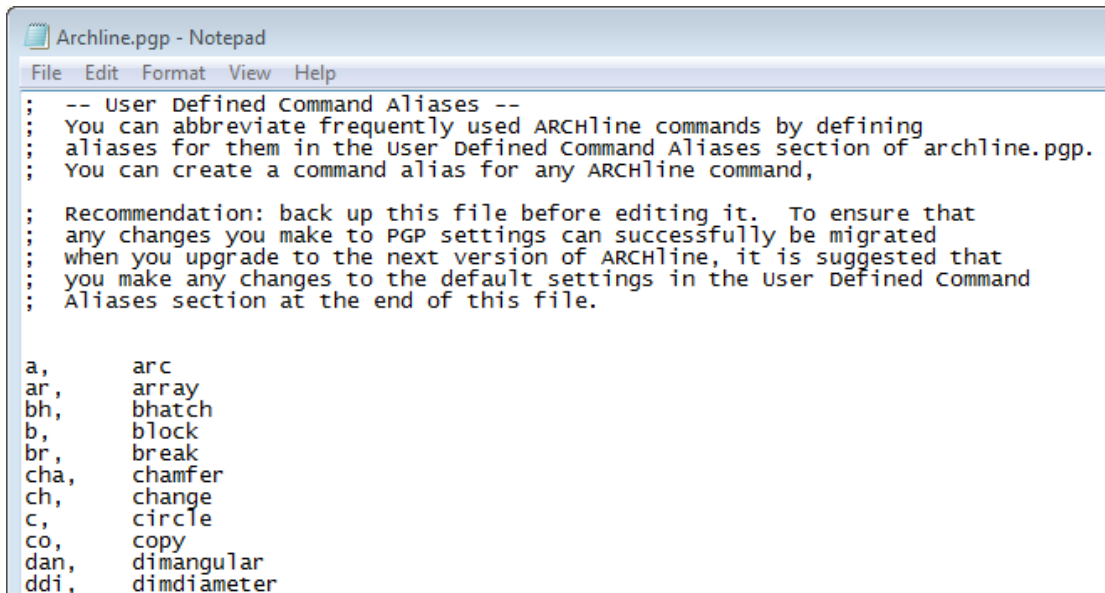
For example, displaying the value of length:



You can activate the typed value with the Enter button.

Command aliases

Command aliases are shortcuts to commands that can be entered in the command line input field. This is a powerful tool if you have a good knowledge of ARCHline commands. You can see and customize the command alias list in a text file (Archline.pgp). This text file is accessible in *Tools menu – Customize – Command alias*.



```

Archline.pgp - Notepad
File Edit Format View Help

; -- User Defined Command Aliases --
; You can abbreviate frequently used ARCHline commands by defining
; aliases for them in the User Defined Command Aliases section of archline.pgp.
; You can create a command alias for any ARCHline command,

; Recommendation: back up this file before editing it. To ensure that
; any changes you make to PGP settings can successfully be migrated
; when you upgrade to the next version of ARCHline, it is suggested that
; you make any changes to the default settings in the User Defined Command
; Aliases section at the end of this file.

a,      arc
ar,     array
bh,     bhatch
b,      block
br,     break
cha,    chamfer
ch,     change
c,      circle
co,     copy
dan,    dimangular
ddi,    dimdiameter

```

You can find all the necessary information at the beginning of the text file in remarks (rows starting with “;” are remarks). For example the shortcut for line is L. When you type L then **Enter** will activate the line tool.

Command history

The list of commands you previously entered in the command line is listed in a drop-down list of the command line.

2.10. Mouse


ARCHLine.XP® uses contemporary computer mouse, with the most common standard features: two buttons and a scroll wheel which can also act as a third button.



2.10.1. Single click with the left button

When clicking with the left button in ARCHLine.XP® the program executes a command.

A command in general can be carried out with a simple click of the left mouse button in the Menu, Toolbox, and Toolbars. For example we can create a line with the following steps:

- ❖ Click on the  **Single line** tool.
- ❖ Click on the drawing to define the first point of the line.
- ❖ Move the cursor to the desired endpoint of the line, and click to define it.

! You can use the mouse with plain mouse clicks on the drawing area, not with the drag and drop method. This has many advantages, e.g.:

1. Faster work
2. The input of the angles and lengths are easier.
3. The forming of commands is easier during running because you need to keep pressing neither of the buttons of the mouse.

2.10.2. Double click with the left button



In ARCHLine.XP® the double click with the mouse is used to modify the properties of the selected object. The properties dialog of the selected object appears.

The changes defined in this way have influence only on the properties of the selected object.

2.10.3. Single click with the right button

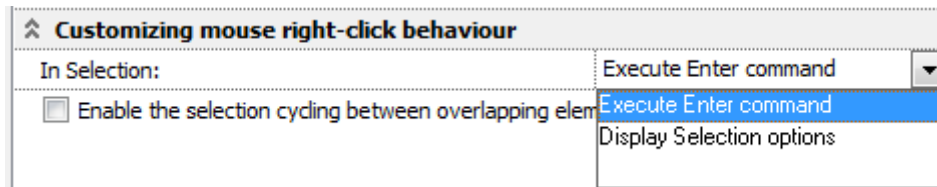


Clicking with the right button of the mouse in ARCHLine.XP-you can reach different functions, among which the most important are:

- ❖ **Terminating the actual command**
- ❖ Using context sensitive menus
- ❖ Opening the *Window handling* menu

2.10.3.1. Using shortcut menus -Right click customization

If you select the **File menu -Options** command, and click on the **User Interface** button, you can select among the options regarding the right button action of the mouse.



ENTER command

Clicking with the right button of the mouse, the program executes the ENTER (terminating) command.

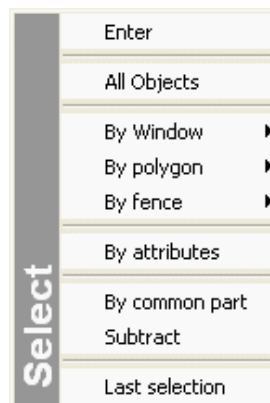
Display Selection options

When a command is waiting for selection press the right button of the mouse, the *Selection menu* appears with the following options:



These possibilities are available from the *Selection menu* of the status line as well. See there the description.

Select the Enter command to close the selection

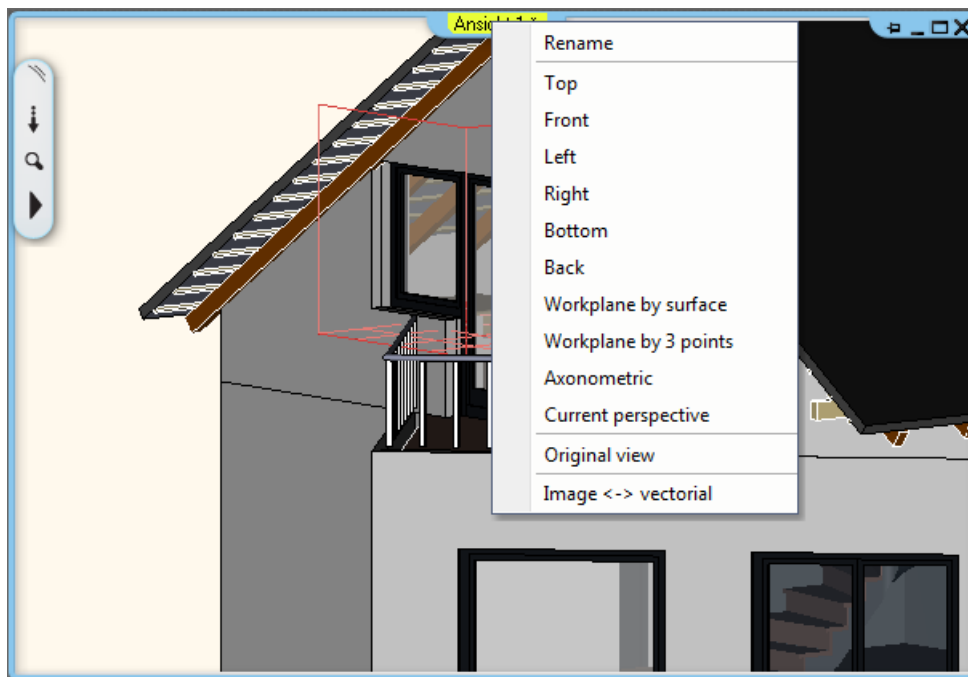


2.10.3.2. Setting the properties of the objects

If you right click on an icon of the drawing tools (e.g. Slab), then the properties dialog of the selected object appears. Having modified the properties the objects created later will have the set properties. At the same time the program opens the submenu of the drawing tool that makes planning quicker

2.10.3.3. Opening the 3D view menu

If you left click on the header of the 3D window the *3D View menu* appears. This contains the following commands:



See the description of the commands in 6.3.1 *View menu – View Properties – Define View* chapter.

2.10.4. How to use the mouse when selecting commands from the menu

The mouse is also used to select commands from the ARCHLine.XP® menus. We are going to demonstrate the selection of the different menu objects (main menu - pop menu - shortcut menu, lists).

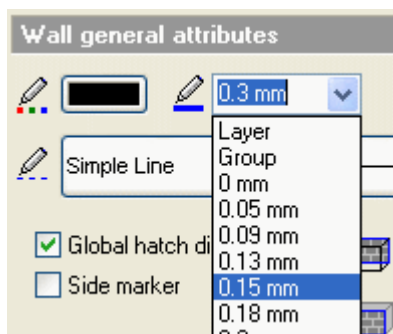
2.10.4.1. Selecting an object of the menu

To select a command or option from the menu:

Click on the name of the adequate main menu (in case of pop menu or shortcut menu it appears automatically). Select the needed command from the list. If sub-command is belonging to it (▶ right arrow next to the option name), click on the needed command in the sub-list).

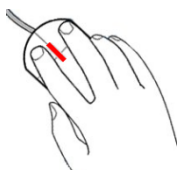
2.10.4.2. Fields of scroll lists

In many dialogs there are so called 'list fields'. The objects of this list can be selected.



- Click with the left button of the mouse on the field, or on the arrow to the side. The whole list appears (or a part of it).
- Select an object of the list. Scroll down the list if there are more objects to be visualized than fits in the list field
or
- Click on the field and
- Type the value.

2.10.5. Using the mouse wheel



If your mouse has a wheel, you can use the functions of the graphical handling. This makes the work very easy. The three frequented window handlings are:

Zoom in – Zoom out: Move the wheel forward means zoom in, move the wheel backward means zoom out.

Moving the „Drawing sheet“: Press and keep pressing the mouse wheel while moving the mouse.

Rotate: In a 3D window press and keep pressing the wheel and the Shift button, while moving the mouse.

2.10.5.1. Zoom in / out

The mouse wheel can be moved forward or backward.

The operation uses the *zoom in - out* command pointing to the actual place of the cursor.

- Move the cursor to the point where you wish to activate the zoom. Move the wheel forward or backward. Moving forward the zoom in command will be activated; moving backwards you activate the zoom out. In case of zooming in the start point is moving towards the middle of the drawing area
- When you have reached the needed view, let the wheel free to close the zoom command.



You can also activate this command, if you

- ❖ Select the **Zoom +/-** icons from the *NaviBar*, or if you
- ❖ Press the **Ctrl** key together with the **+/-** numeric keys on the floor plan or on a perspective view.

2.10.5.2. Moving the „Drawing sheet”

Pressing the mouse wheel and moving the cursor at the same time the „drawing sheet” can be moved.

- Press and keep pressing the mouse wheel.
- This operation activates the Moving the „Drawing sheet” command.
- Move the cursor to the needed position and let the wheel free.

You have now moved the whole drawing on the screen with a vector.



The command also can be activated, if you

- ❖ Select the **Pan** icon from the *NaviBar*, or
- ❖ On the floor plan press the **Ctrl** key together with an *Arrow* key.



The operations **zoom** and **moving the „drawing sheet”** can be used together.

2.10.6. The shape of the cursor

The cursor is a graphical sign that shows the actual position of the mouse

The ARCHLine.XP® automatically changes the shape of the cursor according to the type of active operation

2.10.6.1. No operation - Arrow cursor

When ARCHLine.XP® is waiting for a command ('Select a command' mode); the cursor is in arrow shape.

If you press **Esc** key the program closes all commands in progress and gets into 'Select a command' mode.

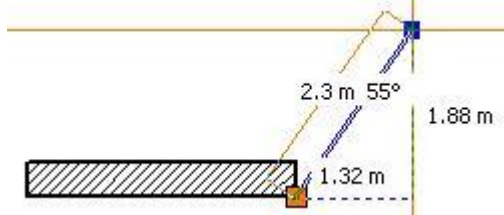
2.10.6.2. Editing - Cross cursor

If an editing command is active, so that ARCHLine.XP® is waiting for the definition of a point or a coordinate, the cursor

becomes cross-shaped.



You can switch on the *Long cross cursor* shape as well in the **File menu -Options** dialog, in the **Other - Screen** part.



2.10.6.3. Selection - Selection cursor

When a selection command is active, so that the program is waiting for the selection of one or more objects, the cursor

gets into the selection shape.



The size of the cursor signs the tolerance, so that the sensibility of the selection. The value of the tolerance can be set at the **File menu -Options - Cursor snap** dialog. Here you can define the radius of the tolerance circle in the percentage of the screen.

2.10.6.4. Snap to special points - Special shapes

If an editing command is activated, and pressing the **Ctrl** key the cursor changes its shape to the sign of the special point (found inside the tolerance circle). The clicking snaps the cursor to the special point.

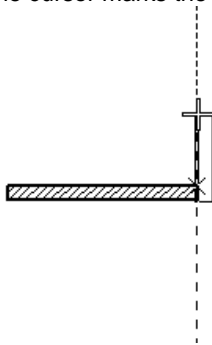


See description in 2.11.4 *CTRL* key chapter.

The same effect can be achieved if you check in the *Object Snap (OSNAP)*. This option is in the **File menu -Options - Object Snap Options** dialog.

2.10.6.5. HV cursor

The HV cursor appears if you move the cursor vertically or horizontally relative to the previously defined point. The cursor marks the vertical and horizontal directions



2.10.7. Cursor Input Box

When starting a command, ARCHLine.XP displays the Cursor Input Box.

Specify first point

| | |
|-------------|--------------|
| Length | 19762.07 mm |
| Inclination | 27.816622° |
| X spacing | 17478.477 mm |
| Y spacing | 9221.837 mm |

This transparent box helps you to visualize and change the actual length, inclination or X and Y spacing of a linear object or definition. To enter into the Cursor Input and edit a value press TAB.

Specify first point

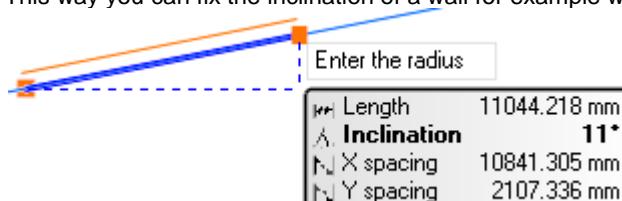
| | |
|-------------|--------------|
| Length | 26634.229 mm |
| Inclination | 6.454471° |
| X spacing | 26465.408 mm |
| Y spacing | 2994.051 mm |

The software will let you edit the first value of the box. When you press TAB again, you can jump to the following value.

Specify first point

| | |
|-------------|--------------|
| Length | 14246.058 mm |
| Inclination | 13.113438° |
| X spacing | 13874.56 mm |
| Y spacing | 3232.142 mm |

When you edit a value and hit the Enter on your keyboard, the software will close the edit field, and fix the value typed. This way you can fix the inclination of a wall for example when drawing it.

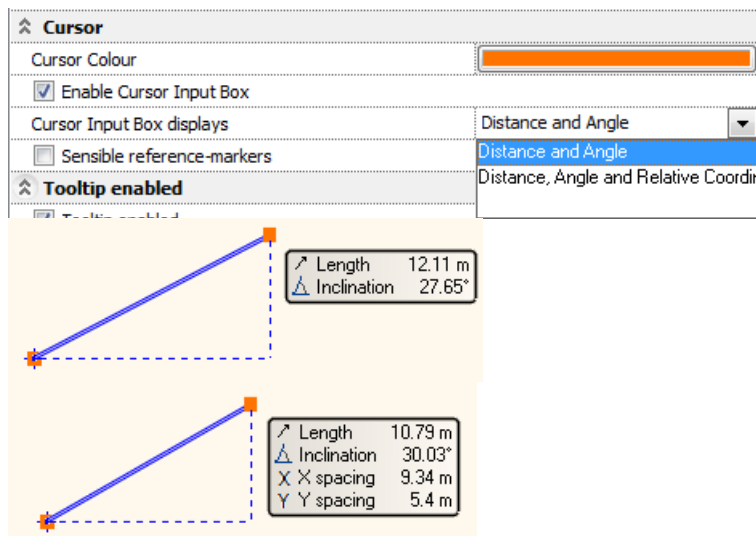


Turn on or Turn off cursor input Box

Click on the Enable Cursor Input Box input button on the Options dialog to turn d Cursor Input Box on and off.

Settings to display type

Use the Cursor Input Box setting to display the information you want to see.



2.11. Keyboard

In ARCHLine.XP® the keyboard is used not only to define values and type texts, but with the help of keyboard shortcuts commands becomes quicker and easier.

Special characters in the name of group, profile, object

You can create your own 2D groups, profiles and objects.

You can use in the name the following special characters:

& ! @ \$ % + = () [] { } ' ; , ~

You can't use the following characters:

? | > < : / * "

2.11.1. Defining values

In ARCHLine.XP® you can type numbers, texts, arithmetical expressions, coordinates.

When a command asks you an input value, you can enter a text, number, arithmetical expressions or coordinate value at the command line or in *Dynamic Input field*.

You can enter two-dimensional coordinates as either Cartesian (X, Y) or polar coordinates.



Polar coordinates can be used in AutoCAD® mode. Type the length and angle in the precise form, so that.

In absolute coordinate system: **1<45**

In relative coordinate system: **@1<45**



In arithmetic expressions, you can give values and operation sign which can be used between these values (addition, extraction, multiplication, division).

For example: to input 6.5, 3 as X, Y coordinate: **3+2*2-1/2, 3**

2.11.2. Enter key

In ARCHLine.XP® with the key ENTER you can **close an active command or subcommand** during the operation.

You can substitute the key **ENTER** with pressing the right button of the mouse, except if you have defined other settings for the right click in the **File menu -Options - Right click customization** field.



In a dialog window the right click does not substitute the OK button.

2.11.3. Special keys

With the special keys in itself no character or number can be given, but a command can be activated. Many keys and key combinations are *predefined* in ARCHLine.XP®, but there is possibility for the users to define freely shortcut keys. You can also change the predefined shortcut combinations.



In the following you can read the description of those operations that can be activated with a special key or with a key combination.

The important keys used in ARCHLine.XP®:



Alt key
Shift key
Ctrl key

2.11.4. CTRL key

The shortcut keys make possible to activate the often used ARCHLine.XP® commands directly. In this case we are talking about the use of the CTRL key and another key.



To activate a shortcut key keep pressing the CTRL key and press the needed key.

The following shortcut combinations match Windows standard:

| Key | Commands |
|---------------------|--|
| Ctrl+B | Move |
| Ctrl+C | Copy into clipboard |
| Ctrl+G | Switch on Grid |
| Ctrl+D | Delete object |
| Ctrl+N | Length modification; elliptic arc, arc, line |
| Ctrl+O | Open |
| Ctrl+P | Print, plot |
| Ctrl+S | Save |
| Ctrl+Shift+S | Switch on grid snap |
| Ctrl + V | Paste from clipboard |
| Ctrl + W | Duplicate and mirror |
| Ctrl + X | Cut |
| Ctrl + Y | Redo |
| Ctrl + Z | Undo |
| Ctrl + R | Redraw |

This list does not contain all **Ctrl** shortcuts. In ARCHLine.XP® there is possibility to define freely your own shortcuts. See **Tools menu - Customize - Toolbars** command. You can put the shortcuts from here to the clipboard, and then you can list them.

2.11.4.1. CTRL key and the special points

Special points enable to define precise locations on objects.

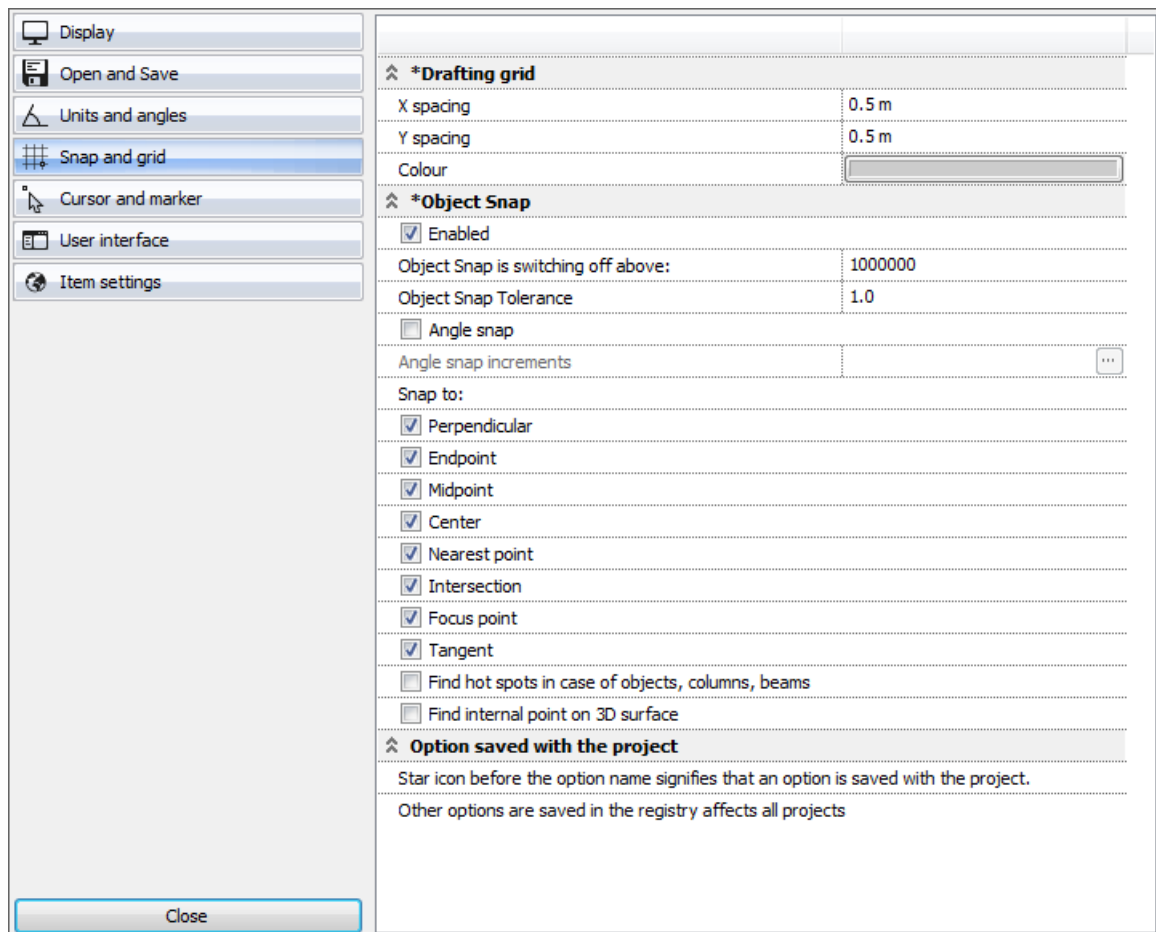
In ARCHLine.XP® the special points are the following:

Perpendicular point, endpoint, centre, midpoint, nearest point, intersection, focus point and tangent point.

If OSNAP is on, the program finds the special points within the cursor tolerance circle and changes its shape, marking in this way the special points of the objects. When clicking the program snaps the cursor to the nearest special point if it is inside the tolerance radius.

Setting can be made in File menu -Options - Object snap options dialog.

The speed of this command depends on the size of the drawing, therefore in the case of big drawings the searching time increases.



ARCHLine.XP® identifies the following special points and assigns a letter or a sign to it.

| | | | |
|--|---------------------|--|-----------------|
| | Perpendicular point | | Nearest point |
| | Extreme point | | Intersection |
| | Midpoint | | Focus (ellipse) |
| | Centre | | Tangential |

Objects snap (OSNAP)

The gravity to the points is automatic if the *OSNAP* option is activated. In this case it is enough to move the cursor towards the object, and the program automatically snaps the cursor to the nearest special point.

The *OSNAP* function helps your work remarkably.



The *OSNAP* can also be switched on with the *Tools menu - Object snap* option.

Limit of Object snap

Default value of *OSNAP* is 1.000 000. This means that if the number of objects of a drawing is above 1.000 000, the *OSNAP* switches off, so searching in a large database will not engage the computer and will not slows down the work. This value can be changed according to the capacity of the computer.

If the *OSNAP* is switched off the special point recognition can also be activated by pressing the **Ctrl** key. When the program is waiting for the definition of a coordinate, pressing the **Ctrl** key the *OSNAP* becomes activated temporarily.


Object Snap Tolerance

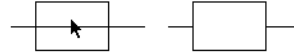
You can also modify the radius of the searching circle (tolerance circle). This must be defined in percentage of the screen. Default value is 1 %.

2.11.4.2. Delete with the CTRL key

Deleting a part of an object is among the most often used commands.

When the cursor is standing on an object, and **no command is active**, (cursor=**Arrow**), pressing the **Ctrl** key the part of an object will be deleted. In details:

Ctrl+Shift+ Click=  If you keep pressing the **Ctrl** and the **Shift** keys and click on an object, the program deletes the part of object that is between intersection points



Delete (DEL) key If you select on an object on the drawing, and press the **Del** key, the program deletes the **entire object**.

2.11.4.3. Ctrl+(+)/(-) key: Zoom

If the **2D window** is active, press the **Ctrl** and the **+/-** key to activate the Zoom in/out command.

Ctrl + (+) Zoom in

Ctrl + (-) Zoom out

When the 3D view displays a perspective view:

Ctrl + (+) The observer approaches to the object (perspective magnification).

Ctrl + (-) The position of the observer diverges from the object



See the 2.5.1 *Zoom in / out* chapter.

2.11.4.4. Selection by object type with Ctrl key

If an icon of the side menu was selected pressing the Ctrl key selects all the objects of the drawing area that is represented by the icon.

- Move the cursor to a main icon of the side menu: e.g. Wall.
- Press Ctrl key, and click on the icon. The program selects all the walls of the actual drawing.

2.11.5. SHIFT key

In ARCHLine.XP® when Shift key is pressed it means:

An editing command is active: **Angle snap, handling vertical and horizontal directions**

A selection command is active: **Selection of more objects**

2.11.5.1. Angle snap

If **Angle snap** is not switched on you can still use it if you are pressing **Shift** key. Keeping **Shift** key pressed the cursor moves to the predefined angle direction. After having selected the needed direction go on with the command you wanted to execute.

Shift key the most often is used to find the vertical and horizontal directions.

HV indicator cursor

The HV indicator appears if you move the cursor in vertical or horizontal directions in correlation with the previously given point

2.11.5.2. Selecting more objects

With a single click the program selects only one object. Pressing the **Shift** key it is possible to select more objects together.

Having selected an object on the drawing area, press the **Shift** key, and while pressing it click on the other objects. It is possible to exclude objects from the selection by clicking again on the objects already selected and keeping the **Shift** key pressed.

2.11.5.3. Combination of Shift and Ctrl keys

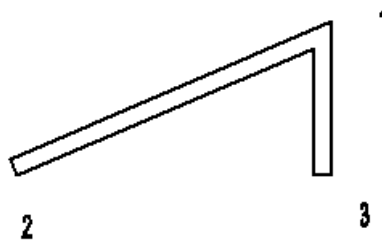
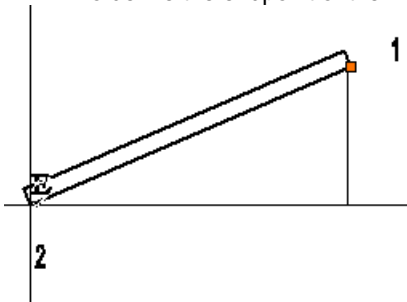
Pressing the Shift and the Ctrl keys together the direction of the line or wall to be drawn can be defined by a predefined direction (Shift key), and its endpoint can be selected as a special point (Ctrl key).

Using together the Shift and the Ctrl keys the handling of geometrical commands becomes easy:

Example:

Draw a wall from point 1 to point 3 in vertical direction. The point 3 is the horizontal projection of point 2.

- Give the start point of the wall: press **Ctrl** key, and select point 1.
- Move the cursor downwards, and press Shift key. The direction is snapped to the vertical.
- To define the endpoint of the wall keep pressing Shift key, and while pressing Ctrl key click close to point 2.

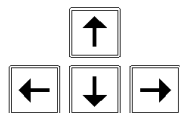
**2.11.6. ESC key**

If you press **Esc** key the program cancels any ARCHLine.XP command that may be in progress and gets into 'Select a command' mode. Press **Esc** key if you cannot close a command with the **Enter** key or more Enters are needed to terminate the command.

Esc key can be also used to interrupt heavy calculation commands in progress (dense hatch patterns, regeneration of shaded model in 3D view, etc.).

2.11.7. ARROW keys

The **Arrow** keys make possible the following operations:



- ❖ **Defining directions**
- ❖ **Rotation 3D**

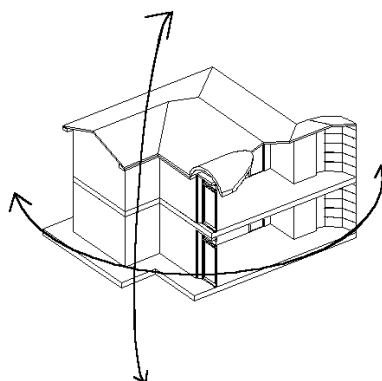
2.11.7.1. Defining directions

With the **arrow** keys of the keyboard the direction of moving, copying and the direction of an object to be drawn can be given.

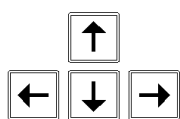
When a command of planning is active pressing an **arrow** key it automatically defines the direction of editing, and ARCHLine.XP is waiting for the definition of a distance or length value.

2.11.7.2. Rotating in the 3D window

If the 3D window is active and there is at least one 3D object pressing the **arrow** keys you can rotate the 3D view into the direction of the arrow.

**Perspective view**

If the active **3D view** has perspective view pressing the appropriate arrow you can rotate model.



Rotates the position of the viewer into the direction of the arrow around the target point, while the position of the model is not changing. This is used when you want to walk around a building.

2.11.8. Alt key

| Key | Command |
|----------|--|
| Alt + A | Copy attributes |
| Alt + C | Draw new objects with the selected properties |
| Alt + F3 | Creates the 3D view of the actual floor of the model that is inside the selection rectangle. |
| Alt + T | Creates the 3D view of all the floors of the model that are inside the selection rectangle |
| Alt + R | Define new reference point |
| Alt + W | Activate global work plane |

2.11.8.1. Alt+A - Copy attributes

Properties of the selected objects are copied to other selected ones.



See chapter 8.5. *Modify Properties - Copy properties.*



The command can be activated by  **Copy properties** icon of *Edit toolbar*.

2.11.8.2. Alt+C - Create similar

The program uses the properties of the selected object when creating new ones.

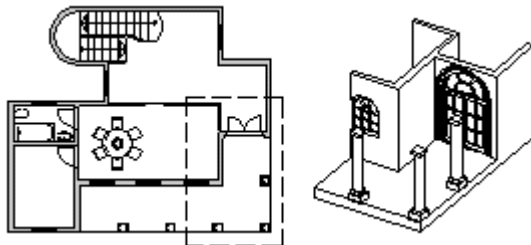
- Press **Alt + C** keys together.
- Select an object to take up its properties. Only one object can be selected in this case.

The program takes the properties of the selected object and enters the command of creating new object. The object drawn afterwards will have the same properties as the selected one.

If for example a wall is selected to copy its properties, the program immediately activates the **Create wall** command.

2.11.8.3. Alt + F3 - Creates the 3D view of the actual floor of the model that is inside the selection rectangle.

You define a rectangle. That part of the model - on active floor - that is inside the rectangle will be visualized in 3D. The rectangle cuts the model.



2.11.8.4. Alt + T - Creates the 3D view of all the floors of the model that is inside the selection rectangle.

You define a rectangle. That part of the model - on all floors - that is inside the rectangle will be visualized in 3D. The rectangle cuts the model.

2.11.9. Function keys

The following default commands belong to the function keys:

| Key | Command |
|----------|--|
| F1 | Interactive Help. |
| F2 | Enlarges the actual window. |
| F3 | If you select one or more architectural objects and press F3 key the program creates the 3D view of the selected objects. If there is no active selection then with this command you can select a rectangle that part of the objects that are inside this rectangle will appear in 3D. |
| Alt + F3 | Creates the 3D view of the actual floor of the model that is inside the selection rectangle. |
| F4 | Zoom in |
| F6 | Turn on/off shadow mode in 3D Image window |
| F7 | Previous view |

| | |
|------------|--|
| F8 | ORTHO on/off |
| F9 | Switches on/off the Design center |
| F10 | Regenerate all windows in Zoom All mode view |

2.11.10. Page up - Page Down keys

On the floor plan the *Page up - Page Down* keys are used to move between floors of the building.
In the 3D window they are used to change between the perspective views.

2.11.11. Define keyboard shortcuts

As you can see many keys and key combinations are predefined in ARCHLine.XP® the others can be defined freely by the user. User can change also the predefined combinations. A shortcut key can be a single character, too.

To define a shortcut click on the **Tools menu - Customize - Toolbars** command.

In the dialog there are commands for the Menu, Toolbars and Keyboard Shortcuts groups, commands and the key or key-combination assigned to them.

You can change Keyboard Shortcuts.



- Select a command group.
- Select the command from the list.
- Define the new key or combination to assign to the command.
- Click on the **Modify** keyboard shortcut button.
- With the **Delete** keyboard shortcut button you can delete a shortcut.
- If you want to use the default shortcuts, click on the **Reset All** button.

Copy shortcuts to the clipboard

Now you can copy all shortcut settings to the clipboard, and then you can paste it in another application. Then you can print it out and use it as an aid to your work.

- Click the **Copy all to clipboard** button to copy all shortcut settings to the clipboard.
- Open a text editor or other application to paste the content of the clipboard.

Sets - Export/import possibility

You can save the shortcut assigns to a set. You can export the saved set into the .set file. This .set file can be loaded into the actual template file using the *File menu - Import - Template* option.



See the chapters 3.2.3. *Using sets of properties* and chapters and 4.6. *Managing styles*.

2.12. Menus

According to Windows standards most of the commands are available in menus. Menus can be:

- ❖ Menu bar
- ❖ Context sensitive menus

2.12.1. Menu bar

Menu bar contains the following command groups:

| | | | | | | | | | | | | |
|--------------------|--|--------|------|----------|----------|-----------|-------|-------------|----|--------|--------|------|
| File | Edit | Modify | View | Modeling | Drafting | Dimension | Tools | Plot Layout | 3D | Add-On | Window | Help |
| File | File handling | | | | | | | | | | | |
| Edit | Edit drawing | | | | | | | | | | | |
| Modify | Modify drawing | | | | | | | | | | | |
| View | Modes of visualization | | | | | | | | | | | |
| Building | Architectural design tools | | | | | | | | | | | |
| Drafting | 2D drafting tools | | | | | | | | | | | |
| Dimension | Dimension tools | | | | | | | | | | | |
| Tools | Additional tools for design, customization or getting information, Prepare print layout | | | | | | | | | | | |
| Plot Layout | | | | | | | | | | | | |
| 3D | Operations of 3D modeller | | | | | | | | | | | |
| Add-On | Add-on modules | | | | | | | | | | | |
| Window | Window operations | | | | | | | | | | | |
| Help | Content of user manual in Help, Registration | | | | | | | | | | | |

2.12.2. Context sensitive menus

If you move the cursor above an architectural or a drafting object, right click with the mouse the program displays the context sensitive commands of the selected object.

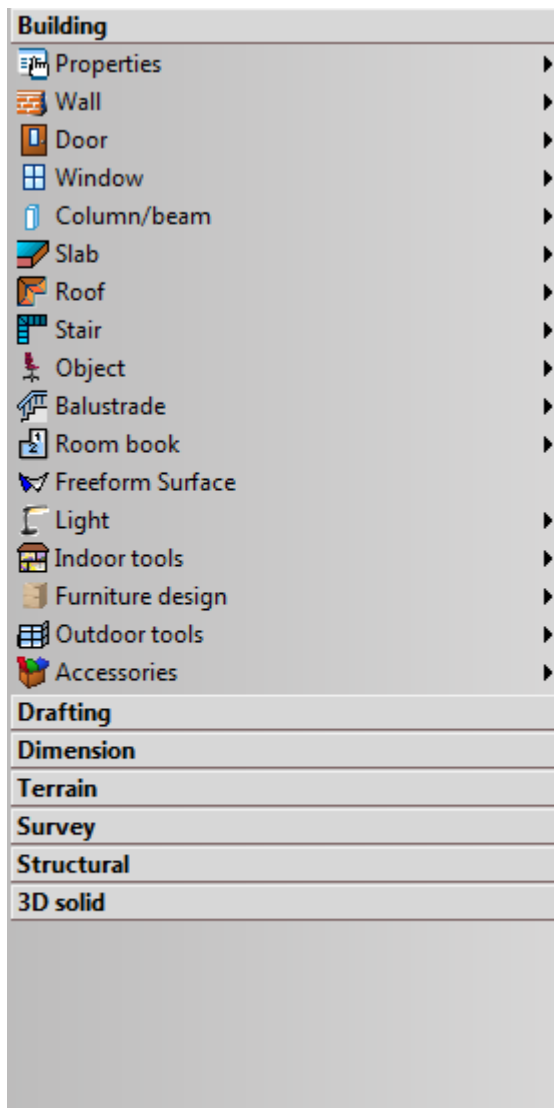
The shortcut menu might also appear when right clicking on the empty area, or when the program is waiting for selection.



Find detailed description in chapter 2.10.3. *Single click with the right button.*

2.13. Toolbox

Toolbox contains the commands using to create objects. They are arranged in groups. The content of this is corresponding with the groups in the Menu bar significantly.

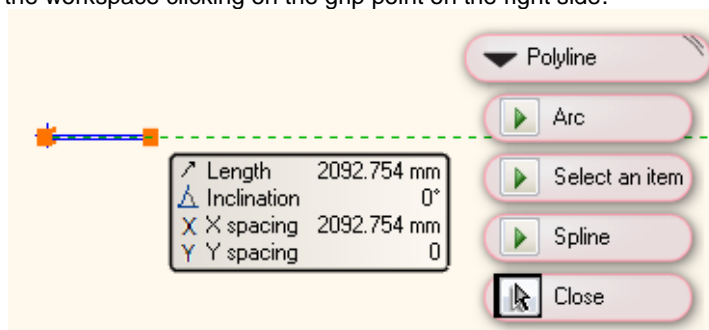


In the toolbox you find the icons and the names of the commands.

Further options

When you activate an ARCHLine.XP drawing command, there are two possibilities what ARCHLine.XP will ask you: further options or specifying point.

Further options menu appears on the screen only when it is needed. It is a floating menu so you can drag it anywhere on the workspace clicking on the grip point on the right side.



Close the Further options

To close the Further options menu click on the little black triangle on the header left side.

It is very important that if you do not want to change the command, you do not need to choose anything from this list of options. These are possibilities that you can use when necessary, if not, you may ignore them.

2.13.1. Short and long mouse click

Toolbox can be managed by short and long mouse clicks:

- ❖ **Short Click** with the mouse **left button** on an icon. The related command is executed.
- ❖ **Long Click** with the mouse **left button** on an icon. The related submenu of the selected tool object appears.
- ❖ **Short Click** with the mouse **right button** on an icon. The Properties dialog appears where you can define the initial properties of the selected object. The objects that are going to be drawn later will have these properties.
- CTRL + Click** with the mouse **left button** on an icon. The command selects all objects on the drawing from the given object class. Example: The objects that are selected can be modified together with the Properties.

2.13.2. Mouse handling: Long click mode

In ARCHLine.XP® there are two ways to use the mouse over the toolbox.

- ❖ **Normal:** When you switch off the long click mode the single left click will open the submenu of a menu object automatically. Another simple left click is needed to start a command in the submenu. This approach of mouse handling is Windows standard.
- ❖ **Long click mode:** Holding down the left mouse button over a menu point of toolbox will make the submenu open after the previously set delay time is over. When you move the mouse over a command and release the left button, the command will be started.

| | |
|--|---------------------------------|
| ⤴ User interface | |
| Language environment (requires restart) | English ▼ |
| Switch to another program edition (requires restart) | Architecture edition ▼ |
| Theme | Office 2007 R1 ▼ |
| Window arrangement | Windows arranged on right - 2 ▼ |
| Interface Skin | Blue ▼ |
| Toolbars | ... |
| <input checked="" type="checkbox"/> Windows Aero enabled | |
| <input type="checkbox"/> Reset command tooltips | |
| ⤴ Toolbox | |
| <input type="checkbox"/> Icons only | |
| <input type="checkbox"/> Big icons | |
| <input checked="" type="checkbox"/> Multiple expanded groups | |
| <input type="checkbox"/> Tree boxes in groups | |
| <input checked="" type="checkbox"/> Bold font in groups | |
| <input type="checkbox"/> Bold font in items | |
| <input type="checkbox"/> Flat groups | |
| <input type="checkbox"/> Hold down left mouse button to open submenu | |
| Click delay (Fast - Slow) | 162 ▼ |
| <input checked="" type="checkbox"/> Toolbox submenus remember last choice | |
| ⤴ Customizing mouse right-click behaviour | |
| In Selection: | Execute Enter command ▼ |
| <input type="checkbox"/> Enable the selection cycling between overlapping elements | |

2.13.3. Toolbox setup

You find it in the File menu - Options – User Interface panel.

Long click speed

Here you can customize the long click delay time to display the related submenu. Move the slider to define the optimal delay time for your working style.

2.13.4. Toolbox working modes

- ❖ **Standard mode**
- ❖ **Learning mode** (Toolbox submenus remember last choice is ON)

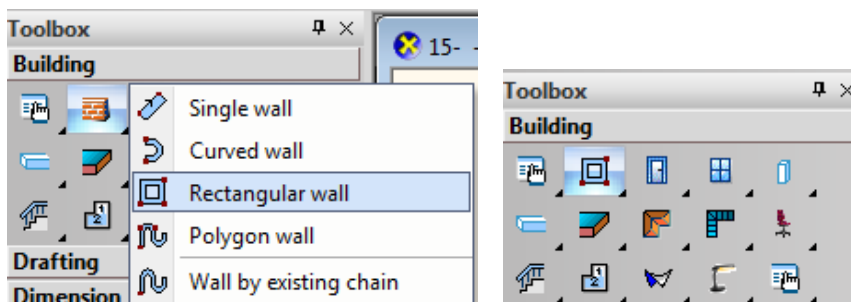
| | |
|---|---------------------------------|
| ⤴ User interface | |
| Language environment (requires restart) | English ▼ |
| Switch to another program edition (requires restart) | Architecture edition ▼ |
| Theme | Office 2007 R1 ▼ |
| Window arrangement | Windows arranged on right - 2 ▼ |
| Interface Skin | Blue ▼ |
| Toolbars | ... |
| <input checked="" type="checkbox"/> Windows Aero enabled <input type="checkbox"/> Reset command tooltips | |
| ⤴ Toolbox | |
| <input type="checkbox"/> Icons only <input type="checkbox"/> Big icons <input checked="" type="checkbox"/> Multiple expanded groups <input type="checkbox"/> Tree boxes in groups <input checked="" type="checkbox"/> Bold font in groups <input type="checkbox"/> Bold font in items <input type="checkbox"/> Flat groups <input type="checkbox"/> Hold down left mouse button to open submenu Click delay (Fast - Slow) 162 ▼ <input checked="" type="checkbox"/> Toolbox submenus remember last choice | |
| ⤴ Customizing mouse right-click behaviour | |
| In Selection: | Execute Enter command ▼ |
| <input type="checkbox"/> Enable the selection cycling between overlapping elements | |

Standard

The Main icon is fixed. The short click on the main icon will execute the related command. The long click on the main icon displays the sub dialog and you can choose a command from this dialog with the next click.

Learning mode

The Main icon is replaced by the submenu last selected command's icon, so it 'learns' the last used icon and put it in the Main icon position. The next short click on the main icon will execute the last selected command.



The learning mode is recommended to advanced users only.

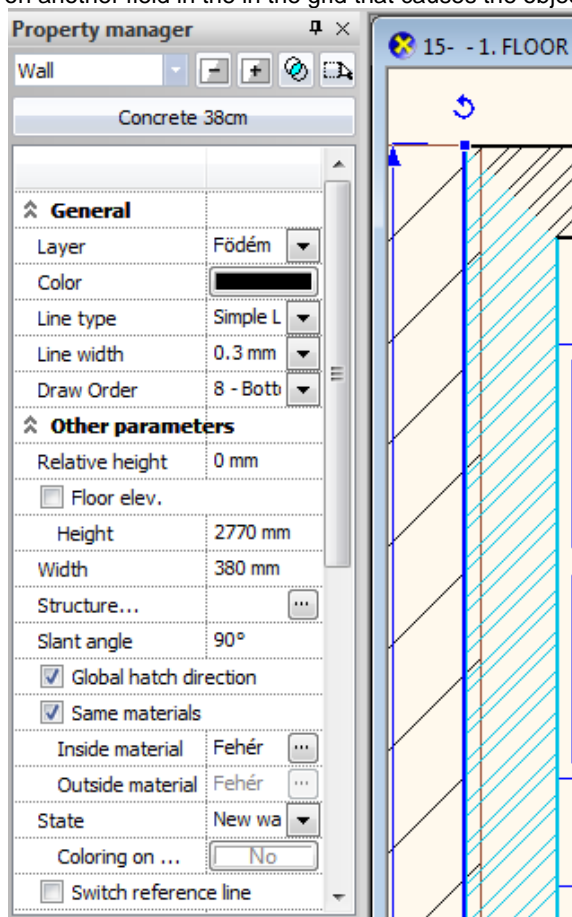
2.14. Property manager

The Property Manager is a user interface tool to visualize the properties of the selected objects and display and modify its values. The Property Manager replaces the double click on the object and the Modify selected from the local shortcut menu.

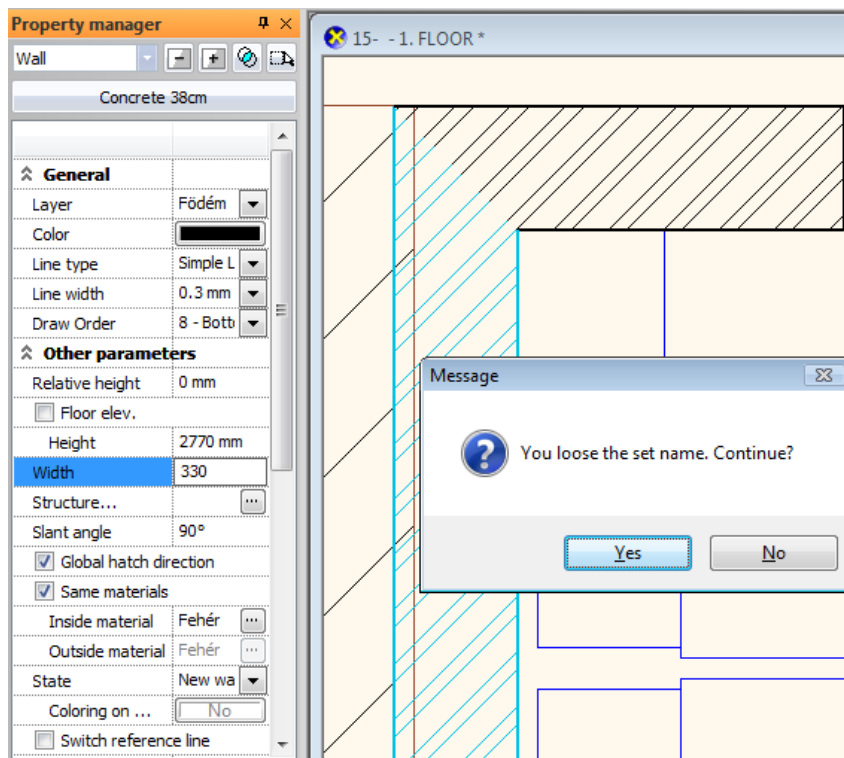
The main part of the Properties grid shows properties for an object. Different object types have different properties, including different tabs. Related properties are grouped. To get help on a property, move the mouse over the field and the short context help is displayed at the lower part of the Property Manager Window.

Single selection

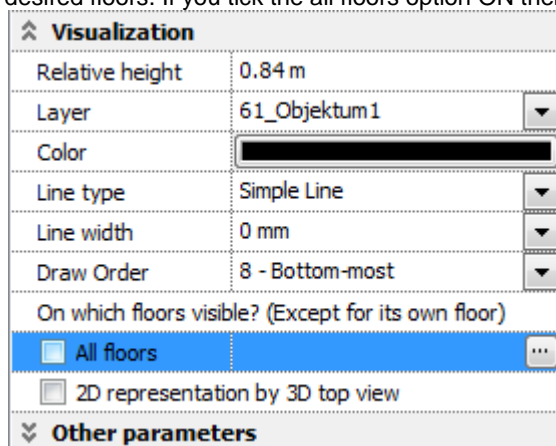
The information displayed in the grid is a snapshot of the properties at the time the object is assigned. You can change the editable property value of the selected object or objects. The new value is executed when you click on another field in the in the grid that causes the object to update with the new value.



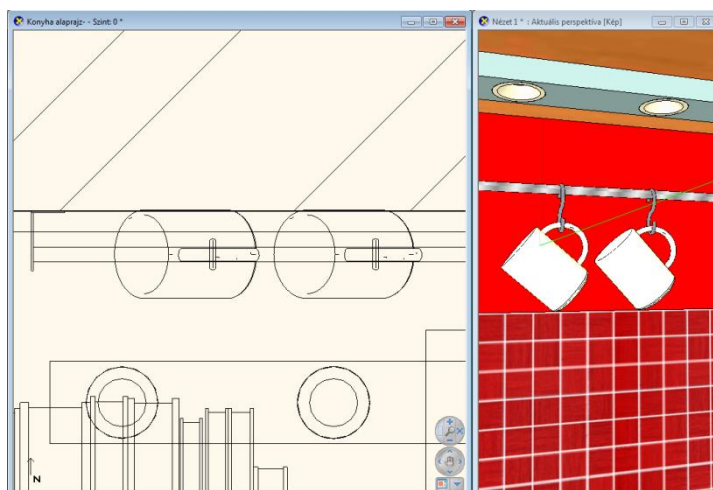
The program denotes with light red background colour all the properties that cause the losing of the assigned set name if you change any of those. This applies only to the objects that came from a set, of course. For example, in case of wall the WIDTH is such a property.



You can set the visibility of an object to multiple floors. If you click on the browse (triple-dots) button you can select the desired floors. If you tick the all floors option ON then the 2D symbol of the object will be visible on all selected floors.



The last checkbox gives another option, a dynamic 2D representation can be chosen instead of the static 2D symbol of an object, to represent the real three-dimensional top view. You can switch between the two methods in the property window of the objects, columns, beams and pillars.



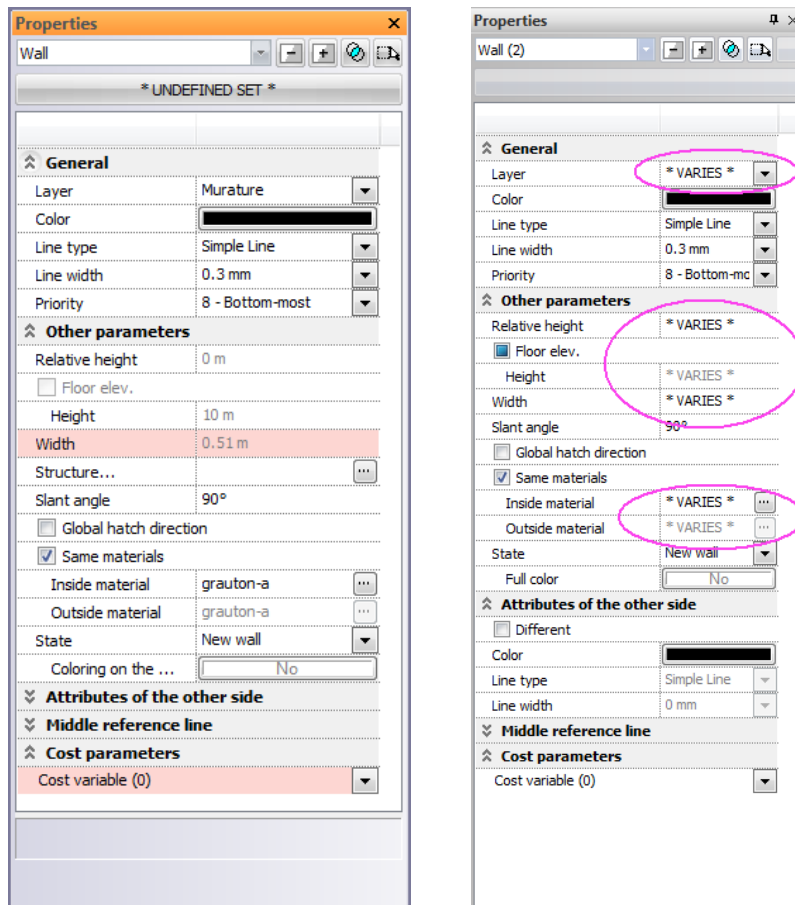
Multiple selections

In case of multiple selections the Property grid displays the common values of the selected objects. The not common property fields are filled with the **VARIES** indicator.

If different sets belong to the selected objects the VARIES indicator appears in place of the set name too.

In this case the program denotes with dark red colour and disables the modification of all the properties that would cause the losing of the assigned set name if you change any of those.

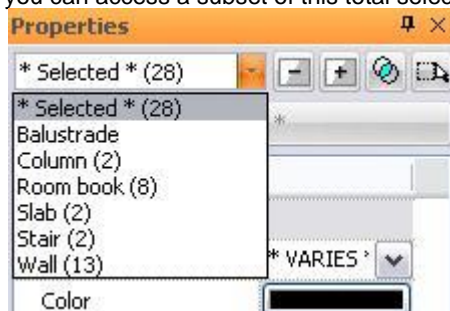
! In this case we recommend not changing the parameter denoted with dark red colour but choose the set that contains the required parameter.



2.14.1. Sub-Selection with Property Manager

Property manager makes it possible to group the multiple selections according to the objects.

When the selection is made up of different types of objects, the selection dropdown will indicate the word "Selected (n)". This is an indicator that (n) objects are selected and your selected objects are not all the same type (for example: you may have a selection made up of lines, walls, slabs and columns). By clicking the down button at the right of the dropdown list, you can access a subset of this total selection.



This feature can be very useful for changing the properties of an object type with a common property, e.g. select all the walls on a complex floor plan.

- Simply make a selection of the entire drawing.



- Drop down the list and choose Wall (n).
- Now you can change the properties common to selected walls.

2.14.2. Intersection of two-or more selections

The Properties Manager enables of intersection of two or more selections. You can access common part of two selections with this command to limit the objects that you want to modify for example to select all walls with the same wall width.

Example:

Supposing that we have a floor plan that contains walls and some of them have the property of wall width with the value of 380 mm.

- Zoom all objects on the screen and click on the upper left corner on an empty area and next on the bottom right corner on an empty area. In This way you have selected all visible objects on the floor plan.
- Now press the INTERSECTION  icon and click on QUICK SELECT  icon and choose the Wall width criteria. Type a value as 380 mm in the current measurement unit and press Ok. Press ENTER to close the current command.

The program displays the common part of the two selections.

Now you can modify easily all the walls that have the property of the same wall width.

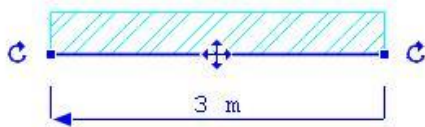
2.15. Markers

ARCHLine.XP® markers are such interactive interface tools that help with modifying objects after their selection without using menus.

Introduction

The main point of using ARCHLine.XP® markers is that it is very easy to handle them.

Appearance of markers can be various depending on their aim. After indicating every drawing object special markers belonging to that object appear and with help of special markers frequent modifications can be completed quickly. Using markers, reduces time, increases design speed and can be learned easily.



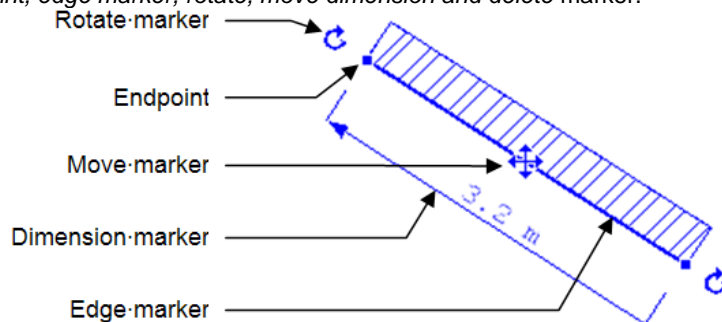
2.15.1. Markers' operation

Markers appear when you select one or more objects.

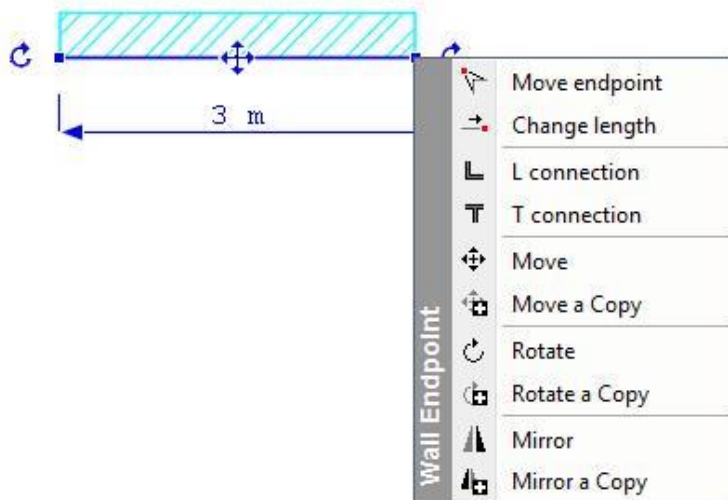
Markers can be used by left mouse button.

There are different types of markers:

Endpoint, edge marker, rotate, move dimension and delete marker.



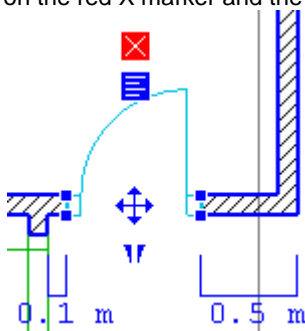
Clicking on a marker with left mouse button a menu appears where you can choose from possible commands:

Example for endpoint:**Example for edge marker:**

It appears with clicking on the edge of the object:

**Delete marker**

When you select one or more objects, the Delete marker will appear together with other markers. Click with the left button on the red X marker and the selected objects will be deleted.

**Local menu marker**

ARCHLine.XP has many context sensitive tools. Most of these tools you can find in the local menu, which can be accessed by a right click, and also by left clicking on the object and selecting the Local menu marker.



Click on this marker to see the menu, and access the commands in it.

How to use?

- ❖ Click on an object on the drawing.
- ❖ The Local menu marker automatically appears right next to the click point, which is visualized by a tiny cross.

Learning mode

At first start of the program *Learning mode* is not switched on, markers have to be used as written above.

Using *Learning mode* work can be quickened in this case markers remember the last command. *Learning mode* can be switched on with settings of dialog window *Markers*, which can be found in *File menu – Options – Cursor and Marker*, see chapter *Markers' settings*. After switching on *learning mode* markers react on short and long clicks in a different way.

| Learning mode | Effect |
|---------------|--------|
|---------------|--------|

| | |
|-------------|-------------------------------|
| Short click | The last command is executed. |
| Long click | The menu appears. |

Moving the cursor above a marker its shape changes and the marker takes the shape of the last command icon used there: with a short click this command is executed.



The learning mode is recommended to advanced users only.

2.15.2. Markers' behaviours in different views

Floor plan

After selecting an object endpoints and edge markers always appear in Floor plan window. If the selected object is seen on the screen in too small size, move, rotate and dimension markers don't appear. In this case if you want to use these markers, enlarge the object with help of mouse runner until the markers appear.

3D window

Move, rotate and dimension markers appear in 3D window if the selected object is seen on the screen in quite a big size similarly to floor plan window. Rotate and dimension markers are not seen in certain views, in this case if you want to use these markers rotate the model with help of arrow keys until the markers appear.

Section window

In Section windows and in 3D windows representing profile a limited set of markers can be accessed. The commands here work on the level parallel to window level and not to model XY level.

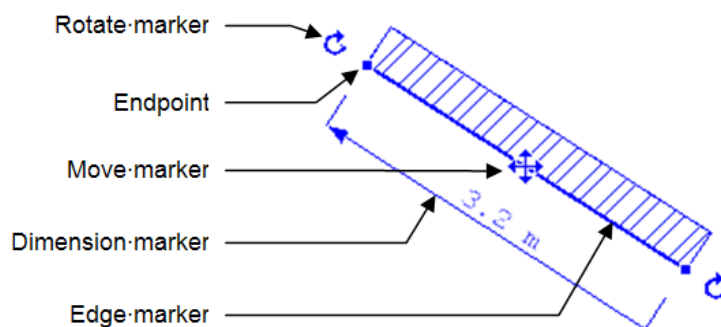
Main markers always aligned

ARCHLine.XP organizes the most common markers next to each other, so they are always placed to the same position and you can use them efficiently. When you left click on an object, you will see the markers aligned next to each other right to the click point.

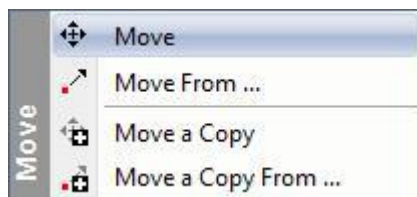


The click point is also represented when you click on an object with the left mouse button. This will help you understand the selection, when you use the local menu marker and the context sensitive tools in it.

2.15.3. Marker types and accessible commands



Move markers



Move markers take place in the centre of objects and they make their moving and lifting possible. In 3D window objects can be moved in parallel with floor plan's level and they can be lifted at right angles to floor plan's level. However in case of objects fitted to vertical or inclined level there is a possibility of moving them on fitting level as well. Menu belonging to move markers generally contain the following commands:



Move or Move a Copy From (starting point of moving is the centre of object)



Move From or Move a Copy From (starting point of moving has to be given as well)

In 3D window there are further commands:



Elevate or Elevate a Copy (starting point of lifting is the centre of object)



Elevate From or Elevate a Copy From (starting point of lifting has to be given)

If you put an object into 3D window and during this process a certain level –which is different from horizontal – was given, in the 3D window instead of Lifting command the following commands can be found:



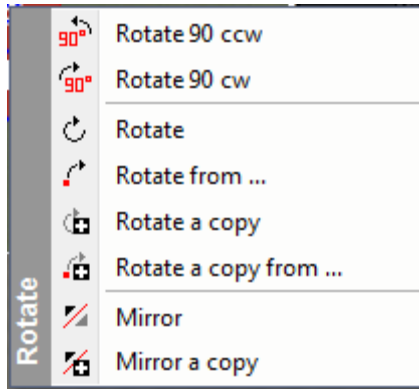
Move on its own level or Move a Copy on its own level (moving starting point is the centre of object)



Move From on its own level or Move a Copy From on its own level (moving starting point is has to be given)



Rotate markers



Rotate markers allow rotating and mirroring of objects. In 3D window objects can be rotate around an axis perpendicular to floor plan and they can be mirror to the plane perpendicular to floor plan. Menu belongings to move markers generally contain the following commands:



Rotate 90 ccw or Rotate 90 cw Copy (the centre of rotating is the move marker position)



Rotate or Rotate a Copy (the centre of rotating is the move marker and only the endpoint of rotating angle has to be given)



Rotate From or Rotate a Copy From (the centre of rotating and the starting- and endpoint of rotating angle have to be given)



Mirror or Mirror a Copy



Endpoint markers

Endpoints indicate significant points of objects. A part of commands connected to them alter (change) the shapes of objects. For example an endpoint menu belonging to Hatch contour contains the following commands:



Move node



Delete node



Fillet

In menus belonging to Endpoints generally commands for moving the whole object can be found as well:



Move or Move a Copy (moving starting point is the given endpoint)



Rotate or Rotate a Copy (rotating centre is the given endpoint)



Mirror or Mirror a Copy (first point of mirror axis is the given endpoint)

In 3D window further commands can be found:



Elevate or Elevate a Copy (lifting starting point here is the given endpoint)



Edge markers

Edge markers allow modifying the edges of objects. For example the menu of an edge marker belonging to Hatch contour contains the following commands:






Offset



Offset all



Insert Node

-  *Insert Smooth Node*
-  *Turn to Curved Edge*
-  *Turn into Spline*



Dimension markers

Dimension makers indicate the dimension of walls, openings and lines. A certain dimension can be changed with a click on the dimension value. In case of modifying the length an arrow can be found at the end of dimension line and it shows that end of object which moves in modifying. Clicking on this arrow its direction can be reversed.

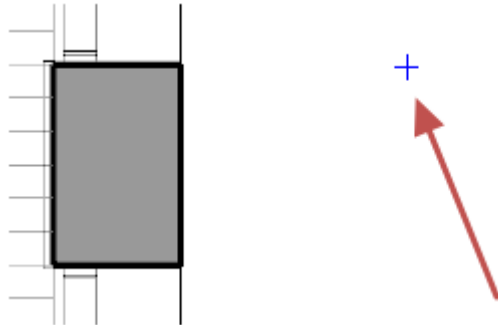


Mirror marker

In case of openings another **mirror marker** helps with transforming doors' and windows' position.

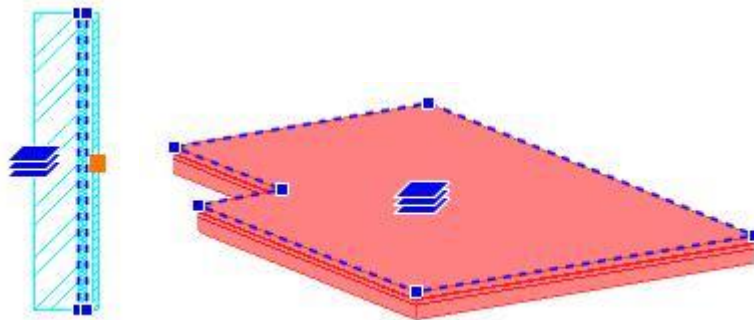
Current reference point marker

The Current reference point marker highlights the last used input point. When working with relative coordinates, it is useful to see the visual representation of it, to avoid false coordinate inputs or other false definitions.



2.15.4. Design layered walls, slabs and roofs

Each layer of layered walls, slabs and roofs can be designed with help of markers. For designing a layer you have to select an object with clicking left mouse button and at the same time you keep **ALT** key pressed down. Then edge markers appear on the object with dotted line, indicating that the given layer can be designed.

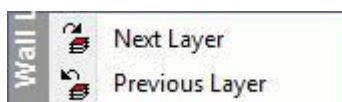


If you select the object as written above, menus of holding points and edge markers contain such commands that help to design contour of the selected layer.



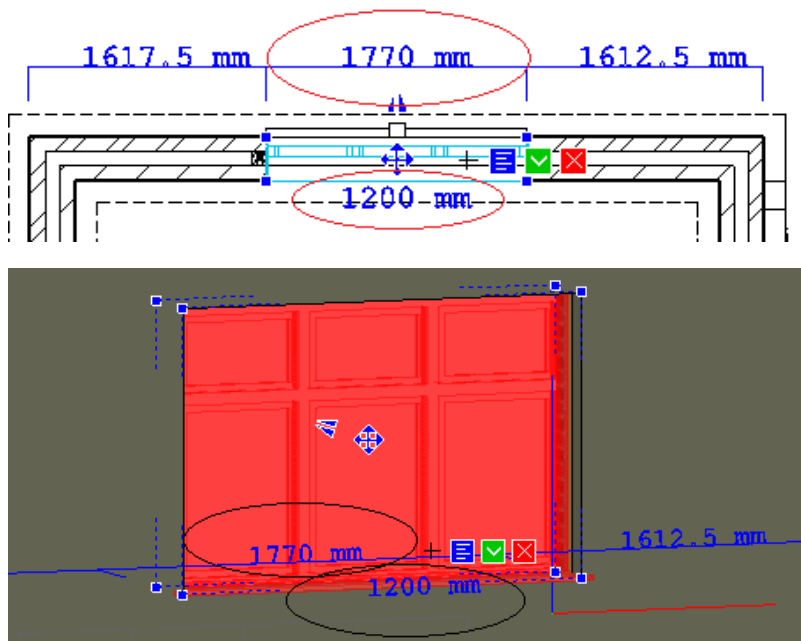
Layer changing markers

Layer changing markers help to change layers of layered walls and roofs. Menu of these markers contains the following commands:



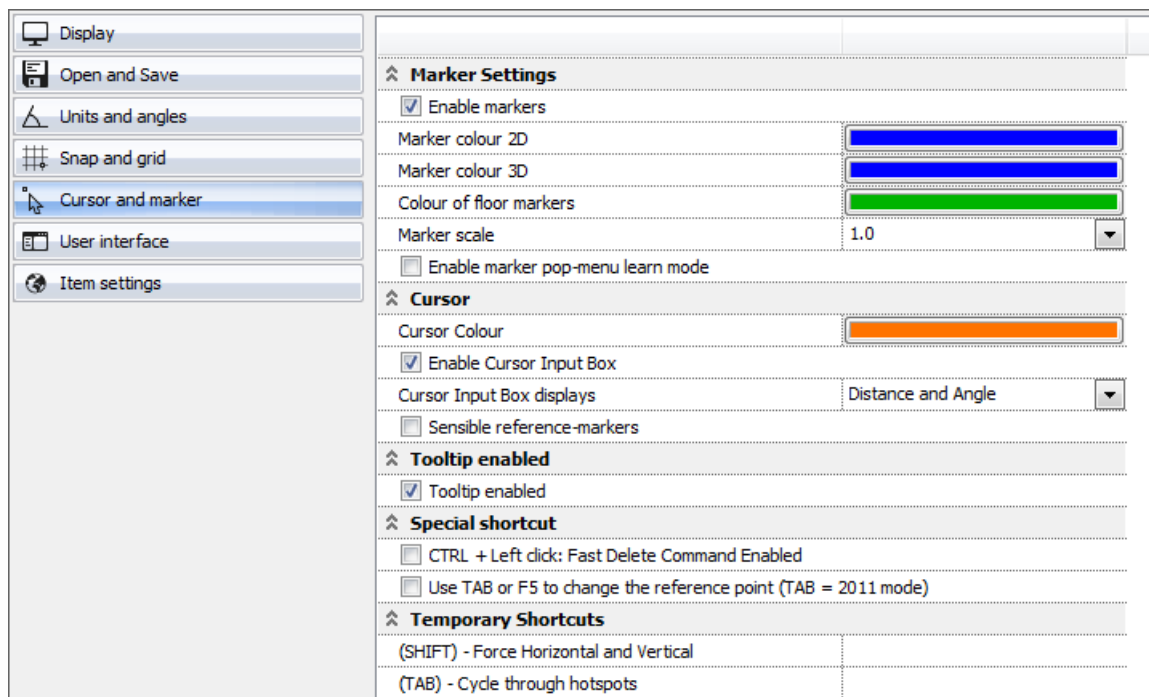
2.15.5. Door, window 'virtual' dimensions

The selected door, window displays "virtual" dimensions (width and height), providing the possibility to change the width and height of a window through the virtual dimension.



2.15.6. Marker settings

Marker settings can be found in menu point File menu – Options – Cursor and Marker.



Enable markers

Markers can be switched on and off in the program with this switch. After installing the program the option is in switched on mode.

Marker colour 2D

You can set in the colours of markers that appear in the floor plan's windows of the program. Click on the colour area on the right to modify (change) value then choose a colour from the colour charts and press down the key OK at last.

Marker colour 3D

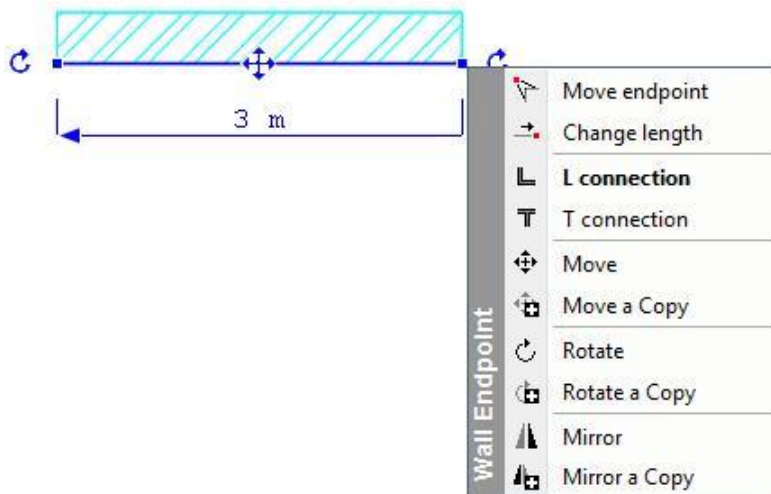
You can set in the colours of markers that appear in 3D windows. To change value click on the colour are on the right then choose a colour from the colour charts and press down the key OK at last.

Marker scale

You can increase dimension of markers because of screen resolution or other facts. Choose one from the rolling list on the right to change the value.

Learning mode

In this mode you can set in that shortcut menu of markers can remember or not the last commands. If you switch on the option, it allows remembering the last used operations for the program. Then the program indicates the actual default command in shortcut menu in bold type.



Special Shortcut

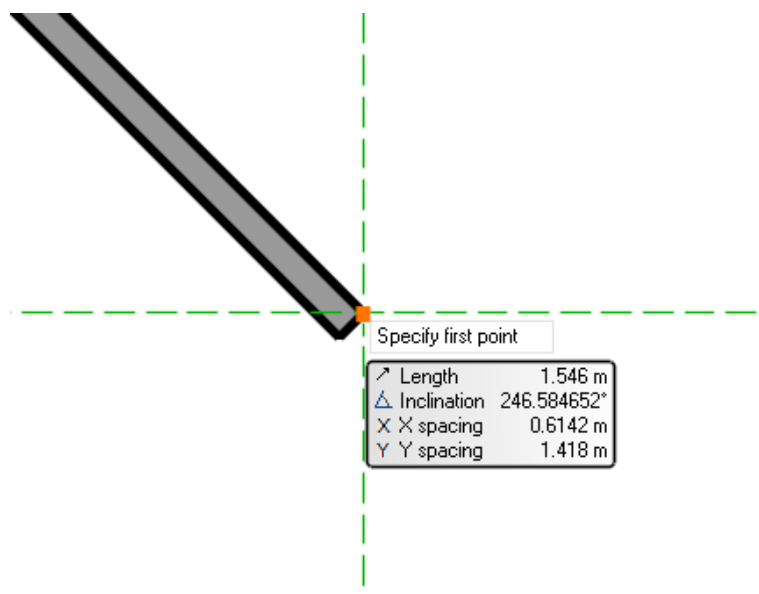
The CTRL + Left mouse click executes fast delete command. This shortcut can be switched on and off in the program with this switch. After installing the program the option is in switched off mode.

2.15.7. Sensible reference-markers

Sensible reference-markers are appearing when you move your mouse cursor over a reference point and you keep it there for a short time. A green coloured vertical and horizontal line will appear. This is a reference marker.

When you marked a reference point you can move your mouse over another reference point and keep it there for a short time. Another reference-marker will appear.

You can repeat the previous steps to mark multiple reference points at a time.



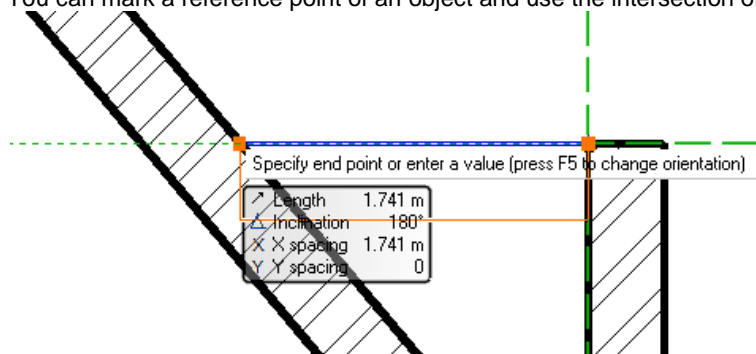
Practical examples:

Horizontal / Vertical snap

You can draw horizontally or vertically aligned objects as the mouse cursor will snap to existing reference-markers.

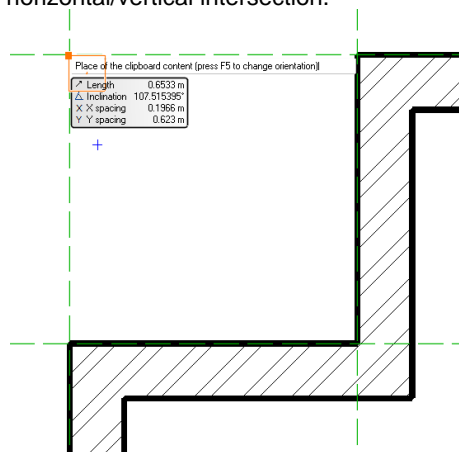
Intersection with a line

You can mark a reference point of an object and use the intersection of the reference marker with another object.



Apparent horizontal/vertical intersection

Mark the endpoints of two objects and you can use the intersection of two reference markers to draft the apparent horizontal/vertical intersection.



2.15.8. Smart Distance marker

Smart Distance is a fast tool to measure and change the distance between the first selected object and the later selected ones.

ARCHLine.XP displays the first object with a different colour. The other selected object(s) will be easy to recognize as it will have another selection colour.

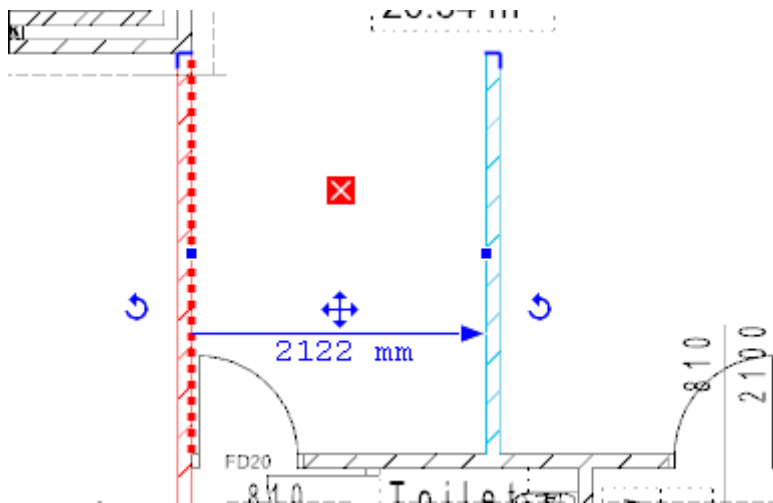
How to use?

- ❖ Click on the first object.
- ❖ Press and hold the CTRL key on your keyboard and click on the second and more objects.
- ❖ Click on the arrowhead if you wish to change direction of the movement.
- ❖ Click into the distance value, type a new distance and press the ENTER key on your keyboard.

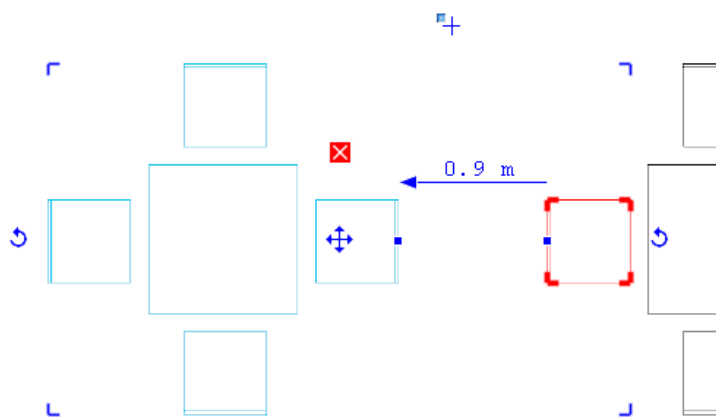
Note: This feature doesn't work when you select multiple objects by using the selection rectangle. In that case there is no object that can be distinguished as the first selected one.

Practical examples:

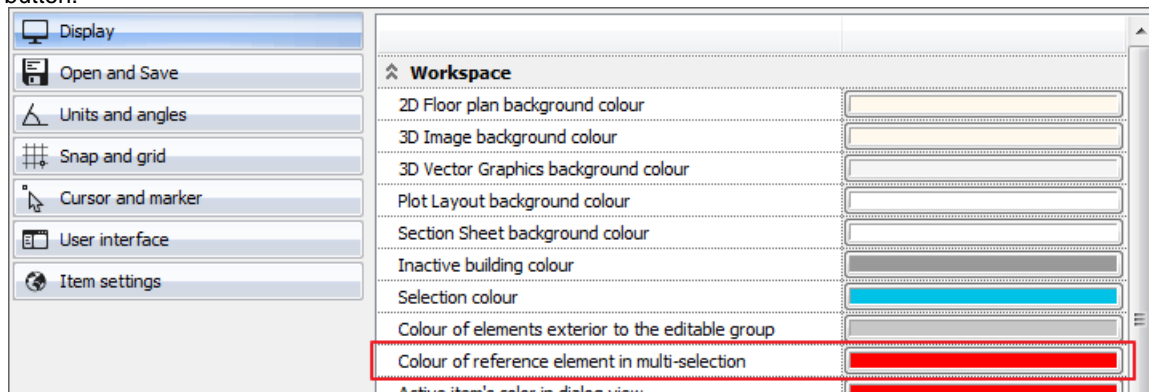
Example 1: Change the distance between two objects



Example 2: Change the distance between more than two objects:

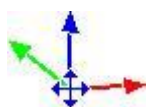


The colour of the first selected object can be changed. Please open the File menu - Options dialog and choose the Display panel. Choose the Colour of reference object in multi-selection option and set the colour by using the colour selection button.



2.15.9. Main axis markers for 3D move

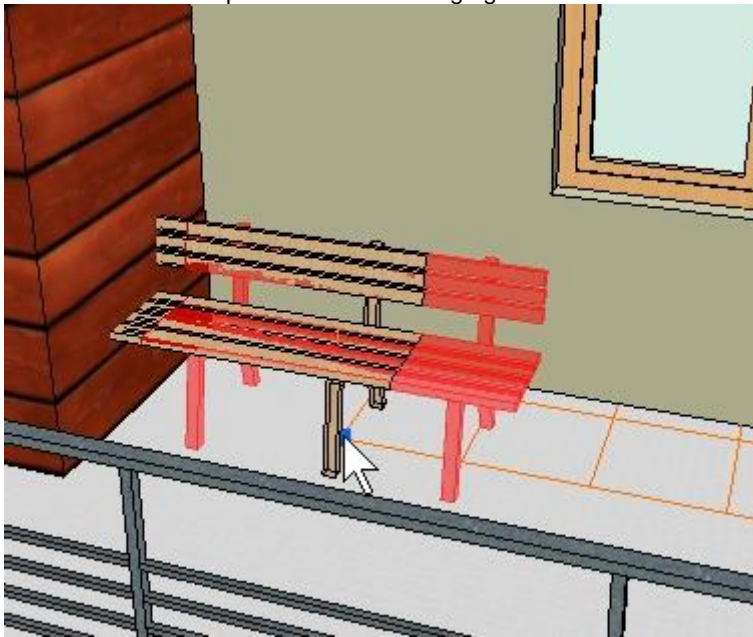
ARCHLine.XP® makes the operations in the model space easy by interactive 3D cursors.



When selecting a 3D object, the program shows the main axis for moving operations. With the help of these markers you can move the selected object in the space easily along the main axes. Each axis has different colour representation. The horizontal X axis is represented by green, the horizontal Y axis is represented by red, and the vertical Z axis is represented by blue colour.

How to use

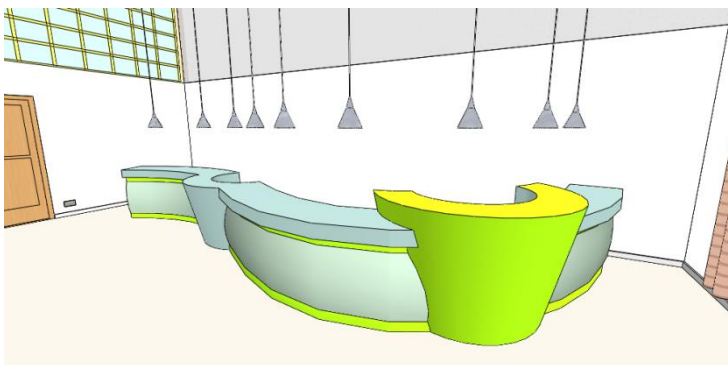
Clicking one of the main axes starts the movement along the axis. You can set the new position by moving the mouse cursor to the desired point and then clicking again.



You can see possible overlaps while moving the mouse

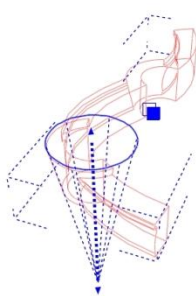
2.15.10. Editing 3D solids

ARCHLine.XP® facilitates moving, copying, editing and deleting components of complex 3D solids created by means of Boolean operations like union or subtraction.

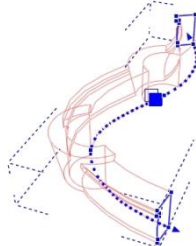


2.15.10.1. Selecting components

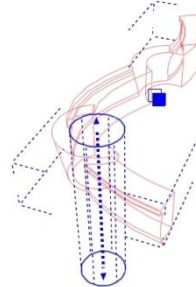
The components of the 3D solids can be selected like wall or slab layers: by selecting the **Edit Components** command in the menu of the Move marker or by clicking the appropriate component while pressing and holding down the **ALT** key.



A cone is the selected component



An extruded solid is the selected component



A cylinder-shaped hole is the selected component

You can navigate between components by using the **Previous component** or **Next component** commands of the marker. The marker appears automatically if a solid component is selected and the 3D solid consists of at least two components.



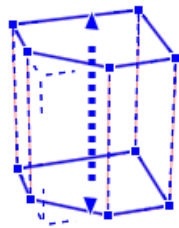
You can modify the shape of the solid which consists of only one component by selecting the single component.



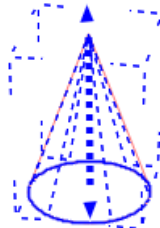
You can select the holes in complex solids as components if they are created by subtracting one component from another, by clicking the inner surface of the hole while pressing and holding down the **ALT** key.

2.15.10.2. Editing an Extruded Profile

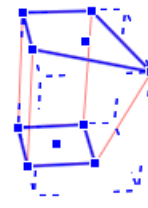
The shapes of some components are based on one or more 2D profile. The cylinder is generated by extruding a circle along a straight path. By selecting the given component you can edit these profiles.



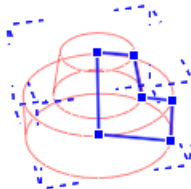
Basic extruded solid



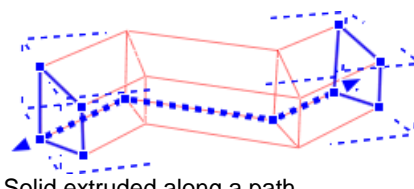
Cone



Solid based on two profiles



Rotational solid



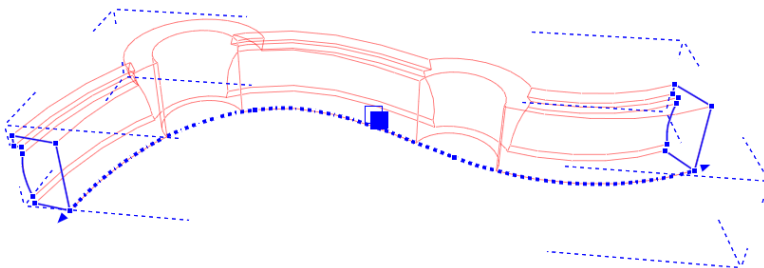
Solid extruded along a path

After selecting the desired component just click on an edge or node of the profile and select the appropriate command from the Marker menu. These menus contain the following common Profile editing commands:

- ❖ Move Node
- ❖ Delete Node
- ❖ Insert Node
- ❖ Fillet
- ❖ Offset
- ❖ Offset All
- ❖ Turn Into Curved Edge
- ❖ Turn Into Straight Edge
- ❖ Change Arc
- ❖ Change Radius

2.15.10.3. Editing the Path of Extrusion

Some components are created by extruding a profile along a given path. After selecting these components it is possible to modify the path of extrusion.



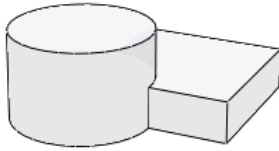
Solid extruded along a spline

After selecting the desired component just click on an edge or node of the path and select the appropriate command from the Marker menu. (You can access the first and last point of the path by clicking on one of the arrows.) These menus contain the following commands:

- ❖ Move Node
- ❖ Delete Node
- ❖ Insert Node

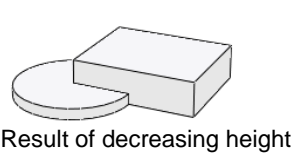
2.15.10.4. Changing height and slanting

Some components are created by extruding a profile along a given path. After selecting these components it is possible to modify their height or to slant them.

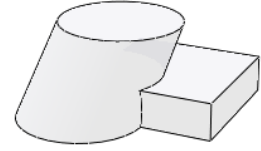


Selecting the cylinder component

After selecting the desired component just click on one of the arrows and select the appropriate command from the Marker menu. These menus contain the following commands:



Result of decreasing height

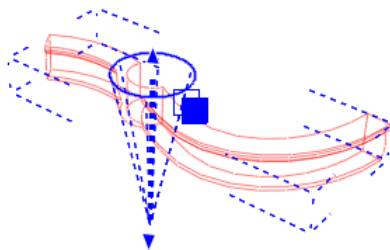


Result of slanting

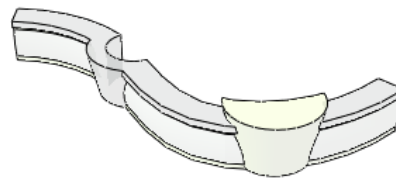
- ❖ Change Height
- ❖ Slant

2.15.10.5. Moving, copying and deleting components

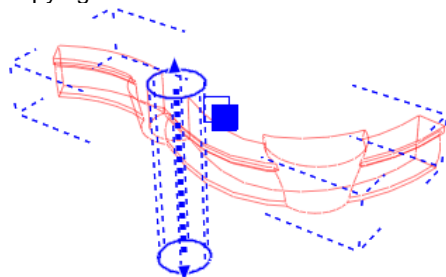
ARCHLine.XP® facilitates moving, copying and deleting components of complex 3D solids created by means of Boolean operations like union or subtraction. If a component is copied, the copy inherits the original one's relations to the other components. For example, if the original component is a hole added by a „Subtract” Boolean operation, the copied component will be a hole, too; it will be subtracted from the same components as the original one.



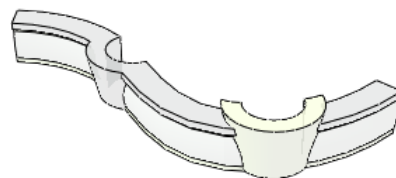
Copying the selected cone



The copy inherits the original component's relations to the other components.



Copying the cylinder shaped hole



The copy will be a hole, too.

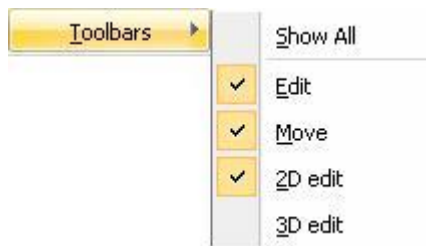
After selecting the desired component just click on one of the arrows or node markers and select the appropriate command from the Marker menu. These menus contain the following commands:

- ❖ Move
- ❖ Copy
- ❖ Delete

2.16. Toolbars

A toolbar is a graphical presentation of commands optimized for efficient work because always displayed instead of being displayed on mouse click like menu bar commands. Toolbars provide direct access to the same commands like menu bar.

The list of toolbars can be found in the **Window** menu:



Visualizing Toolbars:

You can choose which toolbars of the program you need to visualize on your screen. If you check in the **Show all** command, all the toolbars appear on the screen.

Moving the toolbars - Floating toolbars

The toolbars are default on the side of the main window. From there you can replace them if you drag the toolbar from the dot line marking its side and move the cursor to the new place.

If you place the toolbar in the middle of the drawing area, a floating toolbar appears with a heading. The floating toolbars can be resized moving their sides (if the cursor becomes a double arrow), dragging the header you can replace them and clicking on the icon on the top right corner you can close them.

Default position of toolbars

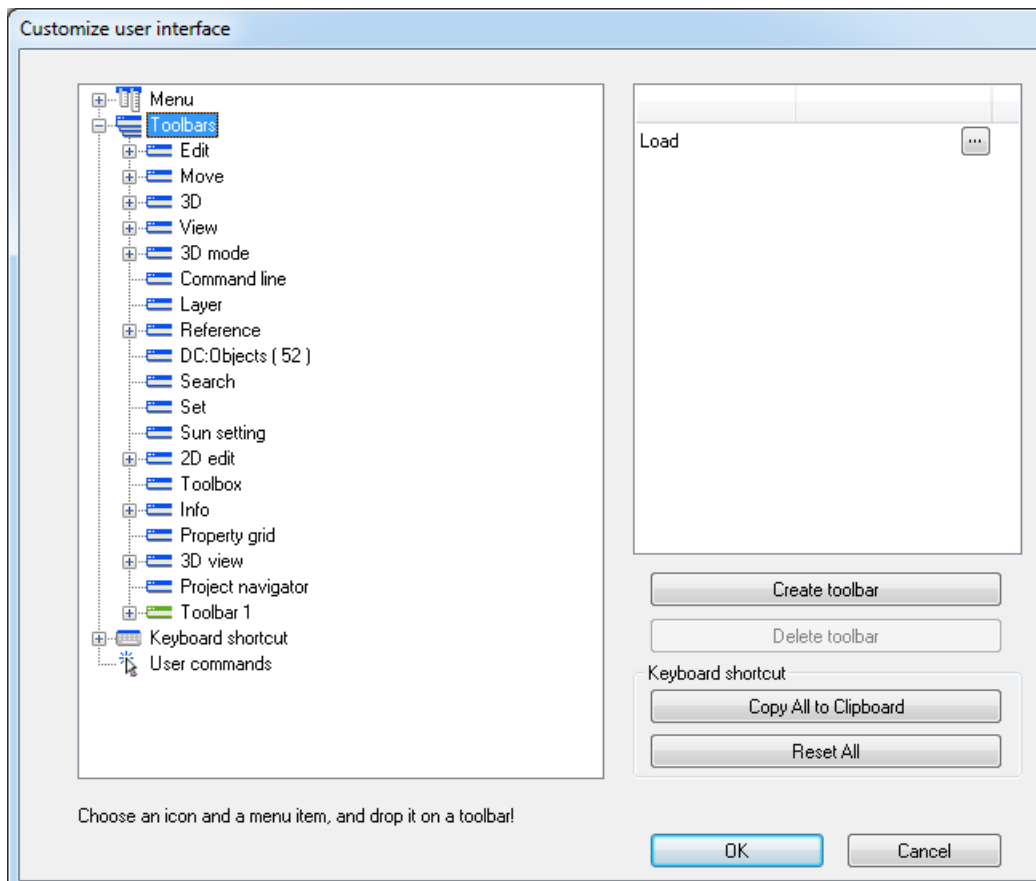
If you have changed the position of toolbars or created new ones with the **Window menu - Default position of Toolbars** command you can restore the original arrangements.

Big toolbar buttons

The program by default has small icons, but selecting this command it is possible to visualize big icons on the screen. The **Window menu - Big toolbar buttons** command is a switch, and if it is active there is a tick in front of the option. If you check off the option the icons appear in the small, original size.

Setting toolbars

Selecting the **Tools menu - Customize - Toolbars** command a dialog appears, where just as in the Window menu toolbars can be activated. Here you can create and delete new toolbars.



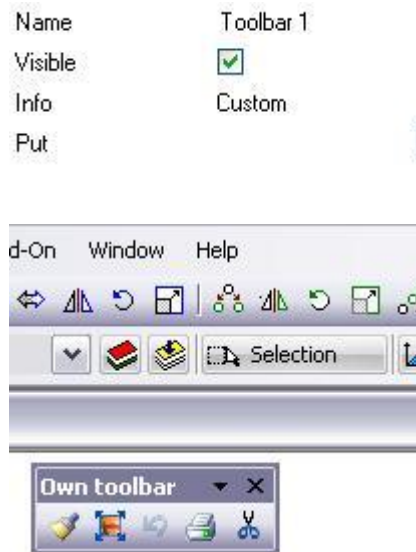
Create new toolbar

- Click on the Create toolbar button to create new toolbar. The list of existing toolbars appears in the dialog.
- Rename the new toolbar in the Name field: The new toolbar appears on the screen.

- Move the icons of existing toolbars into your new toolbar by keeping the left mouse button pressed.

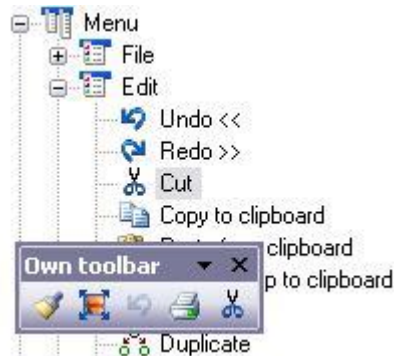
If you have selected an icon from the original system toolbar the program makes a copy of the icon. If an icon is not needed in the new toolbar simply pull it out of it with the mouse.

- OK to close the dialog



The method is the following to drag a **command** into a new toolbar:

- Select from the icons on the left side of the dialog and choose a command among the objects of the menu or toolbars.
- Drag the icon onto the needed toolbar.



Delete toolbar

Only toolbars created by the user can be deleted. Default toolbars cannot be deleted.

- Select the toolbar to be deleted in the dialog.
- Press the **Delete** button. **OK**.

2.16.1. Status bar

The status bar is a collection of the most frequently used commands in ARCHLine.XP such as

- ❖ Options,
- ❖ Grid, Snap, Osnap, Ortho,
- ❖ Selection control,
- ❖ Floor/Perspective settings,
- ❖ Generate 3D model,
- ❖ Layer controls,
- ❖ Reference point bar,
- ❖ Move bar and
- ❖ Edit bar commands.



Options dialog

You can customize the program settings and appearance in the Options dialog.

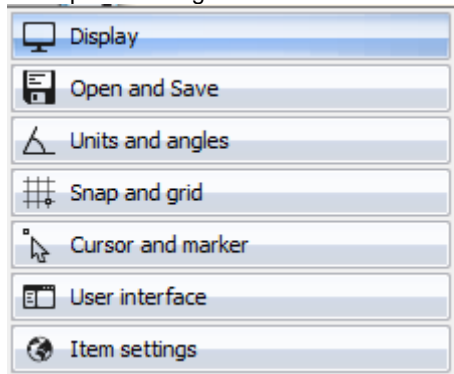
The Options dialog is located in the bottom left-hand corner of the ARCHLine.XP Status bar and has a unified interface outlook.

Click on the first icon (gear like) to display the Options dialog.



You can also open the Options dialog in the File menu and click Options

The Options dialog box includes the following tabs:



Display

Controls options that relate to presentation and drawing settings, colours and other visual options.

Open and Save

Controls options that relate to opening and saving files, import/export settings.

Units and angles

Unit and angle settings control how ARCHLine.XP interprets the length, coordinate and angle entries and how it displays lengths, coordinates and angles in the drawing and in dialog boxes.

Snap and grid

ARCHLine.XP provides drawing aids as snap and grid to provide assistance in drawing quickly and accurately.

Cursor and marker

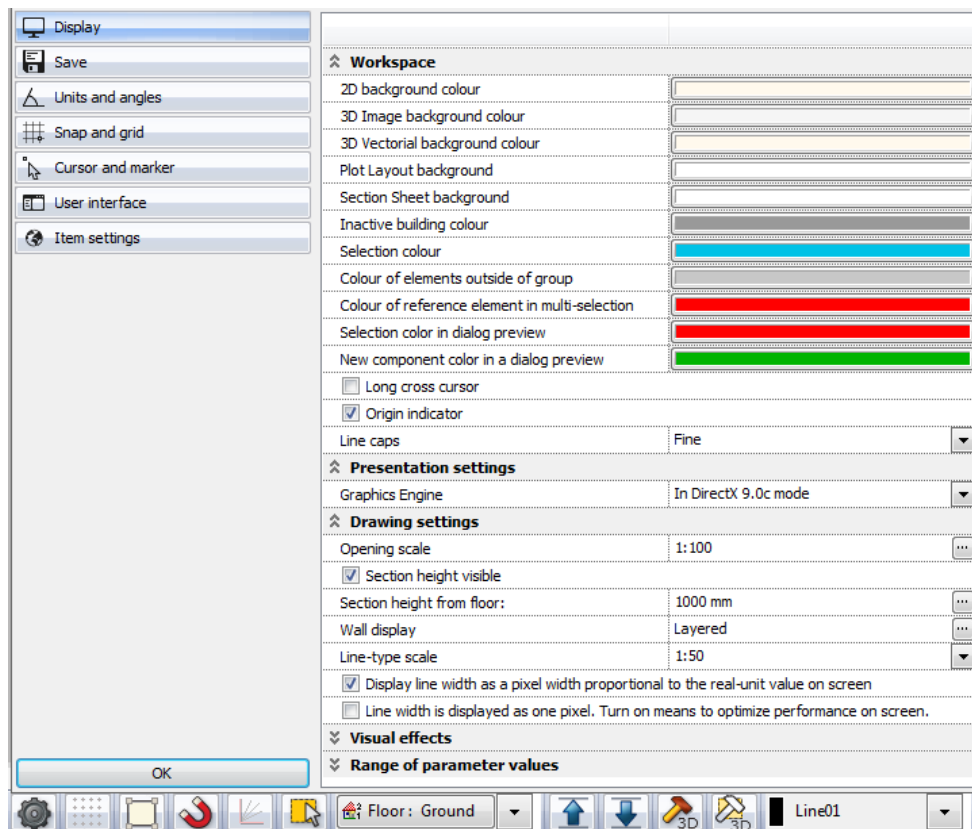
Cursor and marker settings can be found here.

User Interface

User interface settings control the language, the toolbox modes and schemes of ARCHLine.XP.

Object Settings

You find global parameters here that are not related to the given objects Property panel...



Press **Ok** so that the changes take effect.

* Star Icon

Star icon before the option name signifies that an option is saved with the project. An option saved with the project affects only the current project. If you transfer the project to another computer the option will be valid on that computer as well.

An option saved in the computer system registry (and for this reason not displayed with a star icon) affects all projects.

Grid, Snap, Osnap, Ortho,



The 2-5 icon group changes the settings of grid, snap, object snap and ortho commands.

| | |
|--------------------|--|
| Grid | Grid can be switched on/off. |
| Snap | Snap grid can be switched on/off. |
| Object snap | Objects snap on/off. |
| Ortho | You can switch between orthogonal and normal mode. |

Grid

A grid with arbitrary division can be visualized that helps orientation on the drawing. The grid is not part of the drawing. It is not printed with the drawing.

Switching on the snap, the grid becomes a snap grid. This means that points defined by graphical tools will be attracted to the nodes of the grid, or to the proportional part of it.

Angle snap

In a graphical editing command the **Angle snap** defines the position of the second point in correlation to the first given point. The second point snaps to the nearest fix angle. The fixed default directions are: 0° , 45° , 90° , 135° , 180° , 225° , 270° , and 315° .

You can activate the angle snap and modify the default angles in the **File menu -Options - Snap and grid** dialog.

Selection button

Activates the Selection pop menu..

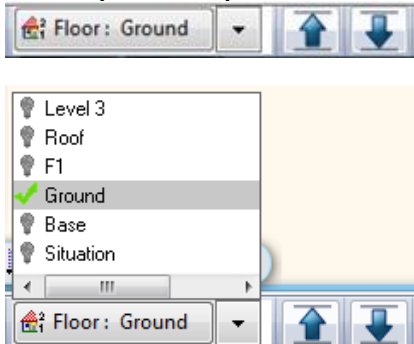


See description in 7. *Selection* chapter.

Floors / 3D Perspectives control buttons group

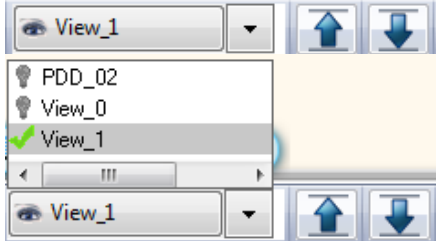
The contents of this group represent the actual workspace nature.

2D floor plan workspace:



The floor plan structure is listed on the button. When you have more than one floor in your workspace, you can switch between them by clicking on the floor name in the list or go up, down one floor by clicking on the blue Up, Down icons on the bar.

3D model workspace:




The saved perspective views with a name are listed here. When the perspective opens, the title bar of the button changes to display the name of the current perspective.

In addition, by clicking on the blue Up, Down icons, allows you to quickly switch between other saved perspective views.

To open a new perspective:
Click the Perspective button that displays the name of the current perspective. (This provides the same command as the View > Perspective view on the menu bar.)
Define the perspective that you want to add and save it with a new name.

Create 3D model

Activates the Build up 3D model dialog.  See description in chapter 6.2 *Building 3D model*.





Create partial 3D model

Build up 3D model by rectangle with clipping on all floors.  See description in chapter 6.2.1.4. By rectangle - on all floors

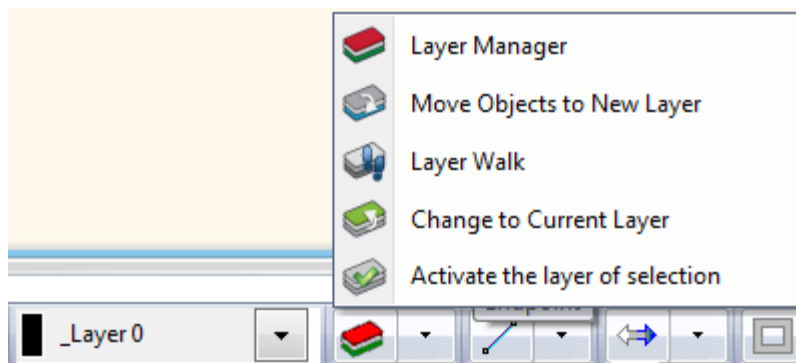


Referenc
e menu
Move
menu

 See 2.16.5 *Reference toolbar*
 See 2.16.4 *Move toolbar*

2.16.2. Layer toolbar

The *Layer toolbar* collects the main Layer management commands:



Layer manager

This dialog manages layers and layer properties. You can change the current layer, create new ones, delete or turn on and off layers and lock/unlock them, change the printable status. In layer control mode you can assign properties such as colour and line type, line weight.

Move Objects to New Layer

This tool will move objects from one layer to another, by selecting the destination layer from a dialog.

Layer Walk

This tool displays objects on layers that you select in the Layer Walk dialog. This tool is very helpful to check which object lies on which layer.

Change to Current Layer

This tool moves objects to the current layer.

Make Object's Layer Current

This command changes the current layer by selecting an object as reference. It will use the object's layer as current layer. This command is accessible in layer control mode only.

2.16.3. Edit toolbar

The *Standard toolbar* includes the often-used general commands (Open file, Save, Print, etc.) and the often-used editing commands.



| | | |
|--|-------------------------------------|---|
| | New window | Opens a new window that becomes the part of the project. |
| | Open file | Opens the selected drawing file. This function equals the File menu - Import command. |
| | Save project | Saves the project. This function equals the File menu - Save project (Ctrl+S) command. If we work with drawings instead of projects, the current drawing is saved. |
| | Print | Opens the Print dialog . (Ctrl+P) |
| | Cut | Cuts the selected part of the drawing and puts it onto the clipboard. |
| | Copy | Copies the selected part of the drawing to the clipboard. |
| | Paste | Pastes the selected part of the drawing from the clipboard. |
| | Undo | Revokes the last command. It is possible to revoke maximum 20 steps. (Ctrl+Z) |
| | Redo | If the Undo command was used to restore the previous situation, the Redo steps forward in the 2D commands queue. (Ctrl+Y) |
| | Copy properties | Copies the properties of the selected object to another object. (Alt+A) |
| | Create Similar | The Create Similar command allows you to create a new object that is similar to a selected object.. |
| | Delete | Deletes immediately the objects you click on. |
| | Delete between intersections | Deletes that part of the selected object, which is between the two intersection points (or endpoints) nearest to the selected point. |
| | Trim first object | This command deletes (or adjusts) the unnecessary (or missing) part of the first selected objects to connect it to the second selected object. |


Trim both objects

Adjusts two selected objects to each other.


Define section

You can define the section line. The program is going to use this line when creating the section.

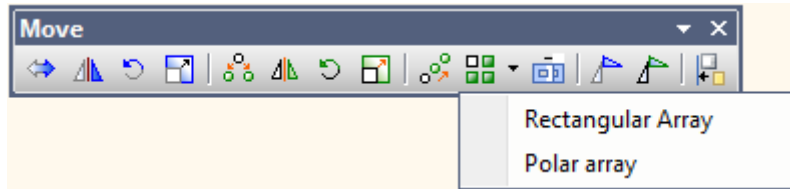


See description of these commands in the 7. *Bases of editing*, 8. *Bases of modifying* and in 6.5 *Section* chapters.

2.16.4. Move toolbar

Using the *Move toolbar* you can define different geometrical transformation on the objects.

This is also available from the Status line in a more compressed form as a list. It saves space on your screen and you may enlarge the drawing area.



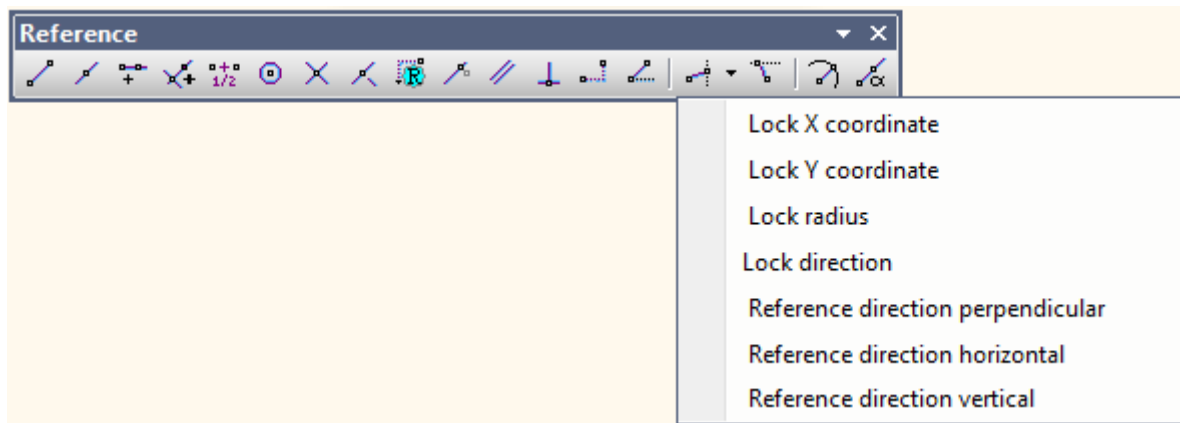
| | | |
|--|-----------------------------|--|
| | Moving | Move the selected objects with the defined vector. |
| | Mirroring | Mirrors the selected object through a given axis. |
| | Rotation | Rotates the selected objects. |
| | Scale | Magnifies the selected objects. |
| | Duplication | Copies the selected objects with a given vector. |
| | Duplicate and mirror | Mirrors and copies the selected objects. |
| | Duplicate and rotate | Duplicates and copies the selected objects. |
| | Duplicate and scale | Scales and copies the selected objects. |
| | Multiply | Makes given copies of the selected object along the defined distance. Divides the given distance into defined equal parts. |
| | Rectangular array | Copies a given object according to the given matrix |
| | Polar array | Copies a given object according to the given polar matrix |
| | Stretch | Stretches the selected objects by a vector |
| | Shift and Rotate | Move the selected objects with the defined vector and rotate. |
| | Duplicate and Rotate | Copies the selected objects with the defined vector and rotate. |
| | Align | Aligns and/or distributes the selected objects on floor plan. |



See description of the commands in the 8. *Editing commands* chapter.

2.16.5. Reference toolbar

The objects of the *Reference toolbar* are used when the program is waiting for a coordinate input.



With some of the icons you can define the special points that the cursor has to find. With others you can lock coordinates, distances, directions, projections.

This toolbar helps you to define precisely the input data.















The commands can be combined with each other.

This is also available from the Status line in a more compressed form as a list. It saves space on your screen and you may enlarge the drawing area.






See 2.16.1. Status bar

Snap to special points, defining direction and distance:

| | | |
|---|------------------------------------|---|
|  | Endpoint | Defines the endpoint of the selected object. |
|  | Midpoint | Defines the middle point of the selected object. |
|  | Distance from endpoint | Defines a new point as a point on the selected object at a specified distance from the endpoint nearest to the selected point. |
|  | Distance from intersection | Defines a new point as a point on the selected object at a specified distance from the nearest intersection point. |
|  | Half division point | Divides the distance between two points into half. |
|  | Centre point | Defines the centre of an object. |
|  | Intersection point | Defines the nearest intersection point on the selected object. |
|  | Apparent intersection point | This command is able to find the intersection point of two selected objects. |
|  | Reference point | The selected point becomes the reference point. |
|  | Nearest point | Defines the nearest point of the selected object. |
|  | Parallel direction | The next input coordinate is in direction of the selected object or in the direction of the tangent of the selected object. |
|  | Perpendicular direction | The direction of the next input coordinate is perpendicular to the selected object or to the tangent drawn in the selected point. |
|  | Relative distance | The next point will be defined in X, Y distance. |
|  | Relative polar distance | Defines the new point at a given angle with a given radius from the last point. |

Coordinate-, distance, locking direction:

| | | |
|---|--------------------------|--|
|  | Lock X coordinate | Locks the absolute / relative X coordinate of the new point. A line appears and the program recognizes only the points of this line. |
|  | Lock Y coordinate | Locks the absolute / relative Y coordinate of the new point. A line appears and the program recognizes only the points of this line. |
|  | Lock radius | Having locked the radius a circle appears, after this |

**Lock direction**

the cursor finds only the points of this circle.
If you lock the value of the angle a line appears in the given direction. After this the cursor finds only the points of this line.

**Lock angle**

Locks the actual editing direction graphically. After this the cursor finds only the points of this line.

Projections:**Reference direction perpendicular**

The new point will be in the intersection of the locked direction and the perpendicular projection of the selected reference point.

**Reference direction horizontal**

The new point will be in the intersection of the locked direction and the horizontal projection of the selected reference point.

**Reference direction vertical**

The new point will be in the intersection of the locked direction and the vertical projection of the selected reference point.



See description in 5.2. *Defining angle*.

2.16.6. View toolbar

The commands of *View toolbar* can be used in both the 2D and 3D drawing windows.

**Zoom all**

Modifies the scale of the active window to make the entire actual drawing visible.

**Zoom in**

Enlarges the selected rectangle of the actual drawing to the whole active window.

**Zoom out**

Reduces the window by a scale factor of 0.5.

**Redraw**

Redraws all windows containing the actual drawing.

**Pan**

Shifts the active 2D window on the actual drawing.

**Local Origin**

You can redefine the local coordinate system by giving the origin and the direction of the X axis.

**Previous view**

Restores the last defined view into the active window.

**Next view**

Reloads the next stored view in the active window.

**Enlarge active window**

The active window appears on the left side of the screen. Other views get to the right above each other.









See detailed description of the commands in chapter 6.1. *Setting view*.

2.16.7. 3D View toolbar

The icons of *3D View Toolbar* provide different ways to visualize the 3D model.

**Perspective settings**

Defines the perspective transformation by viewpoints on the 2D drawing. You can save the actual perspective view with a name in the Perspective dialog.

| | | |
|---|--------------------------------|--|
|  | Define right view | Visualizes the right side view of the model in the 3D window. |
|  | Define frontal view | Visualizes the frontal view of the model in the 3D window. |
|  | Define top view | Visualizes the top view of the model in the 3D window. |
|  | Define axonometric view | Visualizes the axonometric view of the model in the 3D window. |
|  | Define back view | Visualizes the back view of the model in the 3D window. |
|  | Define left view | Visualizes the left side view of the model in the 3D window. |













See description of these commands in chapter 6.1. *Setting view*.

2.16.8. 3D Mode toolbar

The icons of *3D View Toolbar* provide different ways to visualize the 3D model.



| | | |
|---|----------------------------|--|
|  | New rotation centre | You can change the centre of rotation. |
|  | Shadow ON/OFF | You can switch on or off the shadow. |
|  | Wire frame mode | Shows all the edges and vertexes of the solids. |
|  | Hidden line mode | Shows all the visible lines and vertexes of solids. |
|  | Colour mode | Visualization with colour representation of the materials. |
|  | Textured mode | Visualization with original texture representation of the materials. |
|  | X-Ray mode | The X-ray rendering type is similar to the Textured (with wireframe). The difference is that non-transparent surfaces become transparent and therefore the structure of the model can be overviewed in unique and spectacularly way, similarly to an X-ray photo. |
|  | Rendering | Prepares a photorealistic image of the perspective or axonometric model in the 3D window. |
|  | Walk | In case of walk – like in the reality – the viewpoint height of the spectator doesn't change. When you move in the model with the help of walk, then it moves the viewpoint (the camera) on a fixed horizontal plane. |
|  | Fly | In case of fly the viewpoint height of the spectator can change as if it flies the model. This function can be important, when you need higher freedom of movement from Walk. You can reach down and up different levels (for example movement on the step) owing to the freedom open space coordination independently from the size of the model. |

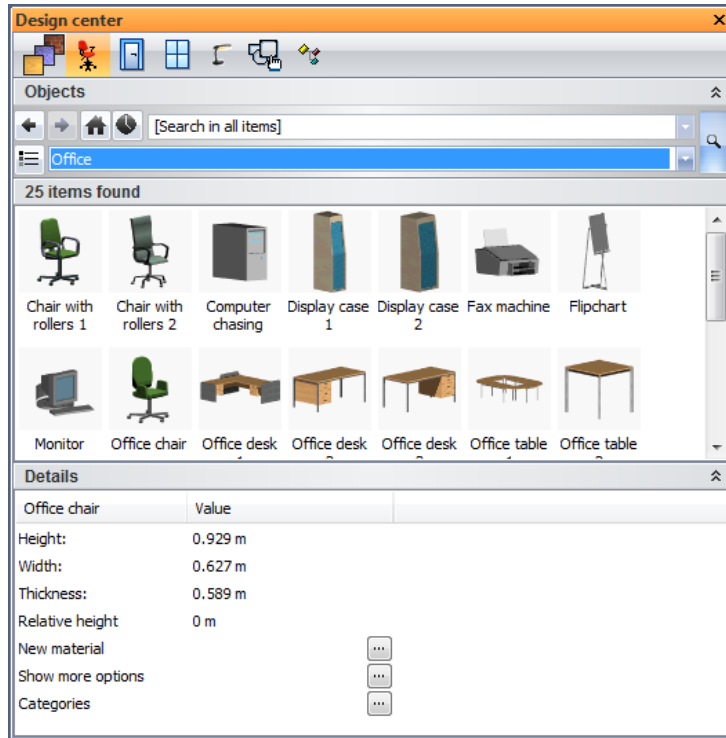


See description of these commands in chapter 6.1. *Setting view*.

2.16.9. Design Center - F9

The Design center helps finding the objects quickly even in a large database. There is no folder-based listing, while the software keeps its beneficial structure in the categories.

If you feel that from huge amount of objects it is almost impossible to find the right one in a minute, you should get to learn the Design center.



The Design center can display and manage the following objects in one single interface: Materials, Objects, Doors, Windows, Lamps, 2D groups, Sets.

2.16.9.1. Design Center interface

There are 4 main parts of the interface of the design center.



◀ Header

◀ Object type list

◀ Content panel

◀ Details panel

Design Center – Header

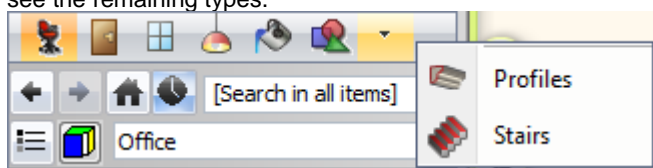
Using the buttons in the header you can hide or switch off the Object Center.

Design Center – Object type list

You can choose an object from the object type list. This way the software will show you the object only from the selected object type. These are the types one can choose from:

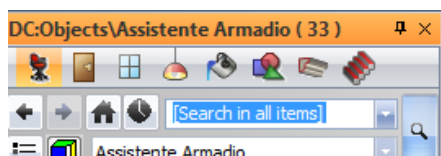
- ❖ Objects
- ❖ Doors
- ❖ Windows
- ❖ Lamps
- ❖ Materials
- ❖ Groups
- ❖ Profiles
- ❖ Stairs

If the Object type list is too narrow to show all the possible icons, you can see a small arrow at the end of the row. Click on it to see the remaining types.



Design Center – Content panel

The Content panel of the Design Center has the following main parts:



◀ Header

◀ Finder

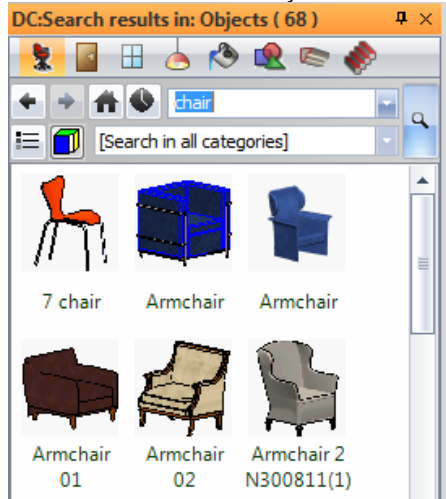
◀ Results / Content

Content panel – Header with current path

When you browse in the Design Center and enter into a category you can see the current path at the top of the Design Center. This feature helps to understand where exactly the content is in a deeper category structure. The path is visible on top of the content window of the Design Center.

Content panel – Header with search result summary

The search result summary shows how many objects matched the search conditions.



Content panel – Finder

In the Finder of the content panel you can filter & search objects and reach the previous results also.

You can find the following controls in the Finder:

Previous results

- ❖ You can re-execute a search with the previous conditions to see the results of your previous search again.

Following results

- ❖ You can re-execute a search with the conditions to see the results of your next search again. This button is available only if you already used the previous results button.

Home / Categories

- ❖ When you push the Home / Categories button, the software will jump to the category view, which is the highest level. Here you can see the categories, represented as virtual folders, and you can actually open them to see their content.

Last used objects

- ❖ When you press the Last used objects button, the software will show them in a short list.
- ❖ This feature can be very useful when you want to use an object again which you found just before, as you do not need to search for it again.

Search field

- ❖ You can use any word or part of it in the search field. The phrase given here will be used to examine if it exists in the name of the objects.
- ❖ When you would like to use a previously typed phrase again, you do not need to enter it, as the software continuously records them. All you need to do is just click on the small arrow at the end of the search field, and you can choose any of the phrases you used earlier.
- ❖ If you do not want to give a search phrase, just select the [Search in all objects] option.

Category filter

- ❖ You can find all the previously created categories in the Category filter. (You can define categories, for example when you create an object.) This way you can narrow your search only to a certain category.
- ❖ If you do not want to filter for categories, just select the [Search in all categories] option.

Search button

- ❖ You can start the search with the given conditions when you hit the Search button.



Content panel – Results/Content

You can find the result of the search in this part of the content panel. When you use the Home/Categories button, you can see the actual categories as virtual folders here.

When you select an object of the result, a part of its properties will appear at the bottom panel called Details.

Double-click on an object to see its detailed properties.

You can also use the Drag & drop method on an object of the search result. When you drop the object on a drawing the default command will be started, in case of objects it is the Place object command.

Design Center – Details panel

You can see a few of the selected object's details here. If the Details panel is empty it means that there is no selected object in the Results/Content field, or the selected object has no property that you can change this way (e.g.: Sets).

The list of properties you can access at the Details panel varies depending on the selected object's type. Some properties are commonly used, such as the following.

Show more options

At the end of the Show more options row you can find the modify button with triple dots. Please click on it if you would like to change the object using the Properties dialog.

Categories

You can access the Category manager by clicking on the modify button at the end of the Categories row. You can create & remove categories here and you can set which category (or more categories) should contain the selected object.



See description of these commands in chapter 3.2.2. *Material properties*

2.16.9.2. Features of the Design Center

Category based content handling

One object can be in multiple categories, which makes handling flexible compared to the classic folder-based technology.

Search history

The software is continuously recording the results of searches, so you can revisit previous result by just one click.

Fast search engine

The search engine was developed for the software's special needs, thus it can provide quick & accurate results in seconds even in a large database of objects.

Free word searching

Don't remember the full name of an object you used earlier? No problem! Just type any known part of the name, and the software will create a list of the possible objects for you.

Unified interface for all object types

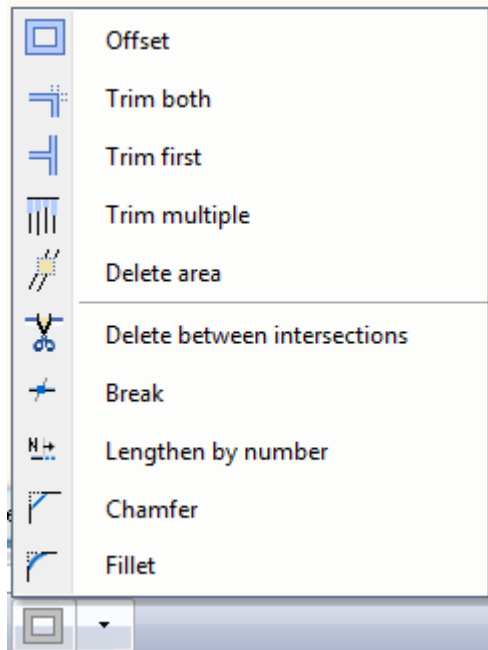
Whether you are working with doors, windows, objects, sets or even with groups and materials you can use the same convenient interface for all of them. You can use the flexibility of searching for all those object types.

2.16.10. 2D edit toolbar











This toolbar collects the frequently used 2D edit commands.



Or you find it in Status bar:





The 2D edit commands are as follows in order:

| | | |
|---|-------------------------------------|--|
|  | Offset | Defines a line that is parallel to the selected object, has the same length as the selected object. |
|  | Trim both | Adjust two selected objects to each other. |
|  | Trim first | Deletes (or adjust) the unnecessary (or missing) part of the first selected object to connect it to the second selected object. |
|  | Trim multiple | Deletes (or adjust) the unnecessary part of a group of objects to connect it to the first selected object. |
|  | Delete area | Deletes the section of the object within the selected area. |
|  | Delete between intersections | Deletes that part of the selected object, which is between the two intersection points (or endpoints) nearest to the selected point. |
|  | Break | Breaks an object into two objects at the point where the object intersects with another object. |
|  | Lengthen by number | Changes the length of the selected line with a specified value. The length specification can be absolute or relative. |
|  | Chamfer | Connects two objects with an angled line. |
|  | Fillet | Connects two objects with an arc. |

2.16.11. Sun setting toolbar

The **Sun setting** toolbar can be switched on in the submenu of *Window menu – Toolbars*. With the help of this you can quickly set the date and time. This setting is analogous to the *View menu – View Properties – Sun position* dialog settings.

The  *Show shadow* icon is analogous to the show shadows option in the *View palette – Shadow* dialog.

Clicking on the  *Sun position* icon you can quickly access the *Sun position* dialog, which is analogous to the *View menu – View Properties – Sun position* command.

Accordingly, this setting affects the shadows:

- ❖ in the Image 3D window
- ❖ in any 3D window
- ❖ On the rendered images.

With the use of the clock slider, an interactive shadow animation can be made in the Image window.



Shadow

Shadow can be switched on/off.

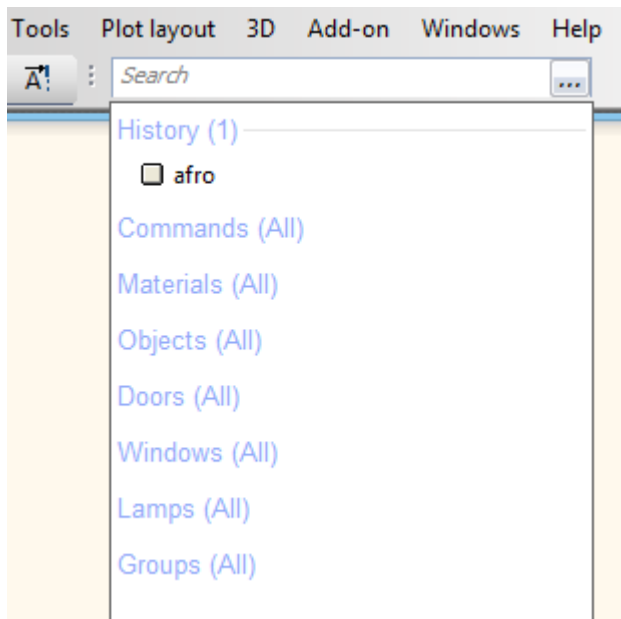
**Sun position**

Sun setting dialog is displayed.

Heliodon

Sun setting using Heliodon.

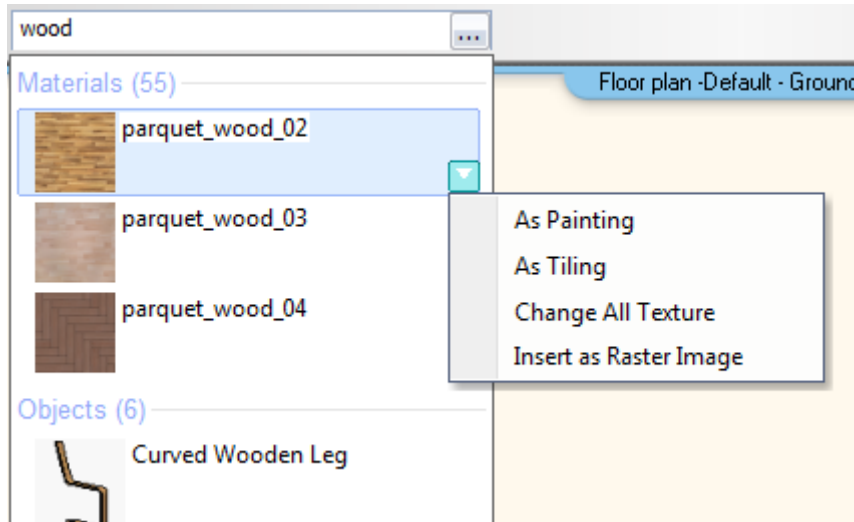
2.16.12. Quick search engine



This can be activated as a toolbar. It allows you to search within ARCHLine.XP commands, materials, objects, doors, windows, lamps or groups.

Simply start to type a word and Quick Search continuously displays the results whose names are partly or fully equal with the search term.

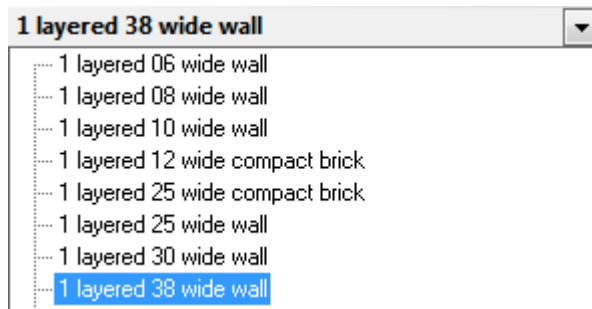
Click on the small arrow on the left side and choose a command to execute from the popup menu.



2.16.13. Set toolbar

ARCHLine.XP Interior dynamically changes the settings on the toolbar depending on what item type you are working on. For example, if you begin to draw a wall the list of the current wall-templates will appear.

If you would like to change the active wall, click on the drop-down list and select the appropriate one.

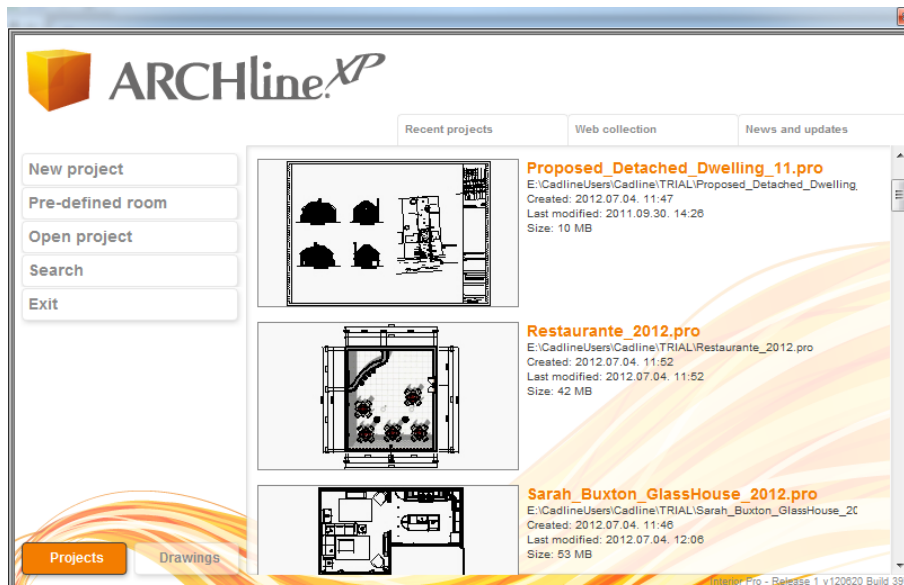


The method is flexible, so you don't need to interrupt the command. Switch seamlessly between sets to be used while the command is running.

2.17. Welcome dialog

After starting ARCHLine.XP® you can choose whether you start a new project, open the previously used one, continue a project saved earlier, or browse by name.

The Welcome dialog automatically opens when you are starting ARCHLine.XP or you are about to close an existing project and create a new one.



The Welcome dialog has a few buttons and pages which you can use to create, open or download projects or even to go online to read the news and updates.

Projects / Drawings switch

This switch is actually two buttons at the left bottom corner of the Welcome dialog. By using these buttons you can switch between Project or Drawing mode and it will change the possibilities also.

For example in Drawing mode, you can create or open only drawings but you cannot create or open projects and vice-versa in project mode you can create or open projects but you cannot choose to do so with drawings.

New project / New drawing button

If you click on the New project / New drawing button, the software will automatically create a new project or drawing, depending on your choice. When you first choose to save the project or drawing, the software will ask you to name the file.

Take care! When a new project or drawing is created it is not automatically saved. You need to save it on your own as mentioned above to physically create the file on your computer.

Pre-defined room

The pre-defined room button allows you to start your work by choosing from a range of ready-made room shapes. In the appearing dialog you can select a room, customize it and place it on an empty drawing.

This tool can also be accessed later from within the software tools.

Open project / Open drawing button

If you click on the Open project / Open drawing button, the software will allow you to browse for an existing project or drawing, depending on your choice.

Search

The Search button opens the Drawing recovery tool, which allows you to find or recover previous projects or drawings, archives or backup copies even.

Exit

The Exit button will close ARCHLine.XP.

Recent projects content window

The Recent projects content window shows the 30 recent projects used lately on the current computer. The recent projects in this list are represented by a tiny thumbnail and a few of their technical data, such as the location, the time they have been created and modified and the physical size on the storage drive.

Web collection content window

The Web collection content window shows the online collection of projects, shared by other people. This feature cannot be used offline.

You can browse online and use different filters and if you would like to download a project, you just need to simply click on it.

News and updates content window

The News and updates content window shows the online News and updates page. This feature cannot be used offline.

2.18. Window handling

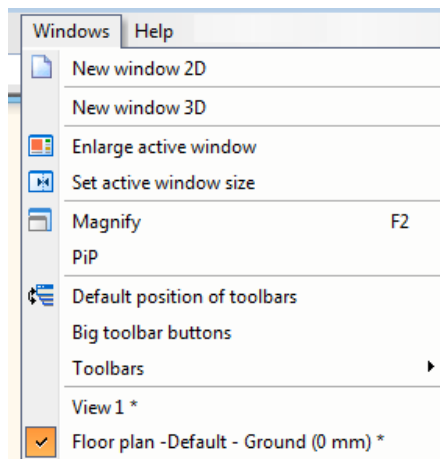
The real Drawing area is the largest part of the graphical screen. Graphical view windows appear here, that contain drawings for construction. Windows can be the following types:

- ❖ 2D windows
- ❖ 3D windows
- ❖ Section windows.

The 3D windows contain different 3D views.

Title bar of each window displays the name of drawing file. Windows can be moved by the title bar, and can be resized by their side.

Commands of the **Window menu** helps handling of used windows and toolbars.



Graphic Engines

Two types of graphic engine windows are available:

- ❖ **DirectX mode** (DirectX Graphics Library).
- ❖ **OpenGL mode** (OpenGL).

Comparison of OpenGL and Direct3

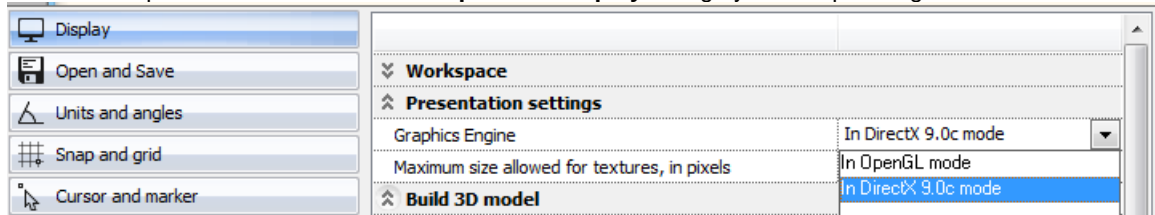
DirectX and **OpenGL** are competing application programming interfaces (APIs) which can be used in applications to render 2D and 3D computer graphics, taking advantage of hardware acceleration when available.

Availability

Direct3D application development generally targets the Microsoft Windows platform. The OpenGL is an open standard, and implementations exist for a wide variety of platforms.

See more: http://en.wikipedia.org/wiki/Comparison_of_OpenGL_and_Direct3D

This can be specified in the **File menu – Options – Display** dialog by the Graphic engine.



3D view window

An arbitrary number of 3D view windows can be created. The names are generated automatically. There can be two types of 3D windows:

- ❖ 3D image mode window,
- ❖ 3D vector graphics mode window

An image window can be converted to vector graphics window and vice versa. For this you have to click with your right mouse button on the title bar of the window and select the last command: **Image <-> Vectorial**

What are the differences among these two window types?

3D DirectX image window

We recommend the use of Image window by default because it moves quickly the 3D model (rotation, zooming) regardless if the model is represented with hidden line, material colour or material pattern. In this case the 3D hidden line representation is much faster because the application can use the capabilities of graphics hardware acceleration.

! Please be aware: if the content of a window is IMAGE then it is not suitable for drawing representation or copying its content to a 2D window!
It is printable as a raster image.

3D vector graphics mode window:

Because of the drawing (vector graphics) content, the representation with hidden line, material colour or material pattern is slow because the generation of the model is based on software. We recommend to use for Sections.

2.18.1. Activate window

Before starting work in a window it has to be activated:
It can be done:

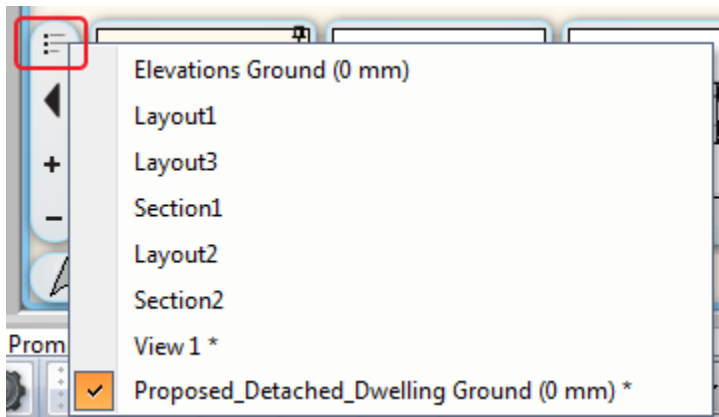
- ❖ By clicking on the window title or on the drawing area with the left mouse button or
- ❖ In the bottom of the **Window menu** the actual windows are listed. There is a tick in front of the active one. Click on the window to be activated.

The window selection tabs can be enabled or disabled in the *File menu – Options – General – Toolbox settings* dialog with the *Show window selection tabs* option.

How to use the window selection button

The window selection button can be seen on the top of the drawing pane.

Appearance



Switching between window

Window selection button make easy to switch between active windows in the project. Click the name of the drawing you want to activate and the appropriate drawing will be active.

2.18.2. Close window

If You click to the X sign in the right upper corner of the activate window, the program close it. It reminds us to save the content of the window. There must be at least one window open on the screen. Working with projects the closed window will not be seen, but it will not be deleted from the project. A drawing can be deleted from the project in the *File menu - Project properties* dialog.



2.18.3. Modify windows

Size and position of a window can be changed according to Windows standard.

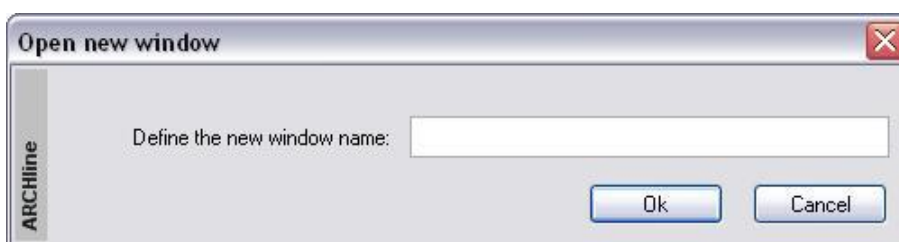
2.18.4. Open new window

Because the windows containing the drawings can be of two types: *2D windows*, *3D windows*. Type must be defined when a new window is created. The maximal number of visible windows is 16.

2.18.4.1. New 2D window


Choosing this command the program opens a new 2D window.

- Define the name of the new window.



New window will be created.



The command can also be activated with the **Edit toolbar-**  **New** icon.

2.18.4.2. New 3D window

Choosing this command the program opens a new 3D window.

The new 3D window visualizes the axonometric view of the actual 3D model.

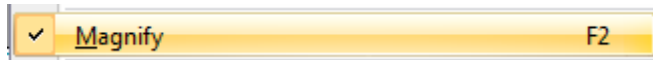
- ❖ The view can be changed by right clicking on the heading of the 3D window and selecting the adequate view command from the **3D view menu**.
- ❖ The same can be done with **View menu - Show 3D - View** option.

2.18.5. Arrange windows

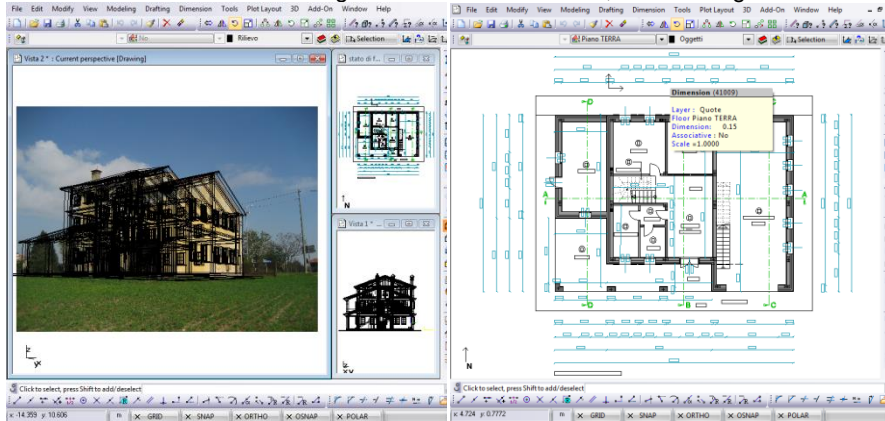
The following commands help you to arrange windows on your computer screen in the most optimal way.


2.18.5.1. Magnify - F2

Presents the active window enlarged to the entire screen. A tick in front of the command in the menu shows that the command is active.



Click on the command again it will be switched off, and the original multi-window arrangement appears again.




Enlarge command can also be activated by the  button in the right top corner of the active window.

2.18.5.2. Zoom in active window

The program divides the screen: the active drawing gets into the main window; the others will be presented under each other in the right side of the screen.

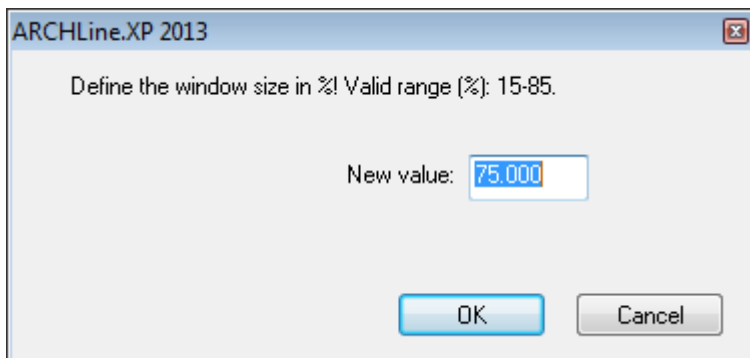
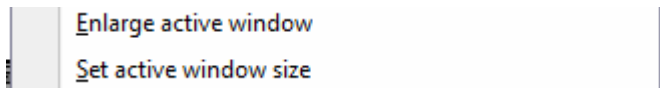
Ratio between the main and lateral windows can be given by the following *Zoom in active window with value...* command.



Command is also available in **View toolbar** -  **Enlarge active window** icon.

2.18.5.3. Zoom in active window with value

You can set here the activate window's width in %. The value can be between 15 and 85 %.



2.19. Screen setting

Screen setting parameters you find in the *File menu - Options – General* dialog.

2.19.1. Grid settings

Set properties of grid in Options dialog.

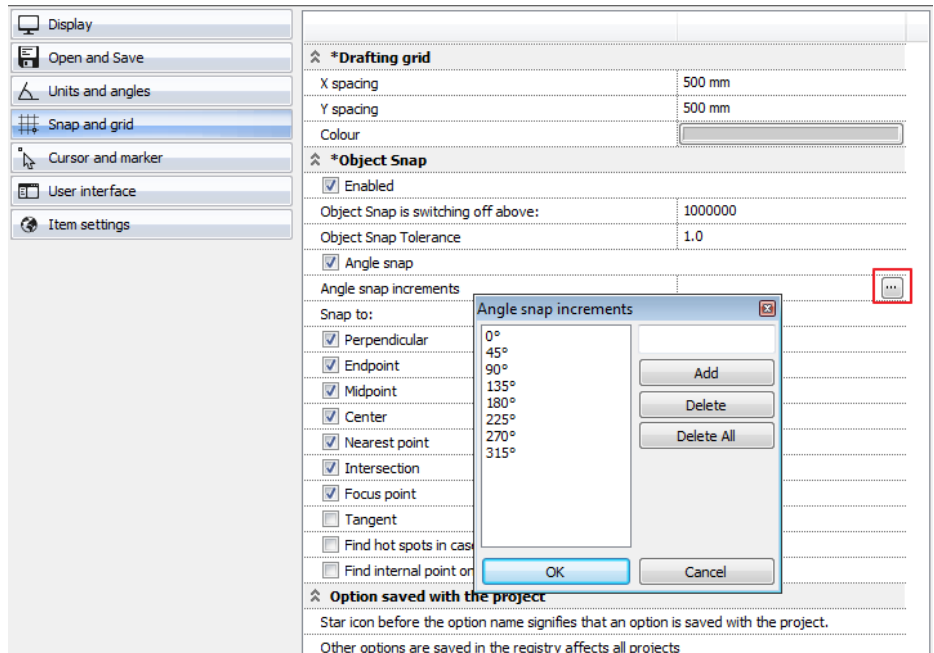
- Define horizontal and vertical distance between nodes of the grid.
The grid is not displayed if its density is too high compared to the size of the drawing. In that case you must zoom in to make the grid visible.
- Set colour and line type of grid.

Activate grid

Clicking on the **status line – GRID** or **Tool menu - Grid** command activates and deactivates grid.

2.19.2. Angle snap

Angle snap controls where to locate the second point in relation to the first point. The second point snaps to the nearest fixed angle. Default directions are the following: 0°, 45°, 90°, 135°, 180°, 225°, 270°, and 315°.



Angle snap

Select this option to enable or disable angle snap.

If you enable angle snap, the cursor can only move towards the defined directions. This is a very strong control and can be used only in special cases. We recommend that you disable this option.

When you define *Length* or press the *Shift* button, the program finds the default angles even if the Angle snap option is disabled.

Angle snap increments

Select this option to change angle snap values with dialog.

Add

You can modify a default value or specify a new one.

- Select the value you want to modify, or enter the new value in the *Input* field.
- Click on the **Add** button.

Delete

Delete the selected value.

- Select the value you want to delete.
- Click on the **Delete** button.

Delete all

Delete all values from the list.



If angle snap is active, grid snap is automatically disabled.

Ortho snap

Using the **Tools menu - Ortho** command you can switch on the ortho snap. In this case you can move the cursor into horizontal and vertical direction.

If the Angle snap and the ortho snap are switched on the program prefers the ortho snap.

Using angle snap with disabled snap option

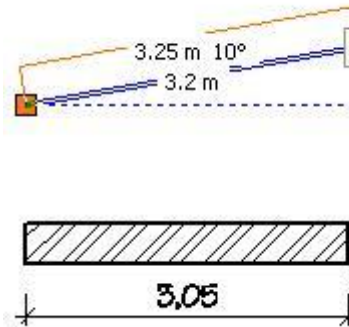
When you have specified the first point of an object:

- Move the cursor to the desired direction.
- The program is waiting for you to specify length or distance. Enter the appropriate values.
- The second point snaps to the nearest special angle.

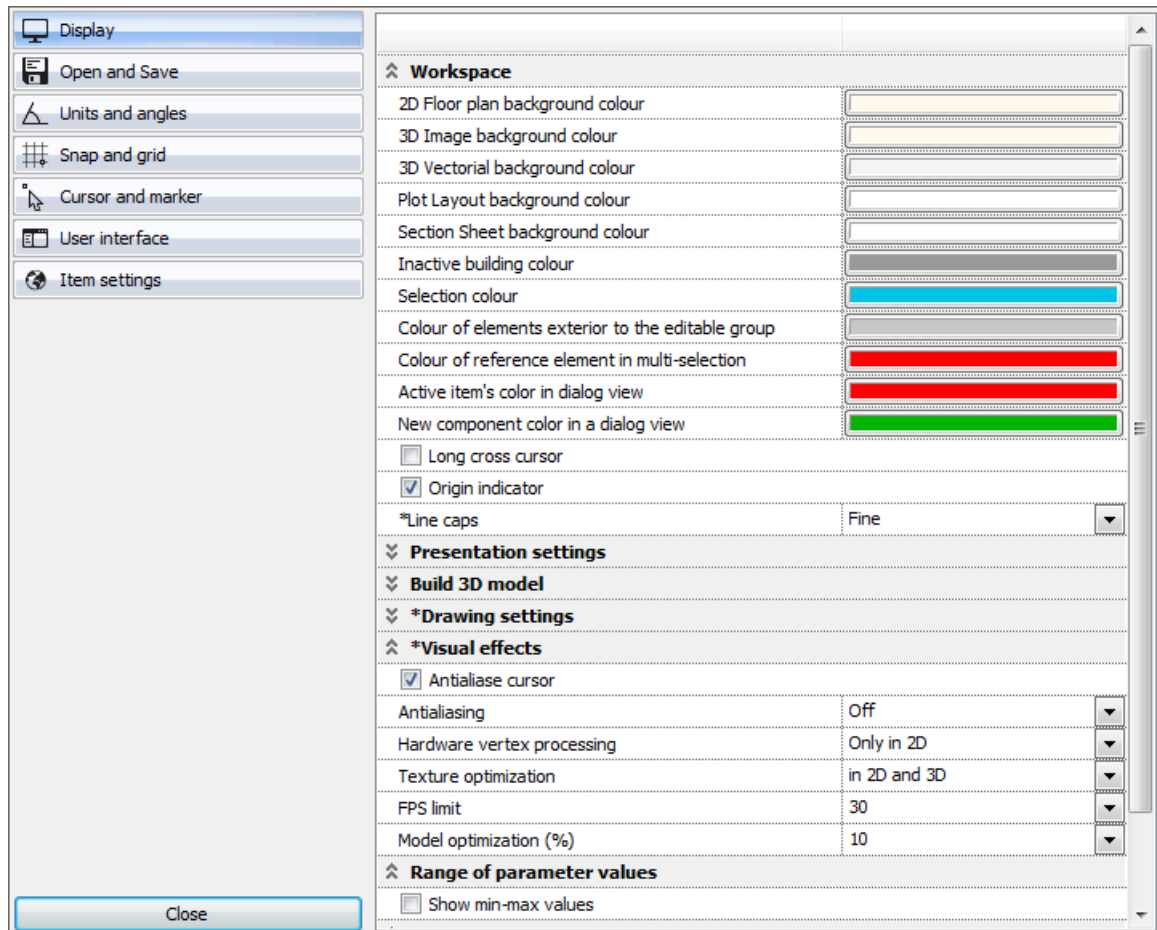
Example:

To draw a 3,05 m long horizontal line:

- Specify the starting point.
- Move the cursor near the horizontal direction.
- Enter the value: 3.05.

**2.19.3. Screen properties**

User can change the original look of the program by modifying colours and cursor shapes.

**Colour**

You can assign colours to different parts of the interface.

- Select that part of the user interface from the list whose colour will be changed:

Inactive building colour:

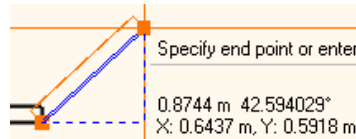
Inactive building colour is used for

- ❖ Representing the inactive buildings when there are more buildings created
- ❖ Inactive drawing objects in group work (multi-user) mode
- ❖ For not active but visible floors.

Cursor shapes

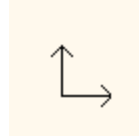
Long cross cursor

Check in the option. The cursor intersects the entire window. When an editing command is active, ARCHLine.XP is waiting for definition of a point the cursor represents this form.



Origin indicator

The marker that represents the coordinate system origin appears or remains in hidden.



Line caps

Set endings of lines:



Round All lines are drawn with rounded ends.



Square All lines are presented with square ends.

Line width on

If option is checked in, all lines will be drawn by the given line width.
If it is checked off, all lines will be presented with 0 widths. Objects do not lose the set line width, because this function serves only for the screen representation.




Settings for printing can be given by the switch in the *Print* dialog.

2.19.3.1. Displaying the range of parameter values

With the *Show min-max values* option it is possible to display the range of parameter values in the objects, doors and windows properties dialogs. This helps by specifying parameter values.

Range of parameter values

☒ Show min-max values



| Name | Value |
|-------------------------------------|-------|
| Frame width around [0.01 - 0.5 ... | 0.075 |
| Threshold thickness [0 - 0.3 m] | 0 |
| Leaf thickness [0.01 - 100 m] | 0.05 |
| Opening angle [0 - 90] | 0 |

Width:

0.9 m

Height:


2.1 m

Thickness:

0.1 m

☒ Show other parameters

2.19.3.2. Auto recover

 See the description of Auto recover in the chapter of 4.2.9. Auto save.

2.19.3.3. Text

Text displayed with boundary rectangle
This command replaces text by its text box. (Redraw is quicker in this mode.)

Text

☐ Text displayed with boundary rect

☐ Texts are delineated in contours w

☒ Keep readability when rotated in:

120°

300°

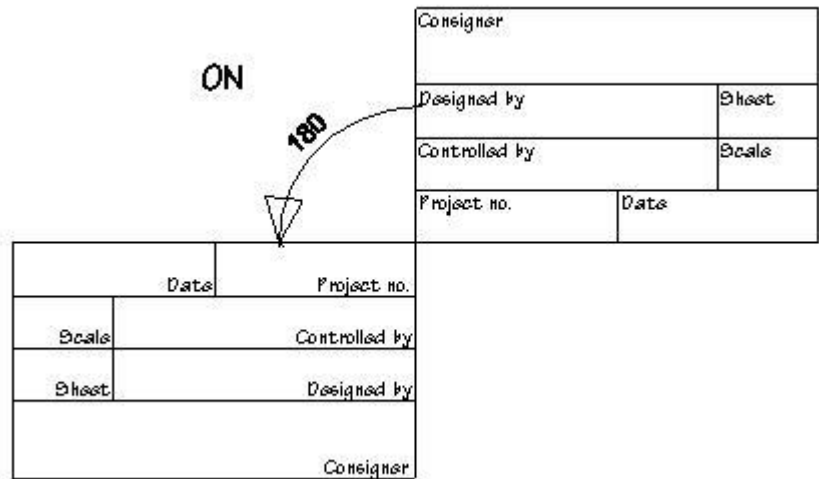
ArchLINE.XP

Texts are delineated in contours without shading
If this option is checked in only the outlines of characters appear.

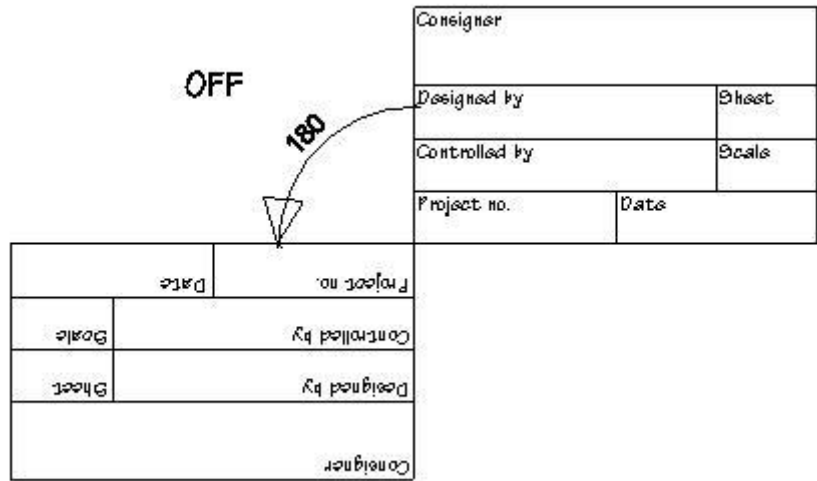
ArchLINE.XP

Keep readability when rotated in:
You can direct the readability of rotated text with this option.

If the *option is in switch on* status, the readability rule is valid for the text in the defined angle area after the rotation too.



If the *option is in switch out* status, then the program ignore the readability rule, so it applies the rotation transformation to the text too.



2.19.4. 3D work plane

Use of 3D work plane is a great help in 3D design. It is easy to define points with it in 3D. After definition of the work plane the position of 3D and geometrical objects can be defined on it. Geometrical objects placed in this way in 3D keep their view when rotating the model; they rotate together with the work plane. A mesh marks Work plane; its properties can be set separately.

Opening a 3D window in the program the work plane by default appears. In the **3D work plane** dialog set the representation properties of work plane.

Delta X, Y:

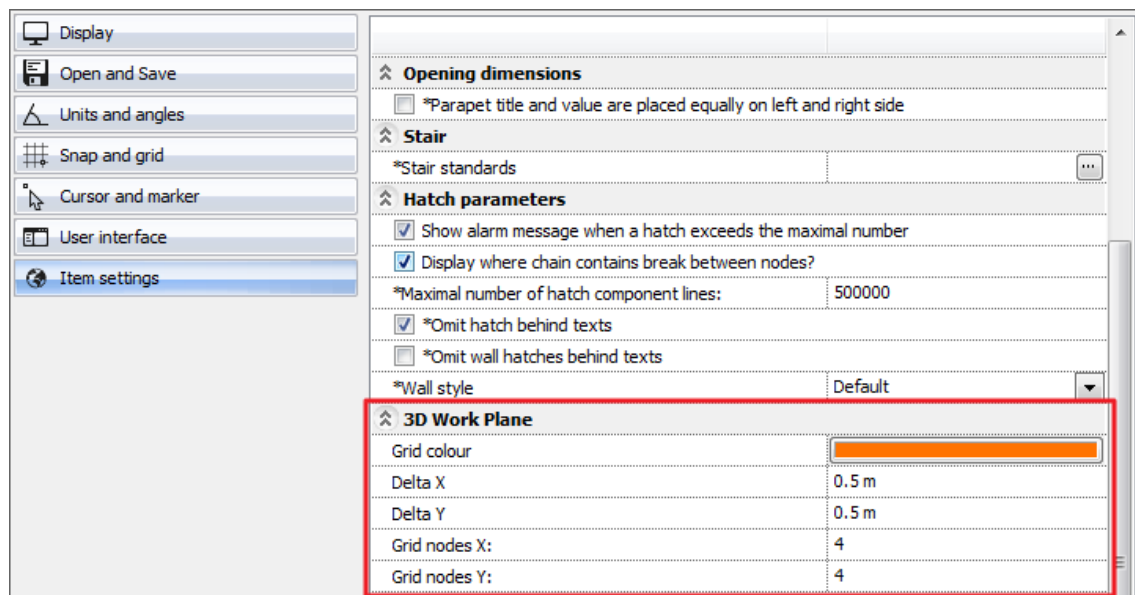
Set the work plane grid in X-Y distance.

Colour

Colour of your work plane.

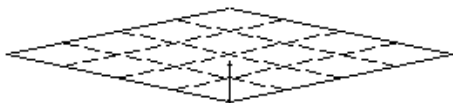
Grid nodes X, Y

Define the number of rectangles of work plane in X-Y directions.



You can switch on and off work plane with the **3D menu - Activate global work plane** command.

3D work plane can also be switched off in the following way: right click on the work plane, **Shortcut menu - Switch off** command. A switched off work plane becomes active again when creating a wall, but switches off, as the wall command will be terminated.



To define the position of work plane use command of **3D menu - Work plane - Define global work plane** or **Status line -**



Global work plane icon.

If you right click on the work plane in the appearing **Work plane menu** further options are available to define work plane.



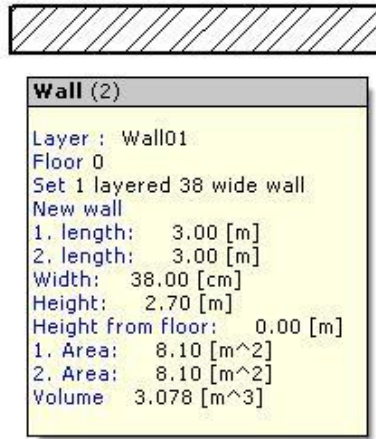
The work plane does not appear on the printing layout.

Object info

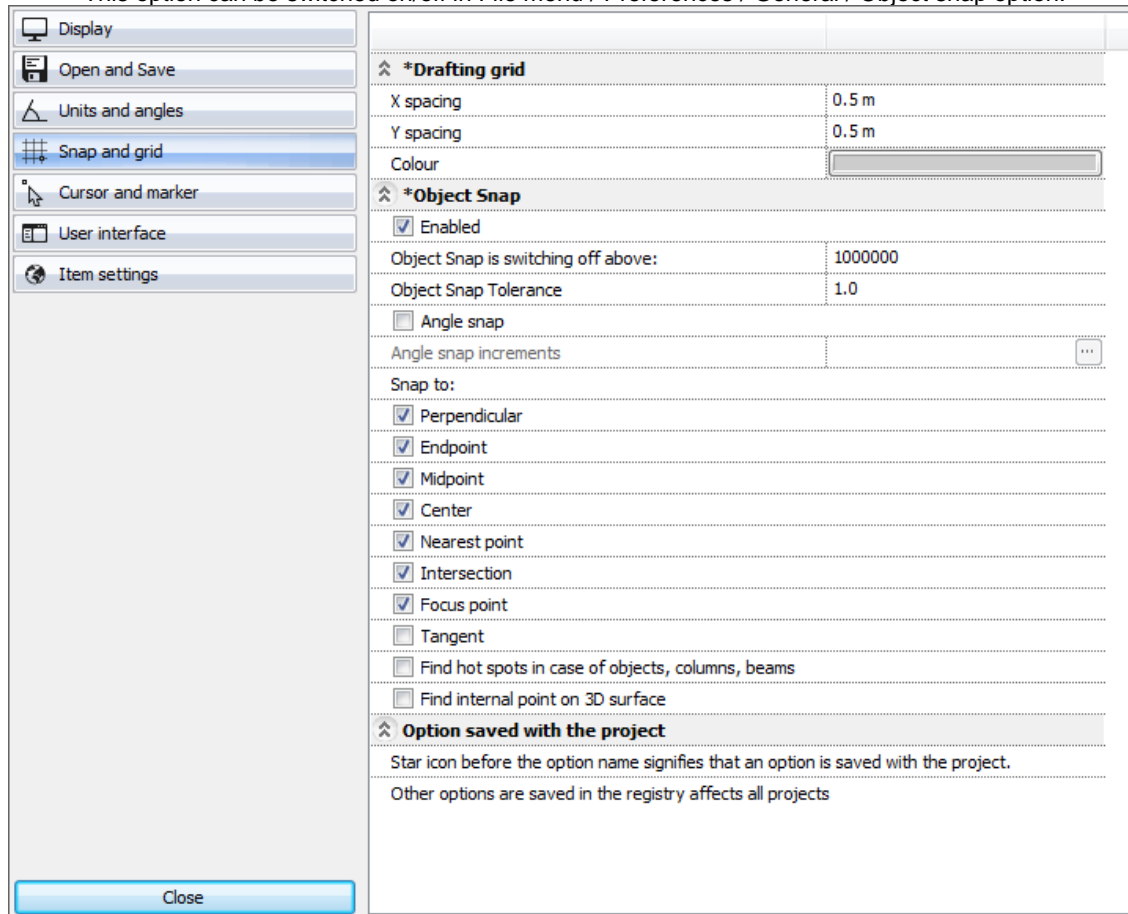
Information window that appears when the cursor is moved above an object, and waits a little. Geometrical information is listed here. Tool tip with these data can be placed on the drawing by the last icon of Text menu



This option can be switched on/off in File menu / Preferences / General /



This option can be switched on/off in File menu / Preferences / General / Object snap option:



3. Settings

In this chapter we carry on with the preparations of design. As you have been introduced to display settings in the previous chapter, you are ready to learn about architectural settings, floor management, layer management and the definition of object properties.

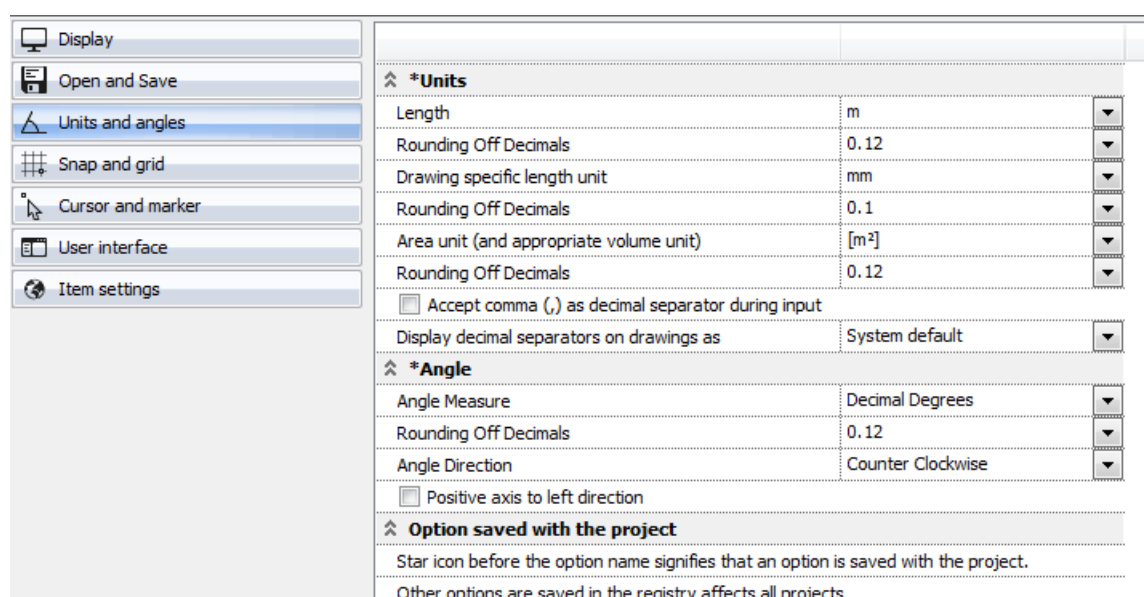
3.1. Architectural settings

You can set the options necessary for architectural design in the Preferences Submenu within the File menu:

- ❖ General: units of measurement angle and scale.
- ❖ Construction Grid
- ❖ Stair standard

3.1.1. Units of measurement

Choose *File -Options* panel.

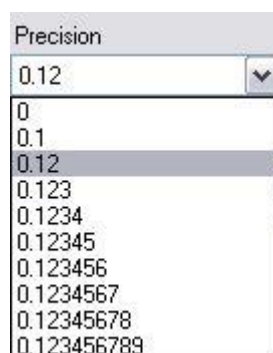


Unit

Specifies the measurement unit and the precision of drawing. The program offers the following units: mm, cm, m and inch.

You can define the desired unit either by choosing the option or by clicking on the icon on the right.

To specify precision click the pull-down list and choose the appropriate object:
E.g.: choosing 0.12 means two decimal points of precision.



Drawing-specific measurement units

It defines the drawing-specific measurement unit and its precision. It includes marker properties, text properties, dimension properties and hatch dimension.



Precision does not refer to the dimensional precision required (that can be set in Dimension general properties); it refers to the precision of the query. This is shown by the **Cursor position tooltip** and by the **Cursor info tooltip**. For further references, see Chapter 2.19.3. –*Screen Properties* and Chapter 10.1.3. *Dimensioning - Format parameters*.

3.1.2. Angle

You can set what angle measure to use and the direction of angles.

The program offers the following angle measures:

| | |
|------------------------|--|
| Decimal Degrees | Displays angles in decimal units (e.g.: 30,5°) |
| Deg/Min/Sec | Degrees, minutes and seconds (e.g.: 30°30'00") |
| Grads | An engineering unit with 400 grads |

To choose the unit of angle click on the corresponding option or the icon on the right.



The result of angle definition is not displayed when setting the dimensions of the object (that can be set in Dimension general properties), only when querying. This is shown for example by the **Cursor position tooltip** and by the **Cursor info tooltip**. For further references, see Chapter 2.10.7 – *Cursor Input Box* and Chapter 10.1.3. *Dimensioning - Format parameters*.

Direction

You can measure angles clockwise and counter clockwise or topographically. Clockwise and counter clockwise directions are defined from the compass direction East, while topographical directions are defined counter clockwise from the compass direction North.

To specify a direction, click on Direction options or the icon on the right.

Positive to left

You can specify the direction of the X axis. By default, the X axis points to the right, so the program measures positive values on the right. Enable this option to measure positive values on the left.

3.1.3. Scale factor

You can assign a scale factor to the drawing.

The Scale option enables you to work with a proportionally reduced drawing, which has all the advantages of drawing with real dimensions. With this command you can work with any (1: X) scale you like, while keeping the original dimensions of the drawing. If you change scale factor, the effect is displayed on line width (except True Type fonts, for which line width does not apply.)



The current scale is displayed in the Drawing status line.

1:1

It is preferable to use a scale of 1:1. The appropriate drawing scale can be defined at printing, e.g.: 1:100.

3.1.4. Construction Grid

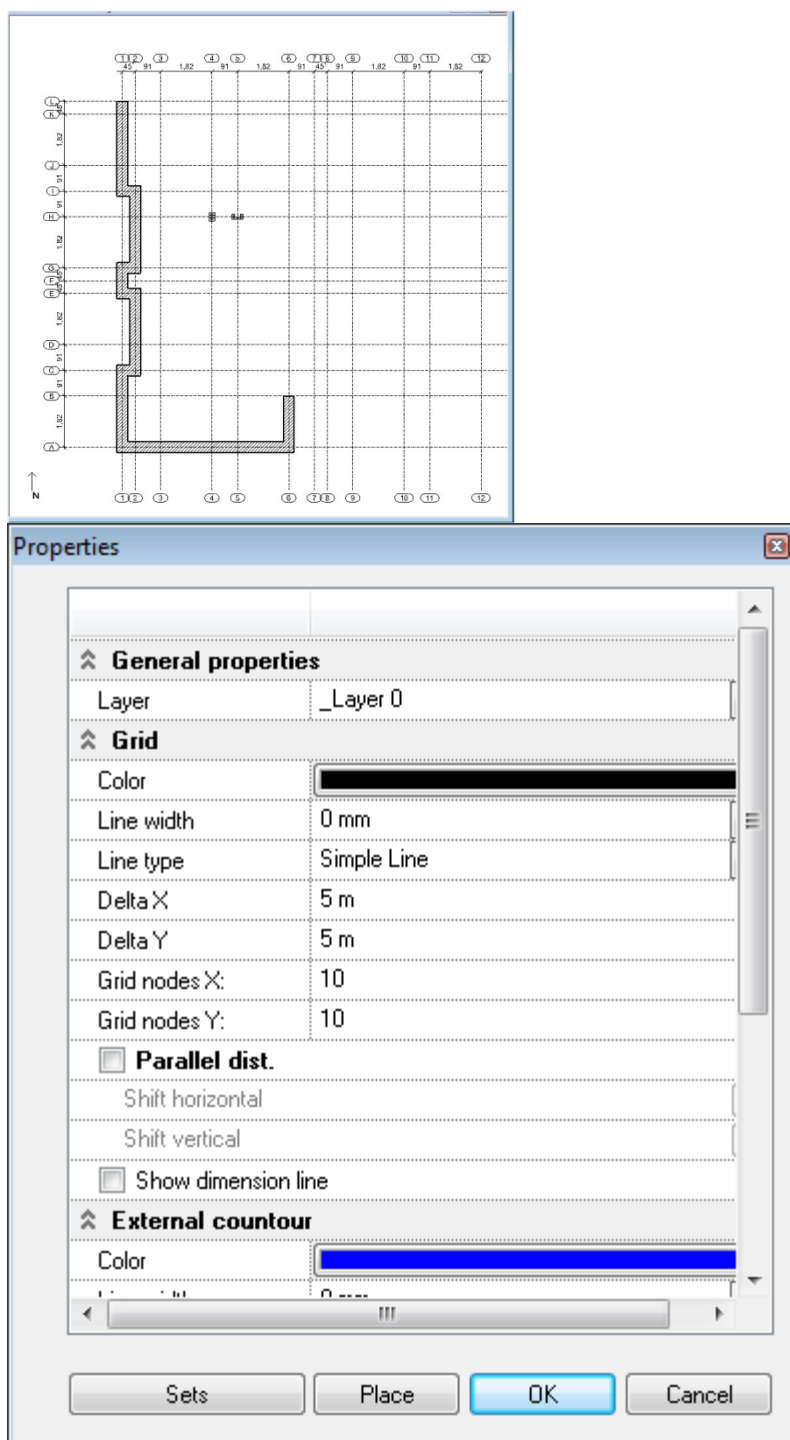
There are numerous places in an architecture where you might want to use predefined grid structure to help the regular design. With this command (in *Building - Construction Grid*) you can place construction grid on drawing of framed buildings.

You can define the distance of grid nodes both in X and Y directions, the number of vertical and horizontal lines and the value for overhanging. Horizontal lines are marked with letters; vertical lines are marked with numbers.

Options:

1. You can make visible the dimension lines between grid nodes in X and Y directions.
2. Definition of different distances in X and Y directions (Click on the Parallel dist. option to open the distance input dialog)
3. In the upcoming Horizontal and Vertical shift dialog the whole pattern can be duplicated by the Copy all button

Later when you already placed the grid on the drawing it is possible to move the grid nodes separately.



3.1.5. Setting stair standards

If you monitor continuously the ergonomic requirements defined by standards in case of stairs selected from the stair sets, it can help you in the drawing of stairs. You can find it in the *File menu - Options - Stair standard* dialog box.

During the planning the program monitors continuously that part of the values, which represented according to the standard, the other part you can select optional. The program signs the exceeded limits in red colour, but it doesn't forbid the creating of the stair, if it doesn't come up to ergonomics requirements.

You can pick your **Stair categories** and **Rise and going** from a pull-down menu. Their combination defines the limits that must be met according to the relevant standard.

Stair categories
Private

Rise and going
Practical limits (rise: 155-220mm, going: 245-260mm)

Stair categories
Institutional or assembly

Rise and going
(rise: 135-180mm, going: 280-340mm)

Stair categories
Other

Rise and going
(rise: 150-190mm, going: 250-320mm)

These are the following: **2R +G** (two times riser plus going), **stair width**, **Rise** and **Going**. When drawing the stairs from the stair library, the program monitors the compliance with these limits; if you exceed them, it is indicated by red colour.

Stair standards

Stair categories
Private

Rise and going
Practical limits (rise: 155-220mm, going: 245-260mm)

| | min | max |
|-------------|---------|--------|
| 2R + G | 0.55 m | 0.7 m |
| Stair width | 1 m | |
| Rise | 0.155 m | 0.22 m |
| Going | 0.245 m | 0.26 m |

☒ Headroom 2.1 m

☐ Set walking line between 1/2 and 2/3 of the width

☒ The stair dialog uses the unit of measurement

OK Cancel

You can enable the monitoring of the following parameters:

- ❖ headroom height above stair: it is relevant when allowing stairs through the ceiling slab.
- ❖ set the walking line between 1/2 and 2/3 of the width of the stairs
- ❖ Use the measurement set in the dialog window. If you switch off the option, the values of stair parameters will appear in **cm** in the proper dialog windows.
- ❖

3.2. Specifying properties

Before you use any architectural object or the geometric drawing tool of the program, specify the properties of objects first. Use the commands in the Building menu, Drafting menu, and Dimension menu - **Properties** command to set the properties. You can also access these properties by right-clicking the icons in the **Toolbox**.

Introduction

Properties are the graphical and structural features of objects and objects.

All object types have:

- ❖ *general properties*, such as colour, line width, line type, layer; and
- ❖ *special properties* (e.g. in the case of walls height, thickness, hatching, layer properties, etc.).



For a detailed description of the special properties of object types see the Chapter on the Detailed description of the special properties of object types.

You can save the edited set of properties of each object type in *Sets* and store the sets in the template assigned to the project.



For detailed information on the use of the template see Chapter 4.6 on *Managing templates*.

3.2.1. General properties

In the **Properties** dialog box you can first set the general properties of each object, such as colour, line width, layer, line type, and priority.

You can set the colour, line type, and line width:

- ❖ **Directly**, by specifying the property explicitly (e.g. the colour is red).
- ❖ **Indirectly**, so that the object acquires its general properties from the layer assigned to the object.
- ❖ 1. If the *Layer control mode* in the *Modify menu* is **turned off**, to specify the colour, line type, and line width you must turn on each *Layer* property separately. E.g. for colour activate the Layer option.
- 2. If the *Layer control mode* in the *Modify menu* is **turned on**, among the fields of general properties colour, line type, and line width are greyed out and are non-editable. In this case the program acquires these properties from the layer assigned to the object.



See Chapters 3.4. on *Managing layers and using properties*



Colour

- Choose a colour from the colour palette by clicking the box of the desired colour. You can choose from the 256 colours of the colour palette, or any other colour from additional colour palettes.
- If you do not want to change the colour, click *Cancel*.
- If you want to use the colour of the layer assigned to the object, activate the Layer option.



Layer 1



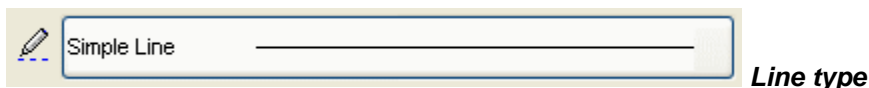
Layer

This specifies the current layer. By using this mode, you can assign different layers to each object type. You can turn layers of a drawing on and off when drawing. (For the sake of an unobstructed view, it is recommended that you store dimensions on a separate layer as it is not necessary to display it as you work.)

- Choose the layer to be assigned to the object from the pull-down menu. You can select the layers in the *Properties* dialog box only if you have already created them in the **Layer** dialog box.

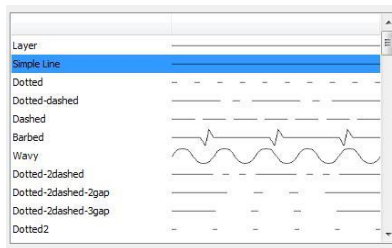


See Chapter 3.4. *Managing layers* for a detailed description on layer handling.



ARCHLine.XP® allows you to choose from predefined line types, or you can create your own custom line type.

- Choose a line type from the list.



- If you want to use the line type of the layer assigned to the object, select 'Layer' in the pull-down menu.



It is not possible to set the line type in the *Text general properties* dialog box.

To set a custom line type, use the **Tools menu - 2D group - Create new line type** command.



This specifies the current line width.

The line width can be set even at a minimum of **0.01 mm**, there is no upper limit.

A line width of 0 defines the thinnest line of the output device (plotter, printer, monitor, etc.).

- Enter the line width or select one of the predefined values.
- If you want to use the line width of the layer assigned to the object, choose 'Layer' in the pull-down menu.



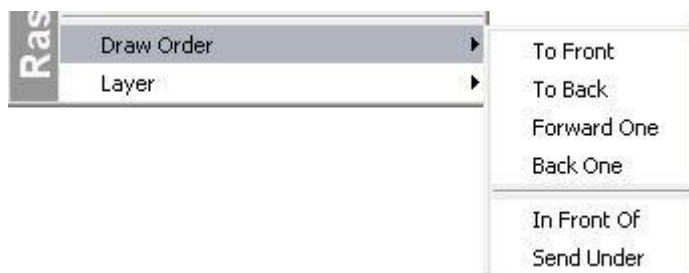
You can set numerically the priority of elements: 1 – top-most, 8 – bottom-most.

Element with a low priority number will be placed over elements with high priority number.

This way you can define which element should cover other elements in case of overlaying elements. This is very important when printing.

Using the **Draw Order** commands in the shortcut menu of an element you can set graphically the priority numbers. You have the possibility to put to front or back, to forward one or back one. You have also possibility set the priority relative to other one.

The graphically set priority value will appear in the Properties dialog window – Priority field.



To Front

The priority number of the element will be 1 – top most.

To back

The priority number of the element will be 8 – bottom most.

Forward one

The priority number of the element will be decreased.

Back one

The priority number of the element will be increased.

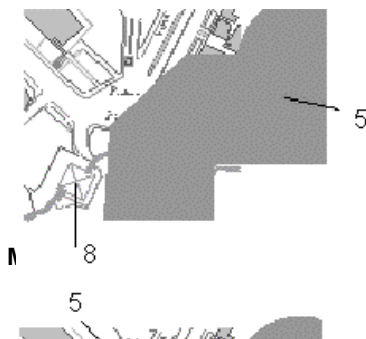
In front of

The priority number of the element will be decreased relative to the priority number of the selected element.

Send Under

The priority number of the element will be increased relative to the priority number of the selected element.

- Select a priority number (1-8) from the list.



The hatched area has a level 5 priority, while the polygons representing houses have a level 8 priority, so the hatched area overlays the polygons.

The hatched area has a level 8 priority; the polygons' priority is higher (5), so the polygons are visible in the hatched area.

3.2.2. Material properties

For the representation of architectural drawings and for a realistic display it is necessary to define materials. The program applies material properties to all architectural objects and 3D objects. You can specify material properties in the **Material properties** dialog box. To access these properties open the **Material** dialog box first where you can handle the materials.

3.2.2.1. Managing materials

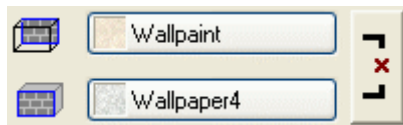
You can access the **Material** dialog box and the **Material properties** dialog box within in several ways; you may select it from the *Tools* menu, or in the architectural objects properties dialog, 3D objects, or the Design center:

- ❖ The **Category manager** dialog box appears instantly when you select *Accessories - Material manager* in the *Tools* menu. The **dialog** shows the previews and properties of the available *materials*.



See description of *Category manager* in chapter 3.3.

- ❖ For access via architectural objects, click the box of the material in the properties of the selected architectural object.



- ❖ For access via 3D objects, double click the material in the **Object properties** dialog box.



- ❖ For access via the Design center, first choose **Material** in the Design center and select one of the available material classes. Materials then appear in the content window of the Design center, where by clicking one of them the **Material properties** dialog box pops up.

3.2.2.2. Managing material classes

You find the material classes, subclasses, and categories in the left window of the **Material properties** dialog box arranged in a directory format. Materials are grouped into two classes:

- ❖ In Model
- ❖ Program

In Model class

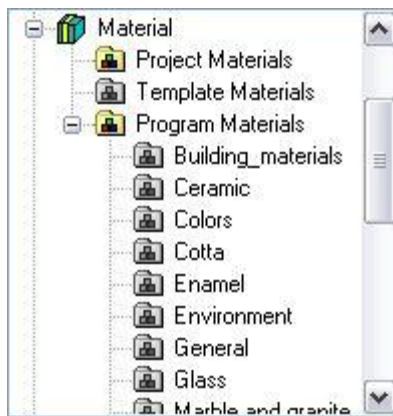
The **In Model** class contains those materials that the user applies in a given project or places here. Therefore these materials vary every project. For example, if you render a material to an architectural object from the *Program* directory, the program automatically creates a copy of this material in the *In Model* directory and will subsequently use this copy. You cannot create any subclasses and categories in this directory. When saving the project, you also save the materials of the Project class.

Program class

The **Program** class contains the official materials supplied by the program. You may create new folders (subclasses) in this directory and also new categories within these folders. Once you start the program, these materials are always available. Official categories supplied by the program are displayed in *grey*, meaning that the material properties of these categories are non-editable. Obviously the properties of user-created materials placed here are editable.

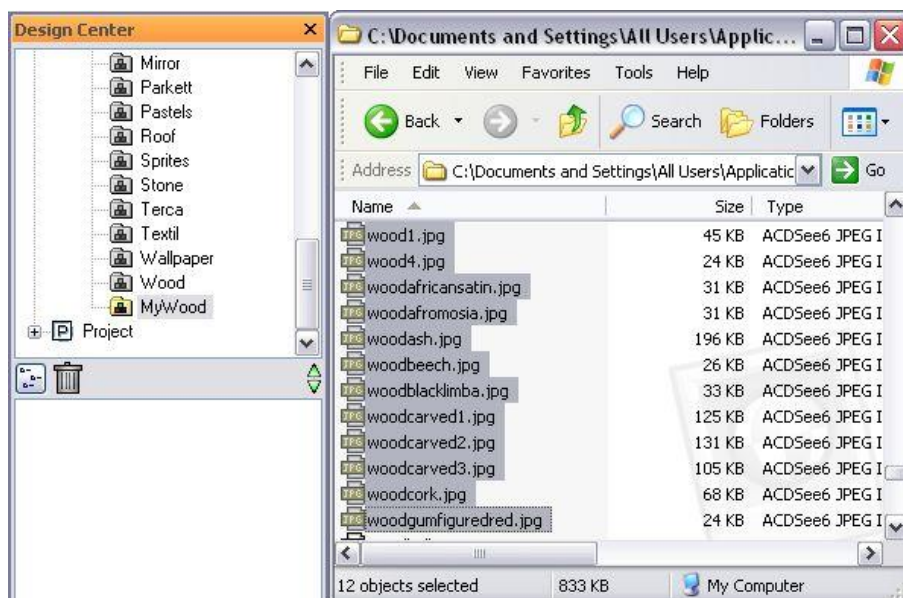
3.2.2.3. Creating materials in the Design center by dragging

The structure presented in the **Material** dialog box can be also displayed in the Design center. You can see the arrangement structure of materials (classes, subclasses, categories) in the Tree window of the Design center, whereas the textures that can be displayed in three different views appear in the Content window. The illustration below shows the Content window of the Design center:

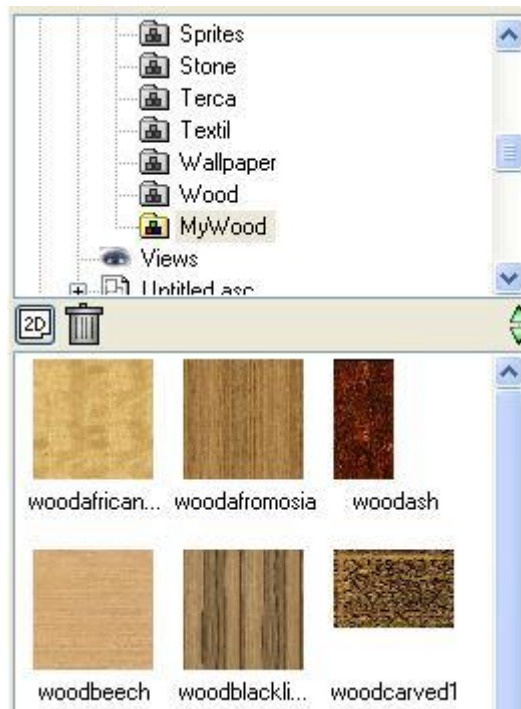


Once you created a category in the **Material** dialog box, you may 'drag' several texture images (.bmp or .jpg) in one step to the selected category with the drag and drop method. Do as follows:

- Set the window of the Design center in such a way that the category in which you wish to place the new textures can be seen. For example: MyWood
- Select the textures in the window of *Windows explorer*.

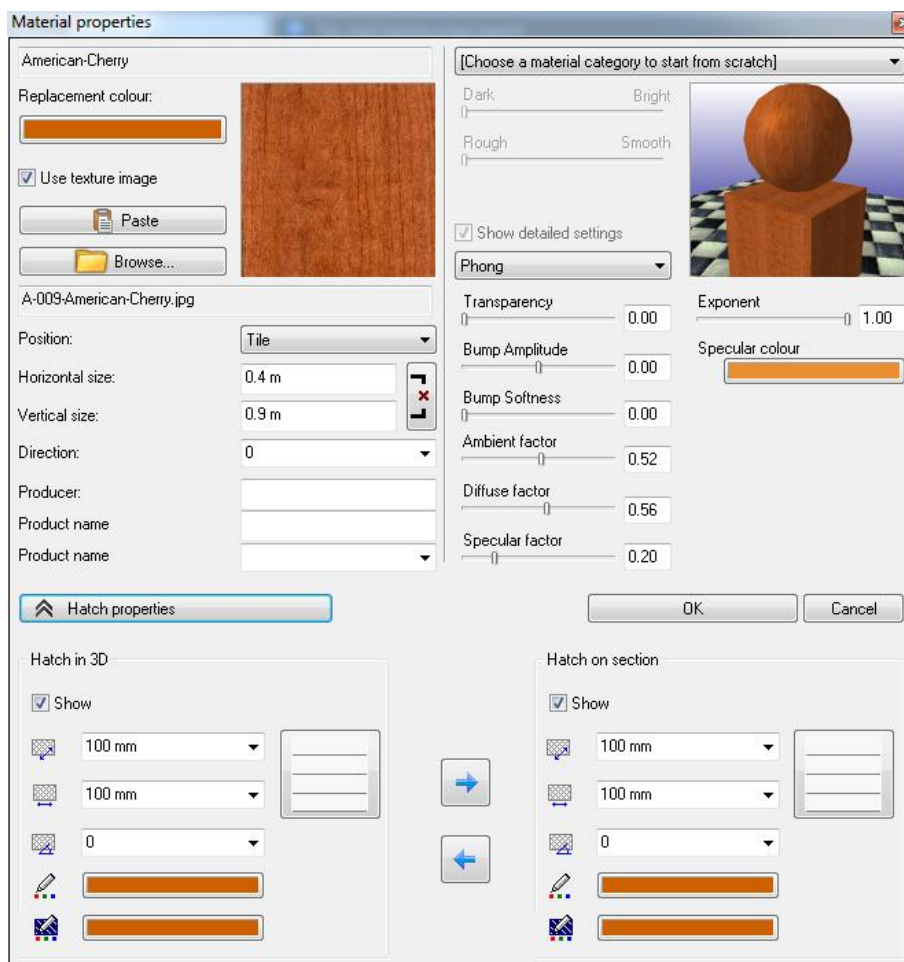


- Drag and drop the selected files to the category. Depending on the number and size of the selected files and the data transfer rate, the time of file transfer may vary.
- After dragging the *Material properties* dialog box appears, where except for the texture, you may assign similar properties to the materials thus created. (It is advisable that you create materials that have the same properties at a time.) In the dialog box the texture image box is now empty.



3.2.2.4. The Material properties dialog box

Choose a material in the **Tools menu – Accessories – Category manager** dialog box, then click *Modify* or *Copy*. The **Material properties** dialog box then appears.



General

For a photorealistic image it is necessary to define the texture. In ARCHLine.XP® in the general properties you can specify with what texture, colour, and physical features the program shall display the material. These will play an important role in rendering.

Material colour

You can see the current texture in the left box. If you do not want to assign a texture, click the **No texture** button. In the photorealistic view colour will be displayed instead of texture, which you may set by clicking the colour icon next to the texture image.

If you clicked the **No texture** button and lost the formerly assigned texture, you can recover it by clicking again.

Colour icon

This setting has two functions:

- ❖ As referred to above, this colour will be displayed in the photorealistic view when there is no texture.
- ❖ The *3D view toolbar - Shade with material colour* command uses this colour in the vector graphics drawing.



For a description of colour settings see Chapter 3.2.2.5. on RGB colour management.

Material texture

If you wish to assign a different texture, click the box displaying the texture and select the desired texture by opening the corresponding *.bmp* or *.jpg* file in the **Open picture** dialog box. The name of the material will automatically be that of the name of the open file without the file name extension.

Below the texture image you can set the **size** that is the horizontal and vertical size, and the **direction**. Depending on the status of the button next to the horizontal and vertical size entry fields, you may maintain aspect ratio:



This state of the button indicates that horizontal and vertical sizes can be specified separately.



This state of the button indicates to keep relative horizontal and vertical sizes. Most of cases it is important to maintain the aspect ratio to avoid stretching the graphic out of proportion.

Stretch material

It is possible to create material without horizontal and vertical sizes. In that case the texture is stretched to fill the destination area.

Select the *Stretch* option from the list. The size fields will be grey.

| | | | |
|------------------|---------|--|--|
| Position: | Stretch | | |
| Horizontal size: | 0.5 m | | |
| Vertical size: | 0.5 m | | |
| Direction: | 0 | | |



Physical features

You can choose the rendering mode in a pull-down menu. Depending on the rendering mode you select, you can set different physical features that affect rendering. The physical features you can specify and their definitions are the following:

| | |
|----------------------------|--|
| Transparency | Determines the extent of the transparency of the material. |
| Bump altitude | Bump Mapping simulates the impression of a detailed 3D surface with shading as if the surface had lots of small angles, rather than being completely flat. The height of the bumps can be adjusted using the <i>Amplitude</i> control. |
| Bump softness | This control is used to set the amount of blur that is applied to the 'bump map' image. |
| Ambient factor | Shows how the material reacts to ambient light. |
| Diffuse factor | Shows how the material reacts to diffuse light. Lights, Sun, camera light. |
| Specular factor | The <i>specular factor</i> controls the reflection of light from a "shiny" object |
| Exponent Roughness | Determines the sharpness of the distribution. Light is more radiant on a smooth surface. If roughness is set to a low level, radiance is concentrated on a small surface; if it is set high, radiance is distributed on the surface. |
| Specular colour | You can specify the specular colour in the colour palette. |
| Transmission factor | Has the same effect as transparency in the case of glass. |
| Mirror factor | Shows how the material reflects light from the surrounding objects. |
| Refraction | This setting concerns the physical characteristics of glass. |

The rendering modes you can set are the following:

Matte

This reflection model ensures a dull and dim appearance. The extent of reflection from objects is determined by the *ambient factor* and the *diffuse factor* together. This model is suitable for displaying dull materials such as brick or textile.

Metal

This reflection model ensures a metallic appearance. The extent of reflection from objects is determined by the *ambient factor* and the *specular factor* together. The distribution of radiance is determined by *roughness*. At a low level of roughness the reflection of shine is sharper, and it affects a smaller area of the object. This model is suitable for displaying most metallic materials such as steel or copper.

Phong

This reflection model corresponds to the well-known Phong model, where reflection is highest in the direction opposite to the viewpoint direction. The extent of reflection is determined by the *ambient factor*, the *diffuse factor*, and the *specular factor* together. The sharpness of the shiny surface is determined by the level of the specular factor. If this level is low, transition from the shiny surface is smoother, but radiance is concentrated in a smaller area. The colour of the shiny surface can be determined by setting the *specular colour*. This model is suitable for displaying glittering or delicately polished materials such as ceramic or glass.

Plastic

This reflection model has the same shiny effect as the Phong model. The extent of reflection is determined by the *ambient factor*, the *diffuse factor*, and the *specular factor* together. The sharpness of the shiny surface is determined by *roughness*. At a low level of roughness the reflection of shine is higher and affects a smaller area of the object. The colour of the shiny surface can be determined by setting the *specular colour*. This model is suitable for displaying glittering or delicately polished materials such as plastic or varnished surface.

Glass

This reflection model is suitable for displaying glass-like materials that are characterized by both reflectivity and transparency. Secondary reflection and light transmission is displayed by ray tracing. The extent of reflection is determined by the *specular factor*, the *transmission factor*, and additional lights defined by the *mirror factor* together. The distribution of radiance is determined by *roughness*. At a low level of roughness the reflection of shine is sharper, and it affects a smaller area of the object. The program applies the same *refraction* factor to lights of all wavelengths. The default value equals the value in the case of glass. This model best imitates glass surface.

Mirror

This reflection model realizes secondary reflection by means of ray tracing. The extent of reflection is determined by the *ambient factor*, the *diffuse factor*, the *specular factor*, and additional lights defined by the *mirror factor* together. The distribution of radiance is determined by *roughness*. At a low level of roughness the reflection of shine is sharper, and it affects a smaller area of the object. This model best imitates glass surface.

Tips:

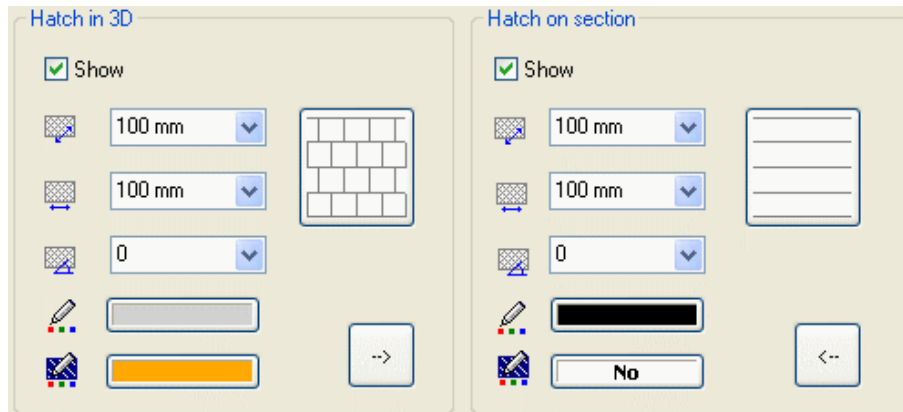
- ❖ If you want to use specular tile lining, use the *Mirror* mode.
- ❖ Use the *Glass* mode in the case of lamp globes: here you have to set transparency to a low level whereas the transmission factor should be high.
- ❖ If the transparency level is not zero, the object in question will cast no shadow. If you want a glass surface to cast shadow, e.g. a lamp globe, you have to set transparency to zero (that is you must bring the slide to the left).

Hatches

A material has 2 different hatches, depending how the material is displayed.

For example in the case of a brick material:

- ❖ You have to specify the hatch on section. In the case of a brick wall we use 45-degree lines on the section.
- ❖ If this brick can be used for outer walls, hatching is also important in the 3D view.
To have the hatches in the 3D view you need to use the View menu – View properties – Image < - > Vector graphics command.
In the case of a brick wall, we use the standard hatch on the floor plan that is 45-degree lines. This hatch is not the property of the material, but that of the wall; therefore you have to specify it in the Wall properties dialog.



Hatch in 3D

When setting material properties you must also specify 3D hatching, which enables you to display textures in the 3D model. For this option you must activate the *Display* button.

The hatch you specify here appears in the 3D model when you activate the Textured preview mode in the Navibar command.

If the *Display* option is deactivated, the material appears with the assigned colour.

Hatch on section

Here you can specify what hatch you would like to represent the material on the vectorial section. To use this option, you must activate the *Display* button.

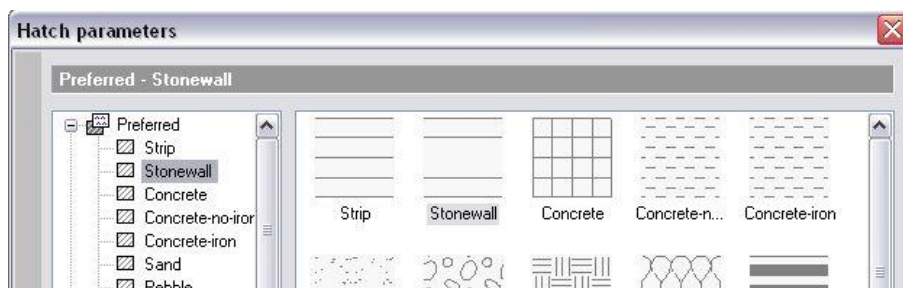
This hatch appears only on the architectural section and on the condition that the **File menu -Options - 3D Preferences - 3D Objects- Section plane created with hatch** is activated. You can switch on the option in the Section properties dialog window too.

To activate hatch on section, use the hidden line mode.

You can specify texture pattern colour and the texture background colour at the bottom of layer settings.

When the *Display* is on, you can select the hatch pattern of the object and set its properties: horizontal and vertical density of the pattern and line direction defined in degree.

- Click the pattern icon if you want to display and select hatch pattern types.



You can choose from various pattern types in the dialog box by clicking either the pattern name or the pattern image. You can move hatch patterns to new categories; this way you can arrange patterns in a structure that best suits you.

Copying hatch settings



When clicking this button you have the option to copy hatch settings. You can copy the settings of *Hatch on section* to *Hatch in 3D*, and conversely.

3.2.2.5. RGB colour management

Colour is among the properties of each ARCHLine.XP object. Objects are represented with their colours on the screen or on the printed documents. Besides the colour properties of objects, colours have important role at materials when you represent materials with colours. In both cases the program uses *RGB* colours.

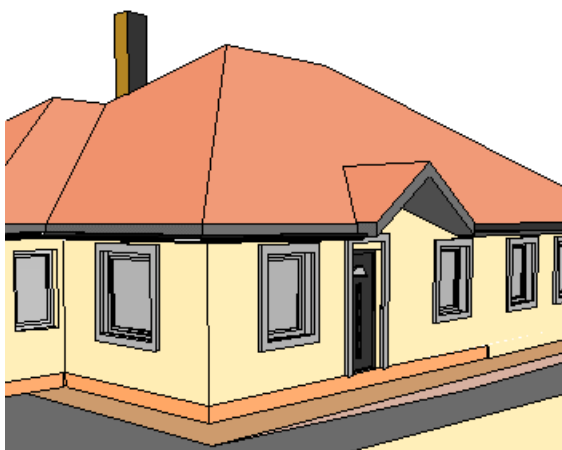
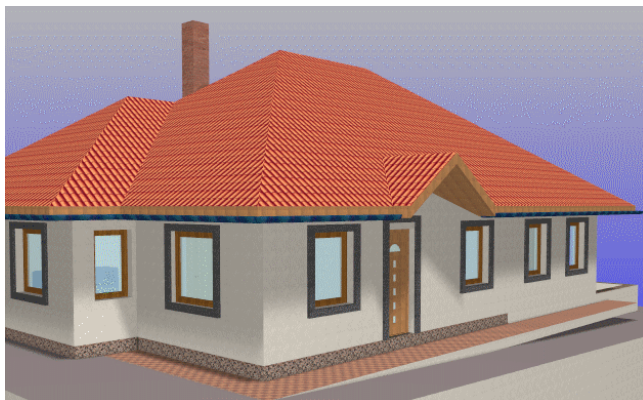
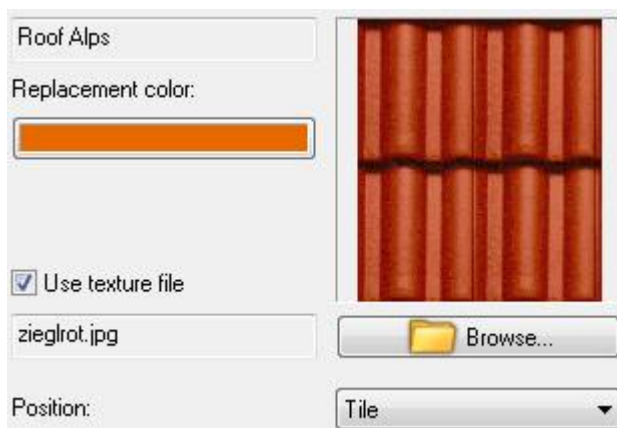
Displaying various colours is not only important in presenting a photorealistic image of wall paints and facades, but also in the case of a coloured 3D view. The option of RGB colour use therefore is significant as it enables you to illustrate or print vector graphics drawings of various facades in true colours that are in realistic Ral, Sikkens or Pantone colours.

Colour settings thus have two functions:

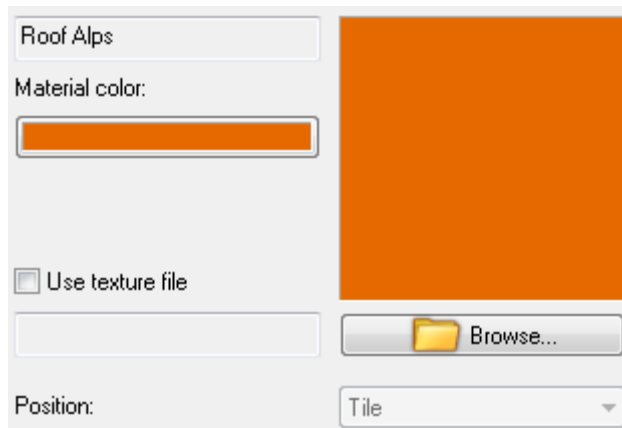
- ❖ Click **No texture** in the *Material properties* dialog box to define the colour for the material. Now instead of the texture the colour appears in the photorealistic view, which you can set by clicking the colour icon next to the texture image.
- ❖ The Navibar – 3D preview modes - Coloured command uses this colour on the vector graphics drawing regardless of whether you defined the colour or texture for the material.



In the following example we use wall paint texture in the photorealistic view and yellow on the vector graphics drawing.



As we mentioned before, by clicking off the *Use texture file* button the given object will be displayed in the selected colour both in the coloured 3D view and on the photorealistic picture:

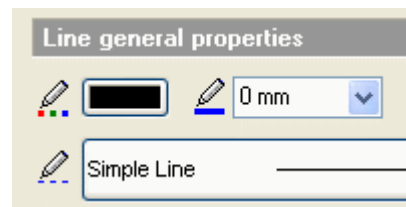


Standard handling of colour tables

Colours can be chosen from different colour tables. The handling of these colours became standard in ARCHLine.XP.

Click on the colour icon in the properties dialog of any object (e.g. line) to access the *Colour tables*:

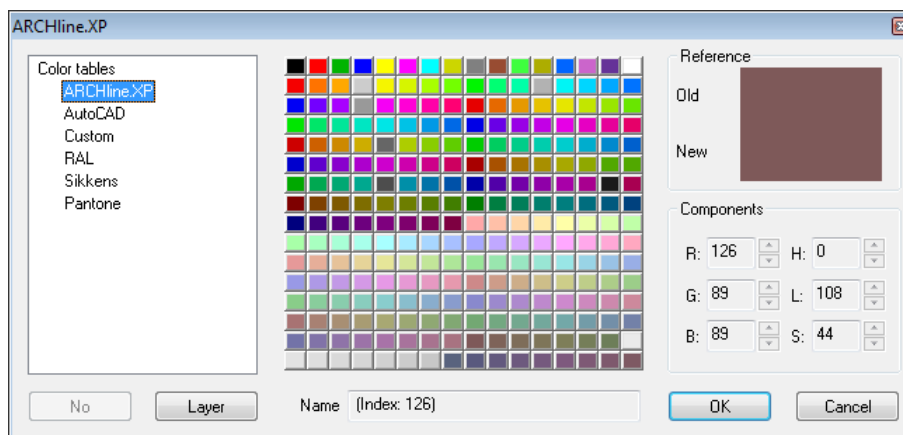
The browser of the appearing *Colour table* dialog shows the name of the selected colour table.



- Select the appropriate colour table.

ARCHLine.XP® colour table

The ARCHLine.XP colour table appears with 256 primary colours, from which you can choose a colour. In the name field only names of the first 16 colours appear. You cannot specify names for other colours.

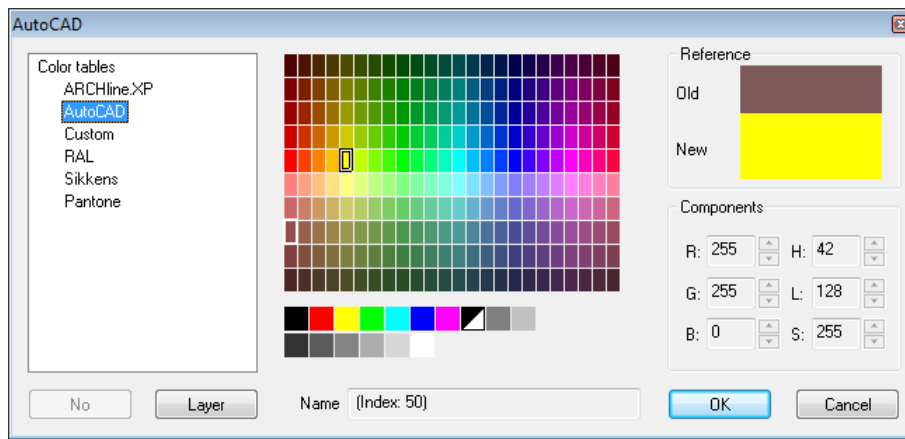


AutoCAD® Colour table

The AutoCAD® colour table appears with 256 primary colours, from which you can choose a colour. You cannot specify names here.

If you import a drawing created in AutoCAD, the drawing objects will keep their AutoCAD colour table settings. Here you can modify the colour of an object.

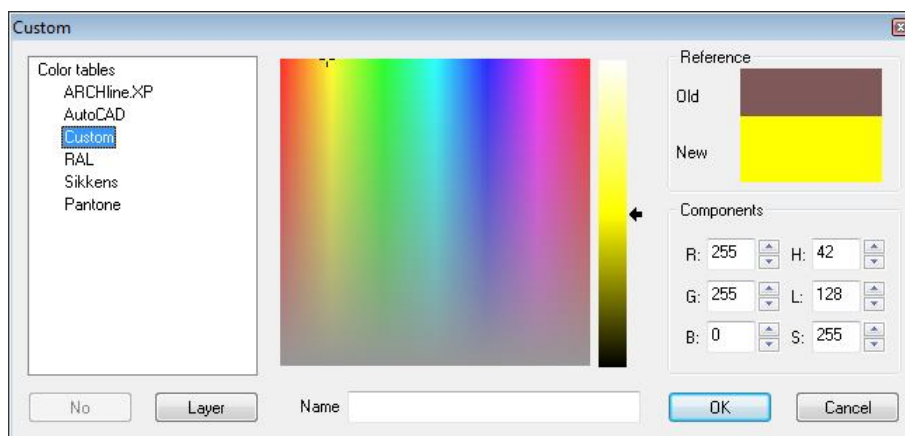
If all the drawing objects have colours from AutoCAD® colour table, you don't need to convert colours at file export. The exported drawing will appear with the same colours in AutoCAD®.



Custom colour table

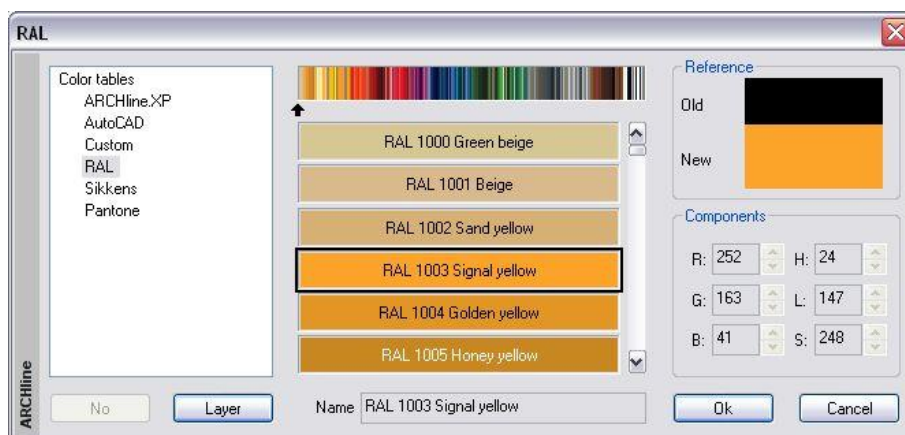
The standard Windows colour spectrum appears here. After selecting a colour you can specify its shading with a sliding arrow.

In the name field you can specify a colour name.



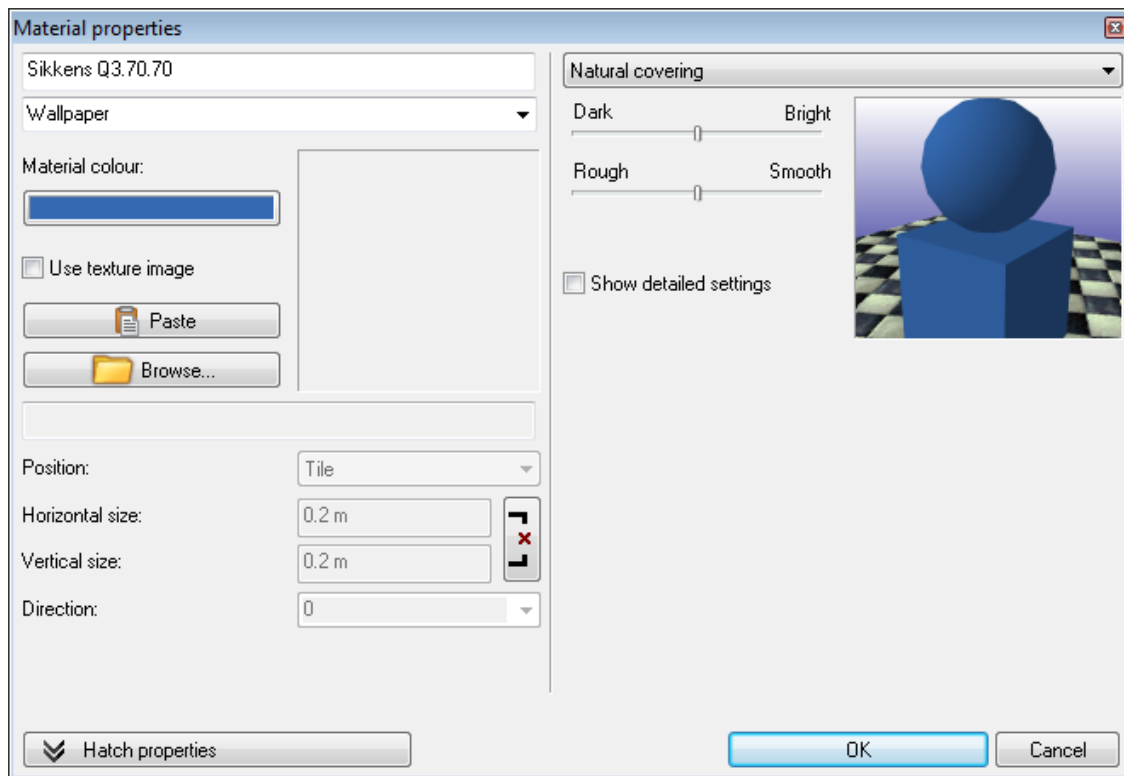
Ral, Sikkens, Pantone colour tables

Use the horizontal sliding arrow or the vertical sliding bar to browse for the appropriate colour group. Select the desired colour by clicking on it. The name of the colour appears in the *Name* field.



New material with colour

If you create a new material by a Ral, Sikkens or Pantone colour, the name of the colour will automatically specify the name of the material, too. You can modify this material name as well.



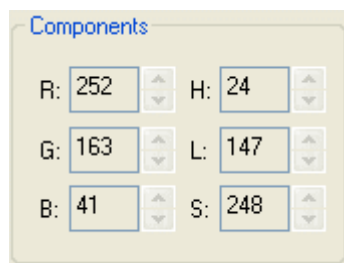
Reference

After selecting a new colour from a colour table, the selected new colour is displayed below the old colour.



Components

The RGB code and the *Hue*, *Luminosity*, and *Saturation* values appear here.



Layer

Click the *Layer* button if you want to specify the colour of an object by a colour of a layer. The object picks up the colour property of the layer where the object belongs to. The colour property of the object follows the changes made later on the colour of its layer.

No

The *No colour* button becomes active only in the case when you wish to specify the background colour of a hatch. Clicking this button the hatch can be specified without background colour.

New colour tables

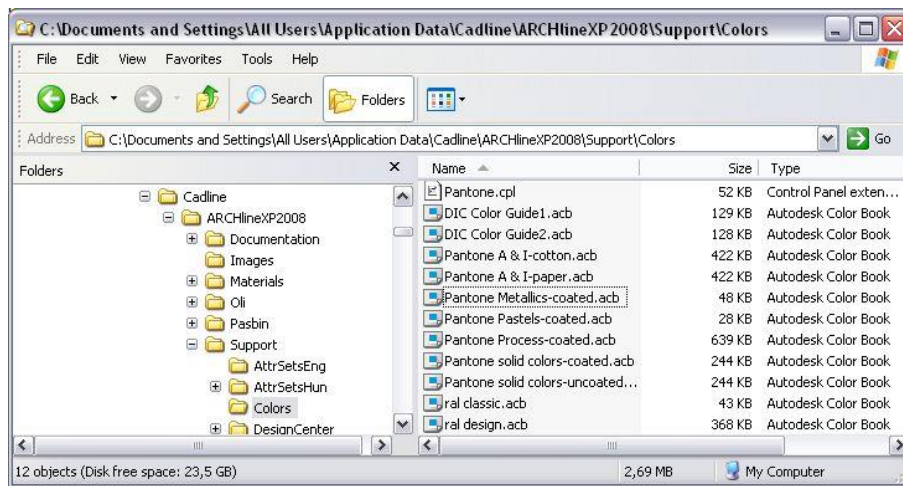
Different CAD applications can use numerous colour tables. Some of these colour tables are downloadable from the web.

In ARCHLine.XP it is possible to load colour tables that follow the format of Adobe or AutoCAD® ColourBook. These files can have .acb extension in binary (Adobe) or XML (AutoCAD) file format.

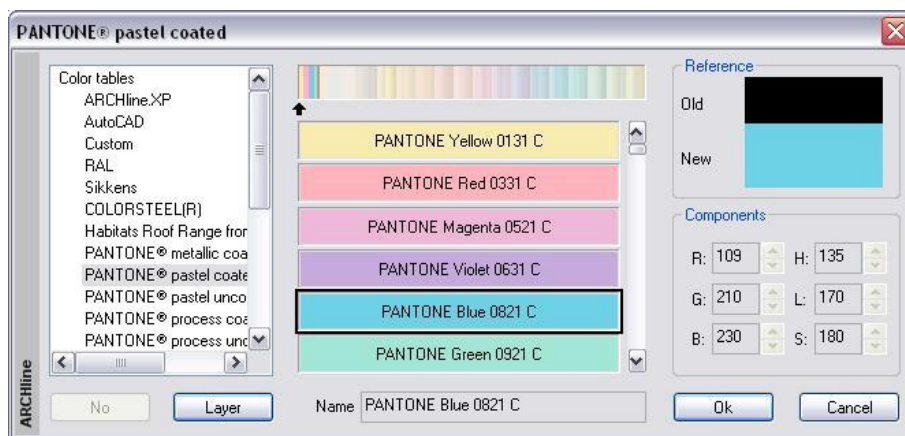


It is not possible to load protected colour tables!

- Copy or move the downloaded colour table in the ...\\Support\\Colours subdirectory inside your program installation directory:



- Restart ARCHLine.XP.
- Open the *Colour tables* dialog. The program automatically loads the inserted colour tables.



Query the colour of an object

Any colour you have specified can be queried later on.

After you have specified a colour to an object, open the properties dialog of the object and click the colour button. The *Colour table* dialog appears with the appropriate colour table, showing the previously specified colour selected in that colour table.

Under *Components* you can read the *RGB* codes and the *Hue*, *Luminosity*, and *Saturation* values.

Here you can modify the colour, of course.

3.2.3. Using sets of properties

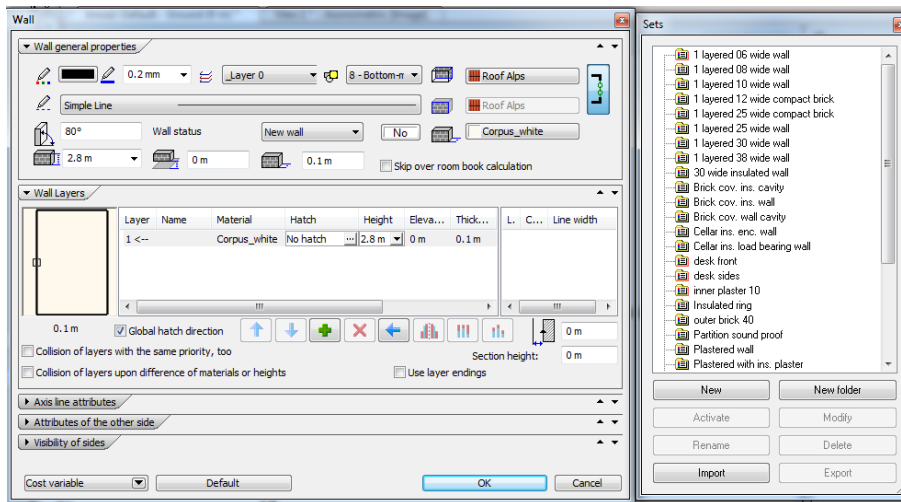
You can save a range of properties specified for object types in sets.

In the course of the architectural design you need several often-used objects (generally used layered walls, slabs, etc.). Sets serve their development.

You may save the properties set for an object under a given name and use these sets of properties anytime subsequently, thus accelerating and facilitating the work process.

ARCHLine.XP® is capable of managing an infinite number of sets. When you start the program objects are displayed with their basic properties as set in the default template. The program contains predefined wall and slab sets. These are industrially default sets, represented with grey icon.

The sets created by the user, represented with yellow icon.



Select an object type from the properties dialog box (e.g. wall) and click the set button displaying the current set name:

1 layered 38 wide wall



When no set is loaded, the word **Set** is displayed.

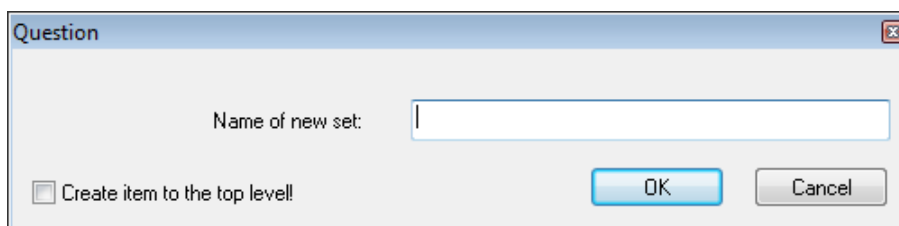
A new dialog box appears on the right where the program lists predefined sets. You can do the following operations with sets:

- ❖ Create set
- ❖ Activate set
- ❖ Modify, delete, rename set
- ❖ Export
- ❖ Activate set and create new object with the active set
- ❖ Copy properties with set

3.2.3.1. Create new set, new folder

Once you have specified all properties of a given object in the **Properties** dialog box:

- Click the **Set** button.
- Click **New**, and
- Enter the name of the new set.



The created set is just saved to the project file, and just when, if the object created by the set occurs in the draw.

Creating new folder

You can group the sets to folders. Use the New folder button for this.



We suggest grouping the new sets to folders!

3.2.3.2. Export sets

The created set is just saved to the project file, and just when, if the object created by the set occurs in the draw. During the planning is needed that you can use the created sets in other projects. For this you have to save the set to the Template file. You can make this:

- ❖ with set export, then import to the template file, or

- ❖ save directly to the template file.

The main difference between the two methods is that just the selected sets are saved in the first case, which later can be given to the actual template file. In the second case every set and preferences are saved to the template file.

Export

After created the new sets quit from the dialog window with OK. When you open the Properties window again you can export the selected sets separately to the given .set extended set file.
In that case, if you grouped the new sets to a given folder, it's enough to select the folder, and click to the Export button. Then the whole contain of the folder is saved.

Determine the name and access path of the set file in the appearing dialog window.

You can add the saved set file to the actual template file with the **File menu - Import - Template** command.

Save template file

You can also save set, if you save in one step all the sets and preferences to the template file.

To do so, use the Save option in the **File menu - Import - Template** dialog box. This command saves all sets and all draw settings in the project to the default template file. After saving you may use the saved sets and settings in a new project.



See Chapter 4.6. on *Managing styles* for further details.

3.2.3.3. Activate set

You need to activate a set if when defining basic settings you do not wish to specify the properties of each object one by one, but in sets. You may also modify object properties by activating the corresponding set.

You can activate a set In the **Properties** dialog box

Properties dialog box

- Open the **Properties** dialog box
 - Click *Set* to display the list of sets, then
 - Select the desired set from the list and click *Activate*
or
 - Double click the set name
- OK** Close the dialog box.



You may use this method in setting properties or modifying objects as you work.

3.2.3.4. Modify, rename, delete set

You can modify the properties of the current set, and rename or delete the set.

Modify properties

- Open the **Properties** dialog box and click *Set*.
- Activate the set you wish to modify.
- Change the properties you want to modify, then
- Click *Modify*.
- In the message box then displayed, click *Yes* to overwrite the selected set.

Rename set

- Open the **Properties** dialog box and click *Set*.
 - Choose the desired sets from the list.
 - Click *Rename*.
 - Enter the new name of the set.
- OK** Close the dialog box.

Delete set

- Open the **Properties** dialog box and click *Set*.
- Choose the desired sets from the list.
- Click *Delete*.
- In the message box thus displayed click *Yes* to delete the selected set.

3.2.4. Assigning cost variables

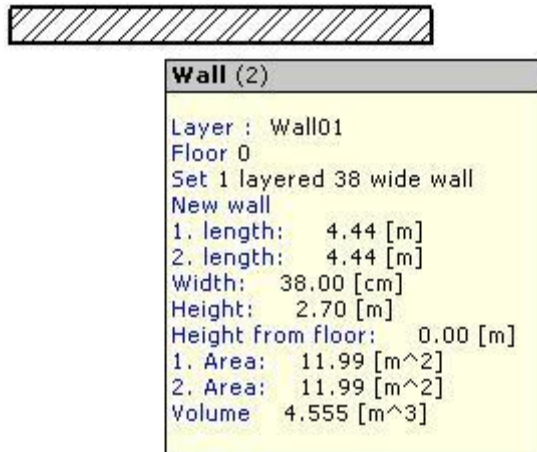
You can freely assign data to all ARCHLine.XP® object types. By this method you can simply create your own 'database':

- ❖ You can enter the required data, or
- ❖ You can export data from the **Excel** database.

Budget calculation using the Excel spread sheet

This function provides support for the calculation of the budget of certain building projects or other calculations. Essentially, in the case of floor plan objects you can assign the cost, unit, and factor to parameters such as area or volume, whereby you can obtain a combined costing spread sheet in Excel format.

Suppose you want to calculate the material cost of wall building and you know the volume. In this simplified example a wall section has the following parameters:



In an Excel spread sheet where you have an objectized list of all costs, it is easy to assign these data to ARCHLine.XP® objects. In the present example one line of the spread sheet indicates the material cost of the wall:

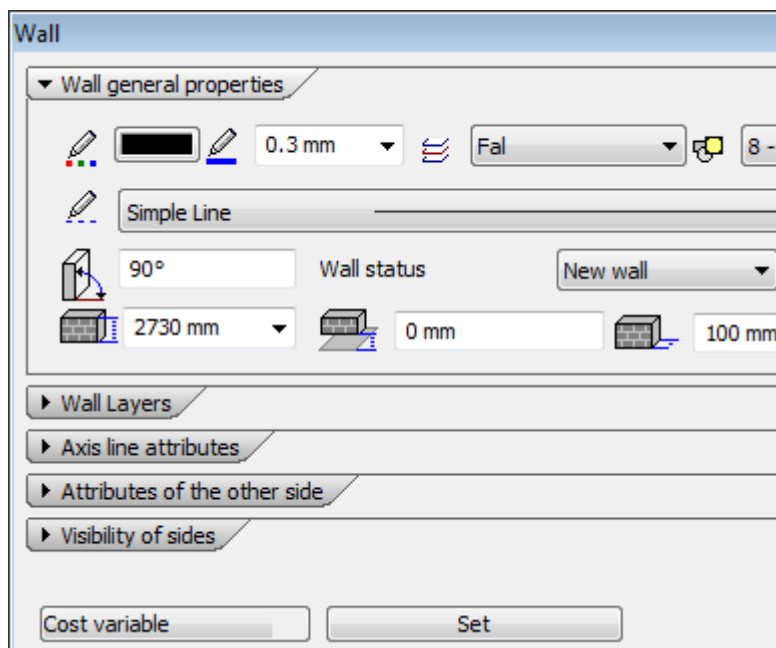
| | A | B | C | D | E |
|---|---------|---------------------|----------------|----------|---|
| 1 | 1.2.4.A | Wall material costs | m ³ | \$300,00 | |
| 2 | | | | | |

You have two options to start assigning:

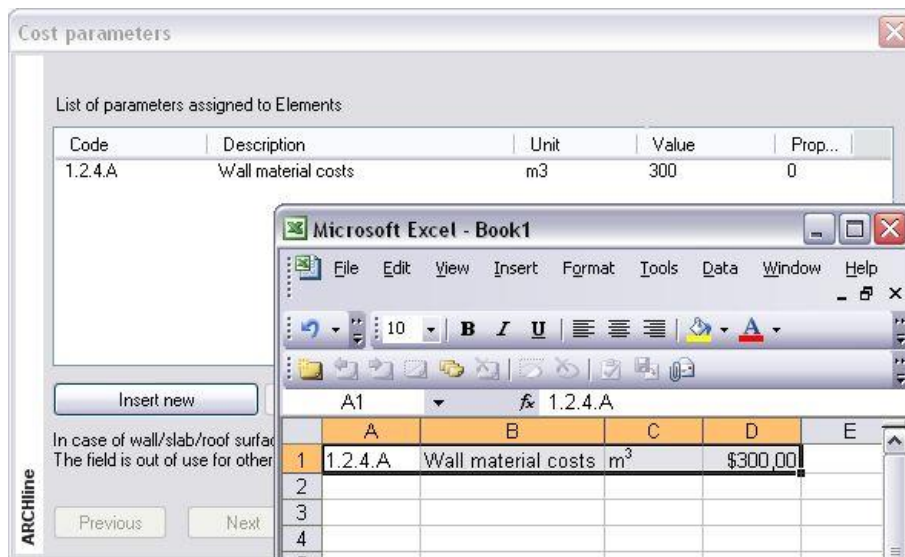
- ❖ In the **Properties dialog box** and
- ❖ In the **Excel spread sheet by dragging**

I. Properties dialog box

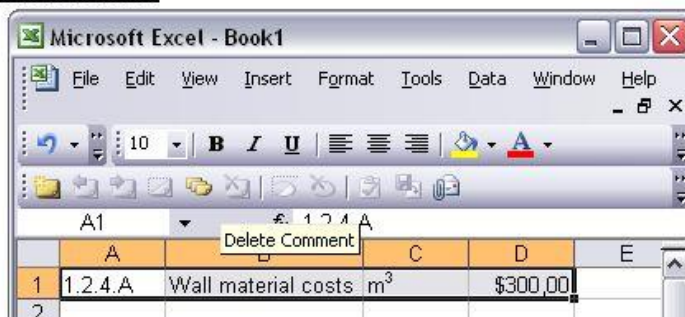
Double click the selected object (e.g. wall) on the floor plan. The **Properties** dialog box then appears.



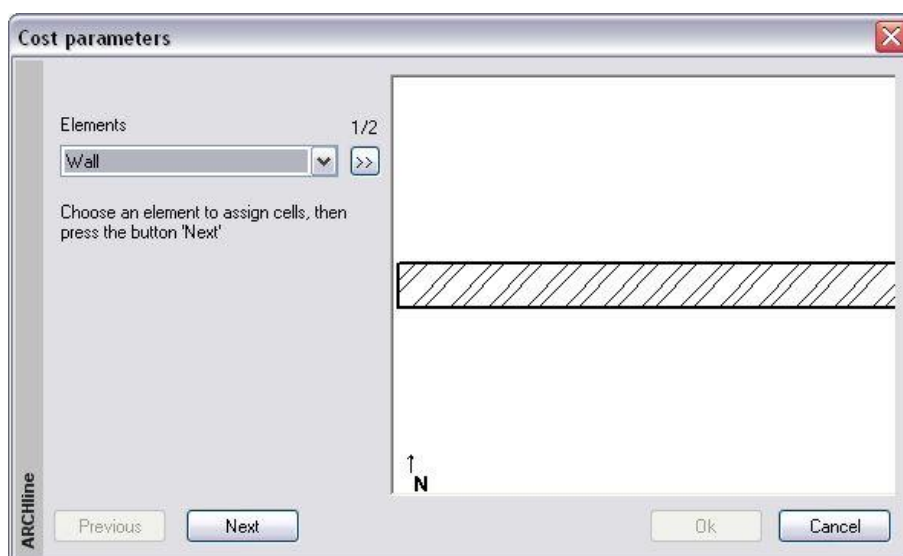
- Click the **Cost variable** button. The *Cost Parameters* dialog box pops up.
- Open the Excel spread sheet.
- Select the desired line.
- By clicking the lower edge of the line, move the cells to the dialog box with the drag and drop method. Now the values are entered in the cells.



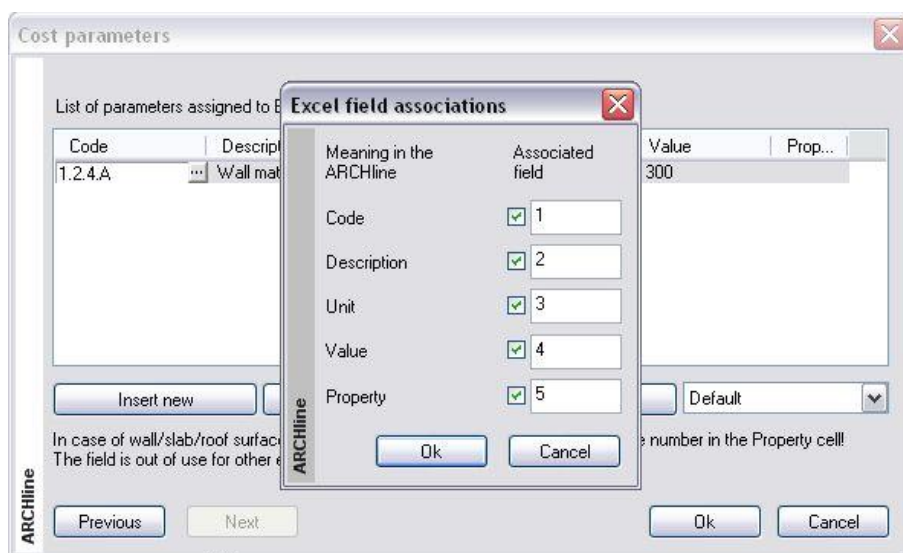
II. From the Excel spread sheet by dragging



- Select the desired line in the Excel spread sheet.
- Having selected the line click the lower edge of the line and move it to the wall in the drawing with the drag and drop method. Now the *Import cell* dialog box appears and the values are entered in the cells.
- When two or more objects overlap and therefore selection by dragging is ambiguous, select the object to which you actually wish to assign the imported data in the dialog box displayed. Click *Next*.

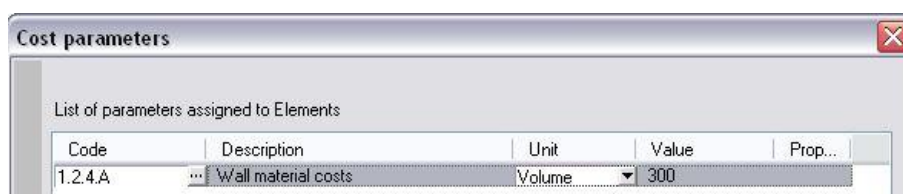


From this point on the two methods are similar:



Here you have to assign the cell values to the variables. At first variables might not be assigned to the cells you want them to be associated with, as in the line of the Excel spread sheet the order of variables may be different. In this case, with the **Field associations** button you can specify for each variable from which cell the program should load its value. In our example the program obtained the code from the first cell, description from the second cell, and value from the fourth cell.

The fields are editable after loading, so for example for unit you can specify the *volume*:



Unit

You can specify any text for the unit, e.g. m3, or you can choose a code from the list. The Excel list will use this code for calculating the budget.

| Note |
|------------------------|
| Width |
| Laminates |
| Original height |
| Average height |
| Volume |
| Side length 1 |
| Side length 2 |
| Net side area 1 |
| Net side area 2 |
| Average laminate width |
| Average side length |
| Average side area |
| Area of 2D contour |
| Gross side area 1 |
| Gross side area 2 |
| Date |

Factor

It only makes sense to set factors in the case of walls, slabs, roof surfaces and roof edge where the factor specifies the layer. Factors should be round numbers.

If you do not wish to assign the value of variables from the Excel spread sheet, you can enter them by inserting a new line



You can also indicate several variables (line) to an object.

You can delete unnecessary lines with the  button.

As from now on the wall has these attributes:



| Wall (2) | | | | |
|---------------------------------|---------------------|--------|-------|----------|
| Layer : Wall01 | | | | |
| Floor 0 | | | | |
| Set 1 layered 38 wide wall | | | | |
| New wall | | | | |
| 1. length: 4.44 [m] | | | | |
| 2. length: 4.44 [m] | | | | |
| Width: 38.00 [cm] | | | | |
| Height: 2.70 [m] | | | | |
| Height from floor: 0.00 [m] | | | | |
| 1. Area: 11.99 [m^2] | | | | |
| 2. Area: 11.99 [m^2] | | | | |
| Volume 4.555 [m^3] | | | | |
| Assigned parameters (1): | | | | |
| Code | Description | Unit | Value | Property |
| 1.2.4.A | Wall material costs | Volume | 300 | |

Similarly to the above, you can assign variables to other floor plan objects. By copying properties you also have the option to transfer only those variables of an object to another that have been assigned.

Listing

When you finish a plan, you can export the consignment in an Excel spread sheet. You can access this list with the **Add-On – Quantity Take-Off - Building** command.

3.3. Category manager

Menu: Tools > Accessories > Category Manager

ARCHLine.XP Category Manager is powerful and provides better content management.

Content includes all libraries related to objects, lights, materials, groups, profiles etc.

Category Manager provides a faster access to browse and edit content libraries with a consistent look and feel.

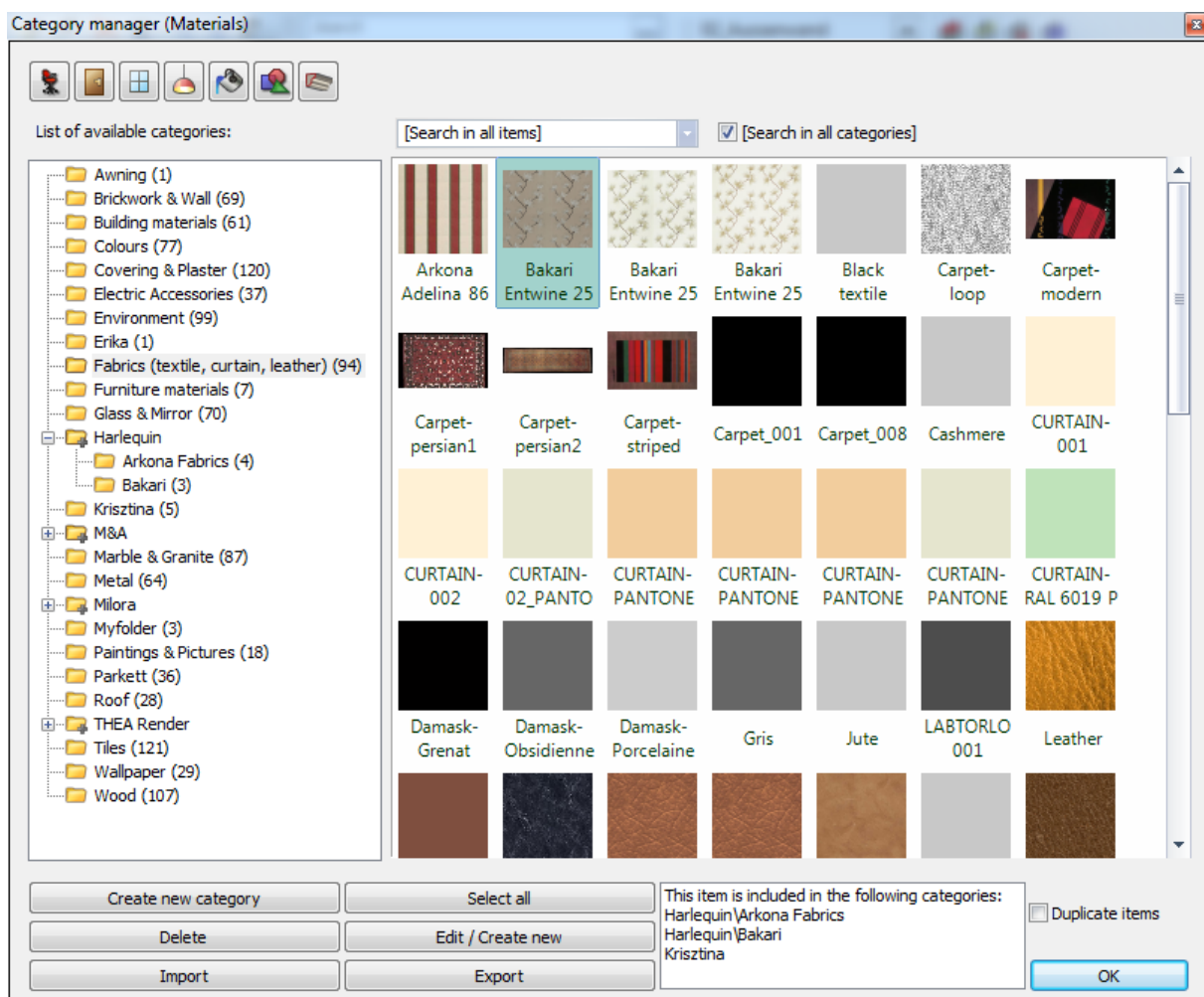
The elements within the libraries are organized into flexible virtual folders that are not dependent on location in a hierarchical directory tree.

This virtual folder system can be thought of as a view that lists all elements tagged with a certain tag.

The tag is a kind of metadata and helps describe an element and allows it to be found again by browsing or searching.

Elements in this virtual folder are not limited to any single physical location on the hard drive, as is the case with traditional folders, but can be in any location.

Category Manager allows assigning more tags to one element. It means the element can fulfil more search criteria in the same time.



Content selector buttons

You find on the top of the panel the content selector buttons. You can choose among:

- ❖ Objects
- ❖ Doors
- ❖ Windows
- ❖ Lamps
- ❖ Materials
- ❖ Groups
- ❖ Profiles

Search

Type the required name into the Search field, and press Enter to start searching. The program displays the result window below.

Result window

The result window displays the required contents.

Move items to other category

- ❖ Select the appropriate category in the category list or use the Search field. The result will appear in the window below.
- ❖ Select the items you want or select all items in the category by click the “Select All” button.
- ❖ Move the selected items to the category name you want using “drag and drop” method and release the mouse button.
- ❖ If the “Duplicate items” is on, the item retains the original category, while the new category is assigned.

Commands**Duplicate Items**

When Duplicate elements are “on” the program keeps the actual tags while dragging the item into another category. It means you will find it in the previous and the new category as well. When the Duplicate elements are “off” the item will lose the actual tags while dragging to another category. It means you will find it only in the new category.

Create new category

You can create a new category.

Delete

You can delete the selected elements from the given category. (It deletes the object only if there is no more tag assigned to it).

Select all

Selects all elements in the category.

Edit / create new

- Here you can edit an existing material or create a new one.

Import

You can import an ARCHLine.XP environment file here.

Export

You can export the selected content into an ARCHLine.XP environment file. This command enables to exchange the required objects, materials, etc with another ARCHLine.XP user or to simply to send to another computer.

3.4. Managing layers

Getting started

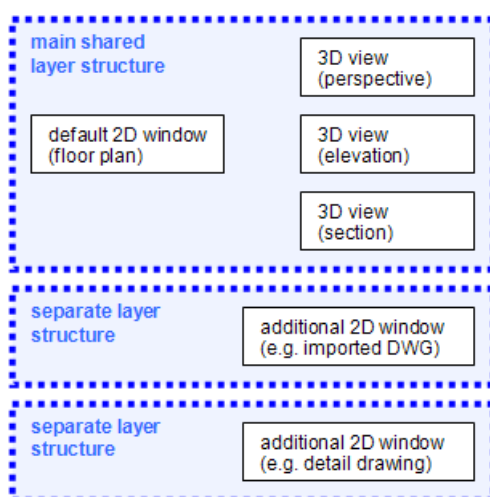
Layers are a method of managing the visual layout of a drawing. The program makes it possible to apply several layers at a time. With the use of layers you can group or separate the objects of the current project according to various aspects. The program sets the *Layer 0* layer as default, but you have the possibility to create additional layers. On the whole the program is able to manage 32 768 layers.

In ARCHLine.XP® layers *have the following properties*:

- ❖ **Visibility:** on and off status
- ❖ **Background:** unlock and lock
- ❖ **Colour :** This feature is active in **Layer control mode**
- ❖ **Line type:** This feature is active in **Layer control mode**
- ❖ **Line width:** This feature is active in **Layer control mode**
- ❖ **Printable:** Set the layer to either printable (on) or not printable (off)
- ❖ **Description:** You can assign a description to layers – special information that is related to the given layer

Layers can be turned on and off, and can be unlocked and locked. With the help of these commands you can easily group the objects of the different layers.

3D views and the floor plan share a single layer structure:

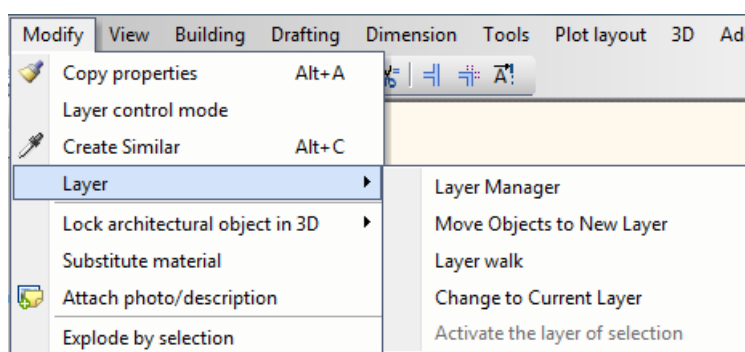


If you create, rename or delete a layer in the default 2D window, you can view the changes in the 3D window, and vice versa.


When specifying the general properties of object types, you can define on which layer you wish to place the objects of an object type.

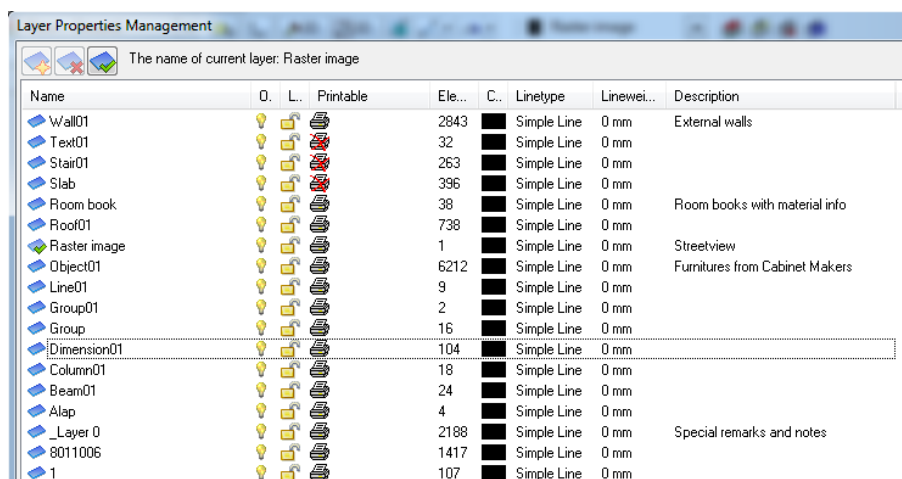
You can place objects with different properties (different colour, line type, line width, even different type, etc.) on the same layer, which due to other aspects, you want to handle together.

If you **activate** the **Layer control mode** in the **Modify menu**, when creating new objects the program can automatically assign the colour, line type, and line width of the layer on which you place the object to the general properties of the object.



3.4.1. Working with layers in Layer dialog


Select the Layer Manager command in the Modify menu, or Click the  Layer button in the Layer bar. The command displays the list of the layers in the drawing and you can specify their properties here.



! We suggest that you use a layer distribution and assign the objects to different layers. In this case you can group objects on the basis of layers. You can switch certain layers off, or use them as background.

In the following we describe the use of the *Layer* dialog box in details:


Add layers

- To add new layer , click the  button.

| Name | On | Lock | Elements | Color | Linetype | Lineweight |
|-----------|----|------|----------|-------|-------------|------------|
| Dimension | | | 0 | | Simple Line | 0 mm |
| ✓ Layer 0 | | | 0 | | Simple Line | 0 mm |
| Layer : 1 | | | 0 | | Simple Line | 0 mm |

You can modify the properties of the new layer subsequently.

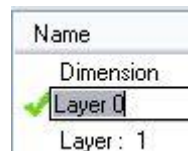


The pipe in front of the name of layer signs the active layer:  Layer 0
See: 3.4.3. *Activate layers* chapter.

Name layers

The program automatically names layers you create *Layer1*, *Layer2*, etc.

- Double click *Name*, and enter the desired name of the layer.
- Repeat the command in the case of other layers.



When clicking *Name* you can arrange the names in ascending or descending order.



The program maintains layer names even when you use the copy/paste command between different drawings. The name of the layer can contain maximum 48 characters; in case of longer name the program cuts the remaining characters.

Delete layers

To delete a layer:

- Select the layer you wish to delete.
- Click the  button.



You can delete only empty, unreferenced layers. You cannot delete the active layer!

Layer Group tree

Layer group's tree control which layers are displayed and used to make changes to a group of layers at a time.

If a layer group is selected in the tree, the dialog displays only the layers in that layer group.

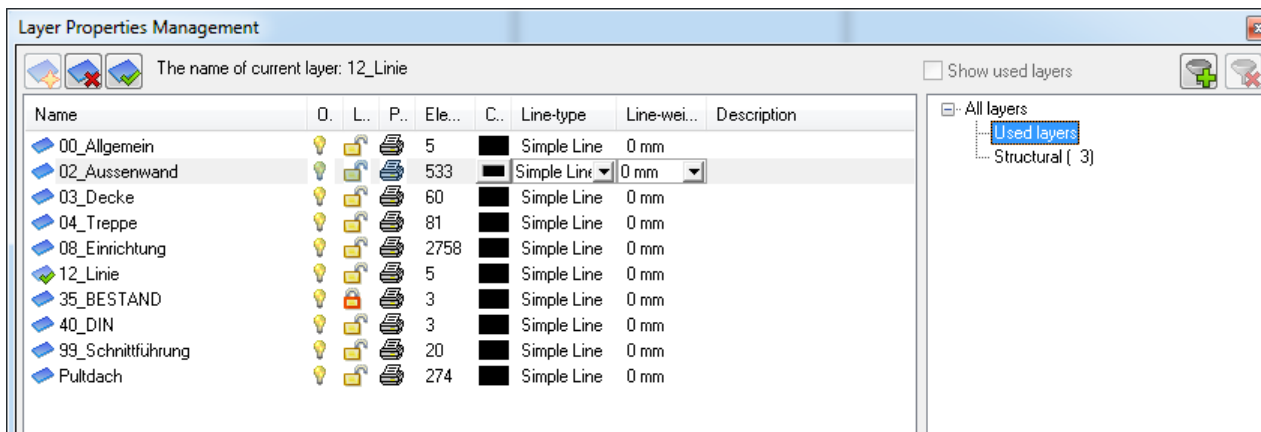
The top node, All layers, displays all layers.

The Used layers displays layers only that contain objects.



3.4.2. Layer groups

You can create layer groups that contain layers that you select and add to the group.



You can find on the right side of the *Layer Properties Management* dialog panel the layer groups buttons and settings.

Create layer group

Click on the *Create group* button, then a new group is instituted with a default name. If you click with right mouse button on the name and select the *Rename* menu, you can give a unique name to the group.

Add layers to a group

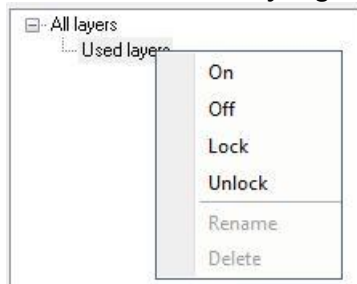
Select one or more layers, then hold down the left mouse button draw them above a layer group, and then release the mouse button. Behind the name of the layer group the number of layers that are in the same group appears between brackets.

Display Layer groups

Select a layer group from the list of *All layers*, then on the left side of the dialog window only the layers belonging to the selected group appear. You can qualify the appearing list if you switch on the *Show used layers* button.

The list of layers group contains two built in layer groups: if you select the *All layers* group, all the layers of the given window appear, if you select the *Used layers* group then that layers will be visible from the all layers, which contain objects unrelated to the position of *Show used layers* button.

Transactions with Layer groups



If you click with right mouse button on the name of a layer group, with help of the appearing shortcut menu you can modify the preferences of all layers at once: you can represent (On), or hide (Off), lock or unlock all layers in the given group at once.

Delete from group

Select a layer group from the list of Layer groups, then on the left side of the dialog window only the layers belonging to the same group appear. Select one or more layers then click on the *Delete from group* button.

The given layers are deleted only from the layer group, and they are available if you select the *All layers* group.

If you select layers from *All layers* and *Used layers* group, instead of *Delete from group* button you find the *Delete* button, which deletes the layers definitely.

Delete layers group

Select a layer group then click on the **Delete** button on the upper right corner of the dialog window. Then only the layer group will be deleted, the layers in it are available further if you select the **All layers** group.




The layers groups have to be determined according to windows similarly to the layers.

Example:

In the following example it is a really great help using the layers group:

- Start a new project.
- Load in a DWG file, which contains more than 30 layers.
- Create a new layer group: *DWG layers*.
- Click on the right side on the *Used layers* group. Then on the left side only the layers imported from DWG drawing and the used layers can be found.
- Move all layers from here to the *DWG layers* group.
- Start design.
- If the imported objects from DWG drawing are not needed, you can switch off or lock them in one step.

3.4.3. Activate layers

Always has to be an activate layer on the plan. The active layer is always turned on and unlocked, with the pipe displayed in front of its name:  Layer 0

You can activate the layers:

- ❖ automatically
- ❖ in the Layer Properties Management
- ❖ in the Layer list box

The program always places the objects on the current layer.

The method is different according to the *Modify menu- Layer control mode* turn on/off status:


Layer control mode turned off:

The program activates *automatically* the layer assigned to the object in the object properties window. It places the new object on this layer. Except if you activate a layer during the command, for example: creating line, from the *Layer list box*. Then the program set the objects on this layer till you close the command.

Layer control mode turned on:

The program set the objects, that layer, which is activated in the Layer Properties Management dialog window or in Layer list box. In this case the program disregards the layer assigned to the object type.

Activate in the Layer Properties Management:

- To activate the layer click on the selected layer and then click on the  button.

Activate in Layer list box:


In the *Status* next to the *Layer settings* button you can find a list box, in which there are the layers with them actual status. The selected layer become active, this appears on the main line of the list box.



The automatic activate, the Layer Properties Management and the Layer list box are synchronized to each other.

3.4.4. Layer properties

Layers on and off (Visibility)

By turning layers on and off you can select the layers the objects of which you display in the drawing windows. The objects of turned-on layers  are visible and you can make reference to them. Any time you can turn the layers on which have been turned off, then they become visible again.

- To turn layers on and off click the desired layer in the list, then
- Click the icon indicating the status of the layer next to Name field.



You can turn off layers easily by using the *Layer off command* in the shortcut menu of the drawing objects. Only the inactive layers can be turned off.

Locking and unlocking layers (Background)

By locking and unlocking layers you can define which layers shall be editable and selectable. You can lock layers containing objects that are not to be edited in a given planning process, these layers become background layers. The objects of locked layers are visible, you can make reference to them, but you cannot select or edit them.

- To unlock or lock a layer click the desired layer in the list, then
- Click the icon indicating the status of the layer next to Name field.

You can change the status of several layers at a time:

- With the Ctrl or Shift buttons select the desired layers from the list.
- Click the appropriate button in the list.

| Name | On | Lock | Elements | Color | Linetype | Lineweight |
|-------------|----|------|----------|-------|-------------|------------|
| Beam05 | | | 0 | | Simple Line | 0 mm |
| Beam06 | | | 0 | | Simple Line | 0 mm |
| Beam07 | | | 0 | | Simple Line | 0 mm |
| Beam08 | | | 0 | | Simple Line | 0 mm |
| Beam09 | | | 0 | | Simple Line | 0 mm |
| Beam10 | | | 0 | | Simple Line | 0 mm |
| CarryOver | | | 0 | | Simple Line | 0 mm |
| CarryOver01 | | | 0 | | Simple Line | 0 mm |
| CarryOver02 | | | 0 | | Simple Line | 0 mm |
| CarryOver03 | | | 0 | | Simple Line | 0 mm |
| CarryOver04 | | | 0 | | Simple Line | 0 mm |



The active layer is always turned on and unlocked.



When the layer is turned on and unlocked:

- ❖ its objects are **visible**
- ❖ you can make **reference** to its objects
- ❖ its objects are **editable and selectable**



When the layer is turned on and locked:

- ❖ its objects are **visible**
- ❖ you can make **reference** to its objects, but
- ❖ its objects are **not editable or selectable**



When the layer is turned off:

- ❖ its objects are **not visible**, therefore
- ❖ consequently you **cannot make reference** to its objects, and
- ❖ its objects are **not editable or selectable**

Colour

Color

- Click the button next to the layer you wish to modify, and then select the colour of the objects on the layer from the colour palette.

Line type

Linetype

- Click the command next to the layer you wish to modify, then
- Click the arrow next to the line type.
- Select the line type of the objects on the layer in the pull-down menu.

Line width

Lineweight

- Click the command next to the layer you wish to modify, then
- Type in the desired line width, or
- Click the arrow next to the line width and
- Select the line width of the objects on the layer in the pull-down menu.

Printable:

- By turning layers on or off you can select the layers to plot. If you turn off the printable property for a layer, the objects on that layer are still displayed.

Description:

You can assign a description to layers – special information that is related to the given layer.

3.4.5. Layer control mode

In the ARCHLine.XP® program the **Modify menu - Layer control mode** option **is turned off** as default.

When setting the general properties of object types you must specify to which layer you want to assign the objects of the object type in question.

You can place objects with different properties (different colour, line type, line width, even different type, etc.) on the same layer, which due to other aspects, you want to handle together.

For example:

When you select Layer1 in the *Wall properties* dialog box, it means that the program will place all walls created after setting with the given properties on Layer1. By turning a layer on or off or locking it, you can display, turn off, or use as background these walls together, where in the latter case you can only make reference to them but they are non-editable.

Let's see detailed, what's the different between the **turned on/off** option of the **Layer control mode**:

Layer control mode - turned off

Let's have the **Layer control mode** in the **Modify menu** turned off:

In case of *Layer control mode* is off:

- ❖ The program set the objects to the object type assigned layer in the Layer Properties dialog. Except if during the creating command activate another layer from the State - Layer list box.
- ❖ When setting the general properties of the object you can specify the colour, line type, and line width directly by defining the property (e.g. the colour is red).

| General | |
|------------|--|
| Layer | 12_Linie |
| Colour | <div style="background-color: black; width: 100px; height: 15px;"></div> |
| Line type | Simple Line |
| Line width | 0 mm |
| Draw Order | 8 - Bottom-most |

Modify object properties:

You can modify the properties of objects already existing on a layer similarly to the method described above. In the Modify object properties dialog box you can assign colour, line type, and line width separately to the layer or if these are already assigned, you can change them by directly specifying the properties.

Layer control mode - turned on

When the *Layer control mode* is on, open the Layer Properties dialog and assign the appropriate *colour*, *line type*, and *line width* properties to the layers.

In case of *Layer control mode* is on:

- ❖ the program set the new objects to the active layer and not to the object type assigned layer
- ❖ The objects to be placed on the layer automatically acquire the layer properties. It means the colour, line type, and line width of the object comes from layer properties.

| Name | On | Lock | Elements | Color | Linetype | Lineweight |
|-----------|----|------|----------|---|-------------|------------|
| Dimension | | | 0 | <div style="background-color: black; width: 20px; height: 10px;"></div> | Simple Line | 0 mm |
| Layer : 0 | | | 0 | <div style="background-color: black; width: 20px; height: 10px;"></div> | Simple Line | 0 mm |
| Layer : 1 | | | 0 | <div style="background-color: green; width: 20px; height: 10px;"></div> | Dotted | 0 mm |
| Layer : 2 | | | 0 | <div style="background-color: red; width: 20px; height: 10px;"></div> | Simple Line | 0 mm |
| Layer : 4 | | | 1 | <div style="background-color: black; width: 20px; height: 10px;"></div> | Wavy | 0 mm |

Modify properties

When modifying the properties assigned to the layer, the objects in the drawing which belong to the given layer and whose properties are layer associated, will automatically be updated.

You can also modify layer associated properties subsequently:

If, for example, the program constructs each object of Layer1 with green lines, but you subsequently change the line colour of one object to blue, the object in question, although it is placed on a green-line layer, will be blue in accordance with the modification.

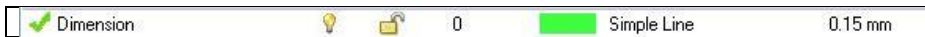


The difference between the on and off status of the layer control mode is that if turned on, the program set the new objects to the active layer and not to the object type assigned layer and the objects to be placed on the layer automatically acquire the layer properties (colour, line type, line width) at once. At the same time you can assign layer properties even if the layer control mode is off, but only one at a time.

There is no difference between the on and off status when modifying object properties.

Example 1:

- Make the Layer control mode turned on.
- In the Layer management dialog box assign to the *Dimension* layer the colour green and a line width of 0.15. Make the layer active.



- Draw a line and specify its size.



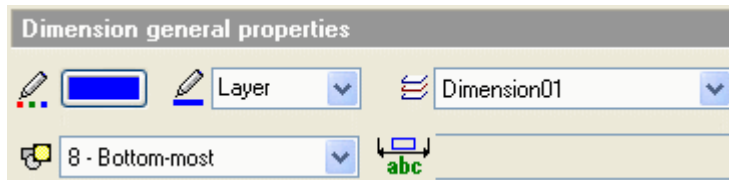
You see that the dimension has acquired the properties assigned to the layer. Let's see it in the *Dimension general properties* dialog box:

- Double click dimension.



The word *Layer* appears in the colour box in the general properties.

- Click colour. Next to the colour palette then displayed, the **Layer** option is activated indicating that the dimension has acquired the colour assigned to the layer.
Next to the colour you see that line width is also assigned to the layer.
- By clicking and modifying the colour box, the colour properties of the object are not layer associated anymore.



3.4.6. Move Objects to New Layer

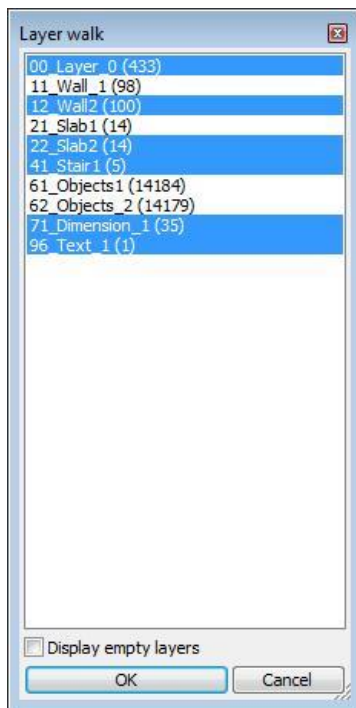
This tool will move objects from one layer to another, by selecting the destination layer from a dialog. You can move certain objects from one layer to another with the **Modify menu - Modify layer** command.

- In the dialog box displayed, choose the number of the new layer to which you want to assign the objects, and then click **OK**.
- Select those objects you wish to move to the new layer (you may also use the commands in the **Selection menu**).
- **Enter** Finish selection and close the command.

! As soon as the selected object is moved to a given layer, the Visibility and Background properties of the layer also apply to the object. Additional layer properties, such as colour, line type, and line width modify only those properties of the moved object that are layer-associated.

3.4.7. Layer Walk tool

Layer walk tool helps you navigating through your existing layers of one drawing. The key point of using Layer walk is that it makes easy to switch on and off visibility of layers and visualize the effect at the same time on the drawing itself. The layer walk list shows the names of layers and the numbers of objects of one layer between bracelets "()".



Layer Walk tool can be found on Layer toolbar and also in the main menu in Modify / Layer walk.

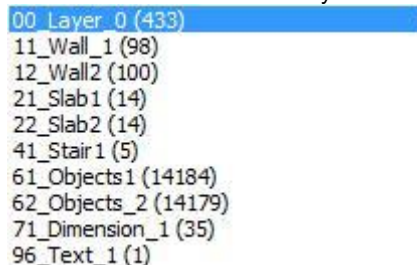
Display empty layers

This option enables the visibility of empty layers in the layer walk list. By default all empty layers are invisible.

Using layer walk

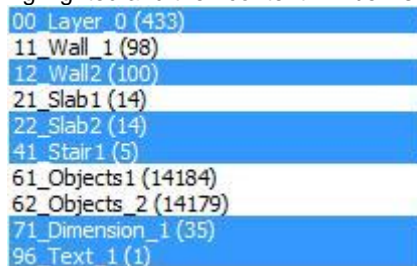
Select a layer

When the layer walk list is open you can select a layer, by clicking on its name. The selected layer will be highlighted and its content will be automatically visible in the active window.



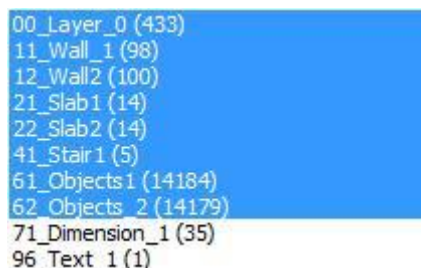
Select multiple layers

To add a layer to your selection please hold down Ctrl button and click on the layer name. The selected layers will be highlighted and their content will be visible in the active window.



Select layers between first and last selection

You can select every layer in the layer walk list between two selected list objects. Click on the first one, hold down the SHIFT button on your keyboard and click on the last object. Every layer between the selected ones will be selected, including the first and last.



```

00_Layer_0 (433)
11_Wall_1 (98)
12_Wall2 (100)
21_Slab1 (14)
22_Slab2 (14)
41_Stair1 (5)
61_Objects1 (14184)
62_Objects_2 (14179)
71_Dimension_1 (35)
96_Text_1 (1)

```

The same selection is also available by mouse only. Move over the first object, and hold down the left mouse button. While holding the left button move the mouse towards the end of the list and when you are satisfied with the selection release the mouse button. All objects will be selected between the first selections until the list object where the left mouse button was released.

Change to Current Layer

This command moves objects to the current layer.

Make Object's Layer Current

This command changes the current layer by selecting an object as reference. It will use the object's layer as current layer. This command is accessible in layer control mode only.

3.5. Floor and building management

In ARCHLine.XP® floors allow architects to tie the construction objects to a specific storey, regardless of the object's physical location.

So, you design your building as if you were building it in reality.

When you start a new project, a first floor is created automatically.

Other floors have to be created by the architect.

You can speed up drawing if you copy the objects of an existing floor to another floor. This is very useful when creating main walls on a number of floors, as their floor plans usually correspond to each other.

Floors in ARCHLine.XP® are not physical boundaries but comprise a single logical unit. An object located on a certain floor belongs to that floor; however, floor properties (i.e. headroom and height) do not influence its geometry. This means that any object placed on the floor does not have to be physically within the floor boundaries but may overhang. This is necessary for split-level buildings.

In ARCHLine.XP® one drawing may comprise *a number of buildings*. These buildings can be created:

- ❖ as separate projects, which are imported to a single drawing by *Import* and *Merge to current drawing*, or
- ❖ within one drawing, where you can create several buildings.

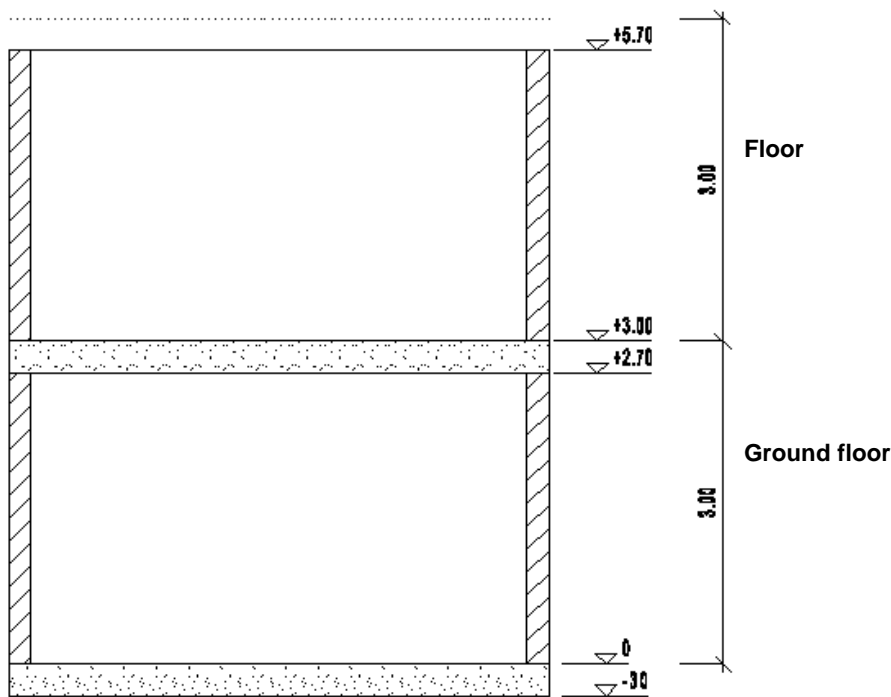
Depending on the terrain, you can assign different heights above sea level to buildings. There is only one active building at a time; others are displayed with a lower colour tone.

Floor properties are: number, name, height above sea level and own height. You can modify these at later stages.

Example

Let's see an example of wall and slab arrangement in the case of two floors:

- ❖ ground floor starts at 0 m, with a height of 3 m,
- ❖ wall starts at 0.0, with a height of 2.7 m,
- ❖ slab starts at 0.0 m, with a width of -0.3 m,
- ❖ floor starts at 3 m, with a height of 3 m,
- ❖ ceiling slab starts at a relative 0.0 m, with a width of -0.3 m.

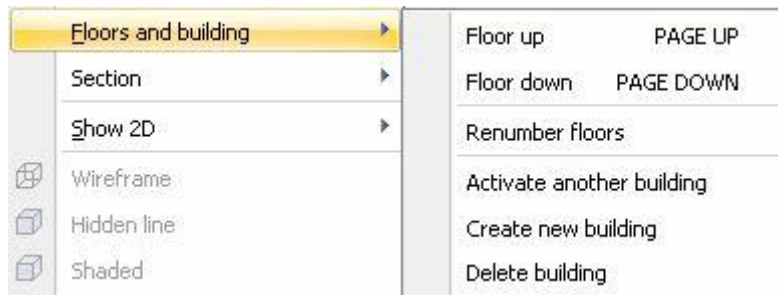


This means that the slab (floor slab) is situated under the wall and overhangs the height of ground floor. The 0.3 m space between the top of the wall and the height of the floor is occupied by a slab of the same position and of 0.3 m width.

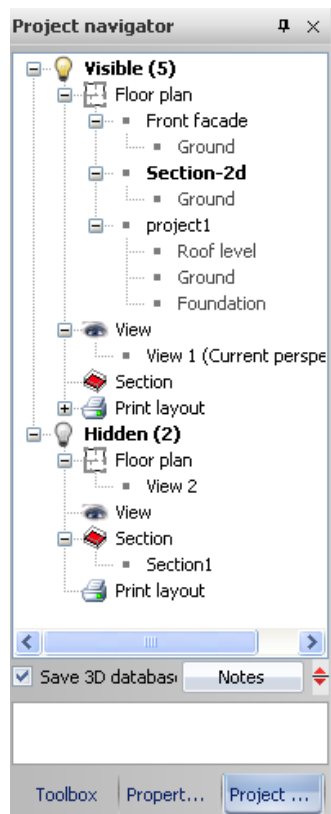
Floor management

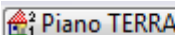
You can manage floors from different parts of the program:

- ❖ in **View** with the command **Floors and building**:



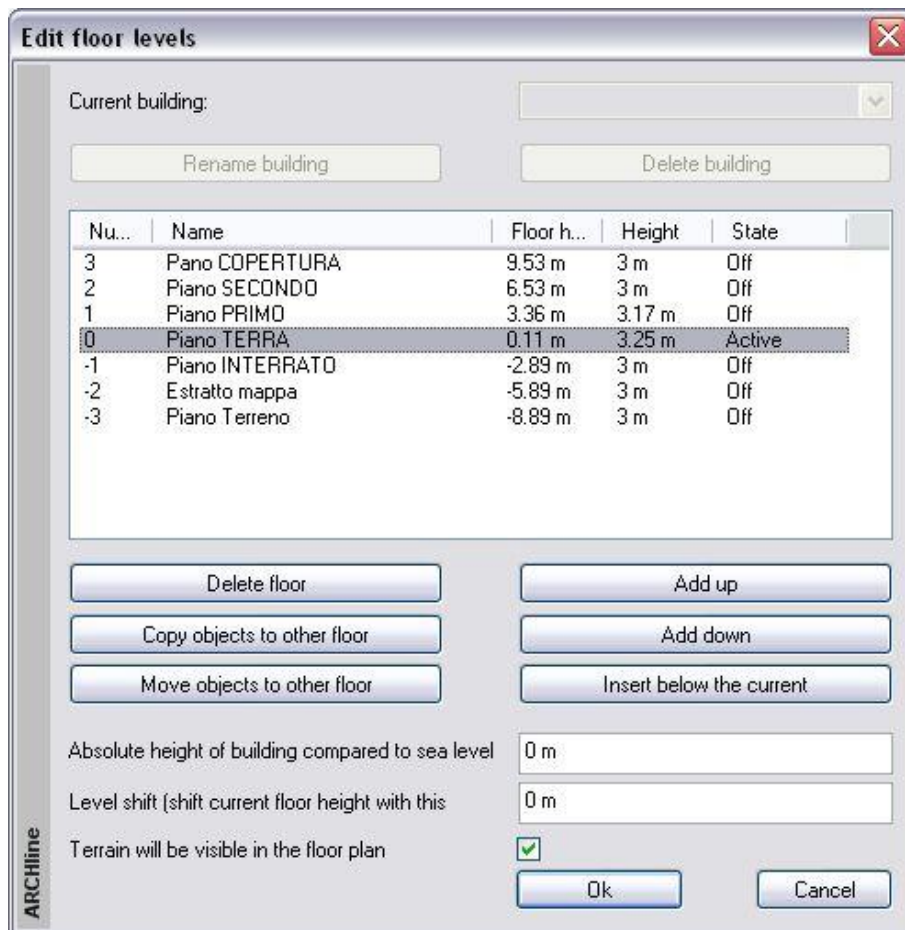
- ❖ In *Project Navigator*:
Choose the appropriate drawing to display buildings and floors in Project Navigator.
You can double click to activate the desired floor of the selected building.



- ❖ In the *Status bar*  with the **Floor** icon:
- ❖ Click on the arrow to open the current floor list and select the new active floor.



- ❖ Click on the button to display **Edit floor levels** dialog box, where you can create and edit individual floors. The properties in the dialog box always refer to the current building.



Let us see the options in this dialog box:

3.5.1. Creating floors

If you start a new project, a 0th floor is created automatically.
By default, floor height is 0 m and the full height is 3 m.



You can create new floors in several different ways, depending on the actual situation:

| | |
|------------------|--|
| Add up | New floor above the top-most floor |
| Add down | New floor under the top-most floor, |
| Insert new floor | New floor between two floors, under the active one |

By default, any new floor will have the properties of the floor under or above which it has been inserted.

! When you *Insert a new floor* make sure that the active floor is the one under which you want to insert a new floor. The other two options will create a new floor under or over the top-most floor automatically.

When clicking *Insert new floor*, a message box informs you that you cannot use Undo here.



3.5.2. Activating floors

Floors have three states: active, off and visible.

You can define the state of the desired floor by clicking the appropriate object in the pull-down menu of *Floors* dialog box:

| Nu... | Name | Floor h... | Height | State |
|-------|--------|------------|--------|---------|
| 1 | Roof | 3 m | 3 m | Off |
| 0 | Ground | 0 m | 3 m | Active |
| -1 | Cellar | -3 m | 3 m | Visible |
| | | | | Off |

Active

The program places the objects on the **active** floor. By default, you can only see the objects of the active floor in the floor plan window, but by clicking *Visible* you can make the objects of another floor visible, too.



Besides the *Floors* dialog box, you can activate the desired floor with the **PAGE UP/PAGE DOWN** keys or with **View – Floors and building – Floor up/ Floor down**. In these cases, you can switch between floors one by one. You can also activate the desired floor in the *Project* class of the *Design Center* by double clicking or by drag and drop,

Off

If you activate a floor, the previously active floor turns off.

Visible

When editing, you may want to refer to some points of an object which is not on the active floor. This option helps you with this.

When a floor is **visible**, the selected floor will also be visible on the floor plan and you can refer to the objects on that level, without editing them. Visible objects will be displayed highlighted in grey.



Only turned off floors can be made visible.

If you do not need to display the visible floor, either choose **Off** or use **PAGE UP/PAGE DOWN** to switch between floors to activate the desired floor.

3.5.3. Floor properties

You can assign the following properties to floors:

- ❖ **Name**
- ❖ Floor height
- ❖ Height

| Nu... | Name | Floor height | Height | State |
|-------|--------|--------------|--------|--------|
| 1 | Roof | 3 m | 3 m | Off |
| 0 | Ground | 0 m | 3 m | Active |
| -1 | Cellar | -3 m | 3 m | Off |

Name

To change the name of a floor:

- Double click the **Name** field to be changed, and
- Type in the name of the floor and press **Enter**.

Floor height

Floor height refers to the starting height of the floor (floor-to-floor height). When you can place an object on the active floor, its height is specified according to the active floor's height.

To change floor height:

- Double click the **Floor height** field to be changed, and
- Type in the floor height and press **Enter**.

Height

Refers to the full height of the floor. This height defines the floor height of the next floor. Objects belonging to this floor do not need to be within this height.

To change height:

- Double click the **Height** field to be changed, and
- Type in the height and press **Enter**.



You can set 0.0 as floor height. You may need to set this value in some cases — e.g. in the case of pseudo copies, where there is no 3D modelling, so there is no height extension either.

3.5.4. Building properties

Buildings are described by the following properties:

- ❖ **Height above sea level**
- ❖ Environment level visible
- ❖ Split levelling

Height above sea level

Gives the absolute height of the building compared to the sea level. This is important when placing the building in its environment, i.e. on the terrain. Modifies the 0.0 m floor height of the building with the height above sea level.

- Type in a new value and press **Enter**.

Environment level visible

You can only place the terrain on the environment level.

If you disable this option, the terrain placed on the drawing will not be visible in the floor plan and the 3D-model. If you enable this option, the terrain will be visible with each level.

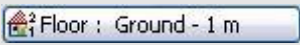
Split levels

As we have mentioned before, an object placed on the floor belongs to that floor, though its geometry is not affected by floor properties (floor height and height). This means that it is not necessary for an object placed on the floor to be physically within floor boundaries, but it can overhang these boundaries.

Modify floor levels – *Level difference* shifts the floor height of the active floor with the specified value. The program will place the subsequent architectural objects at this height.

- Type in the value of the level difference and press **Enter**.
-



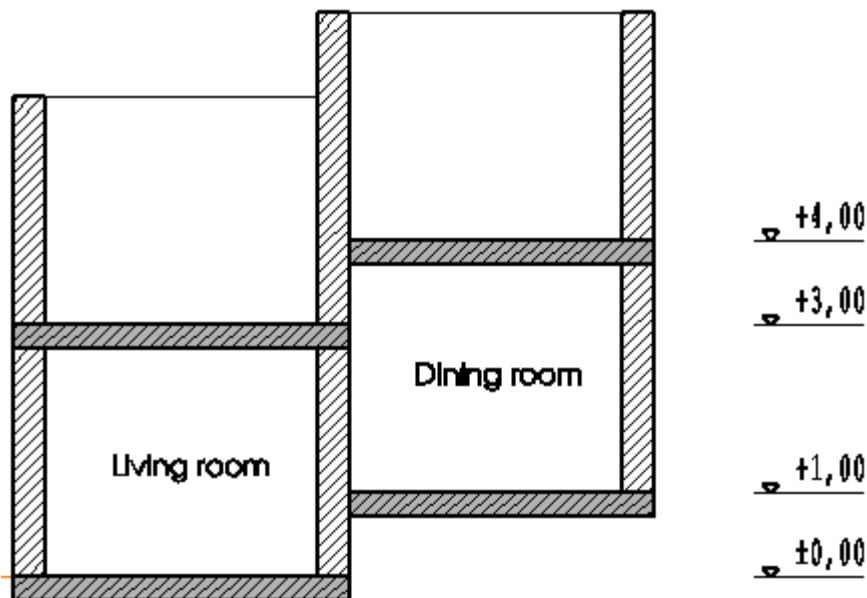
The value of level difference is displayed on the *Floor* button in the *Status* bar, separated from the name of the floor by a hyphen: . The level difference is valid for all floors.

Example:

The living room and the dining room are on the same floor in the house, on the ground floor. However, there is a 1 m difference between the levels of these two rooms with the dining room located higher.

You should place both rooms on the ground floor on the drawing, because they have to be displayed on the ground floor. The objects of the living room (e.g. walls) are placed on the 0.0 m height of the ground floor. The objects of the dining room are 1 m higher.

- ❖ In the case of the dining room objects, level difference can be defined by setting the height above floors to 1 m in the Properties dialog box for each architectural object.
- ❖ The other solution is that we set *Level difference* to 1 m in the *Modify floor levels* dialog box. In this case you do not have to set height for each object individually.
Please note, that if you want to place objects in the living room, you have to reset level difference to 0.0 m.



3.5.5. Floor management

In ARCHLine.XP, you can manage floors with the following commands:

- ❖ Delete floor
- ❖ Copy objects to other floor
- ❖ Move objects to other floor
- ❖ Renumber floors
- ❖ Separate floors

3.5.5.1. Deleting a floor

To delete the selected floor:

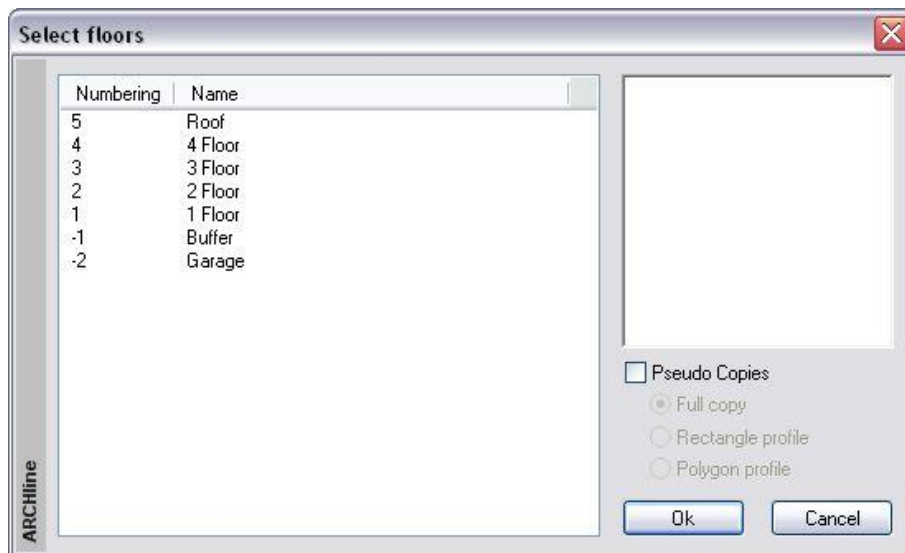
- Click the desired floor in the **Edit floor levels** dialog box, and
- Click **Delete**.

If you delete a floor, the floor height of the floors above the deleted floor will be reduced by the height of the deleted floor.

3.5.5.2. Copy or move objects to other floors

You can copy or move the selected objects with this command to one or more existing floors. The command can be activated only if you have several floors.

- In the *Edit floor levels* dialog box, click the Copy objects to other floor or Move objects to other floor button.
- Select the objects to be copied or moved on the drawing and press **Enter**.
- Select the floors you where want to copy or move the selected objects. Hold Ctrl and Shift to select more than one floor. If you click the name of the floor, you can see the current content of the selected floor in the drawing field.



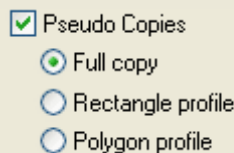
Making pseudo copies

You can copy the floor plan display of objects to another floor, without having a 3D model for these objects. This is what we call a pseudo copy.

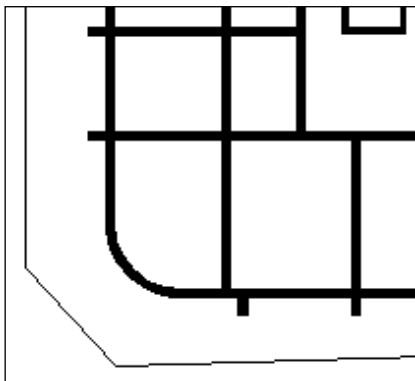
The copied object is displayed as a 2D group object on the desired floor.

This group is still connected to the original object. If you delete the object, the group is also deleted.

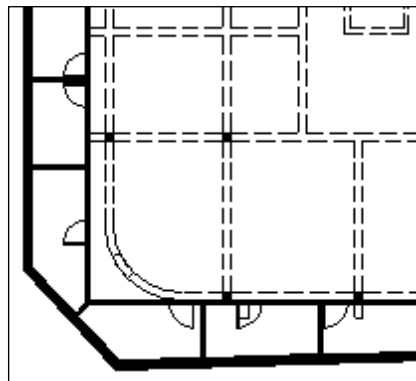
You can place the selected object as a pseudo copy. Going back to the floor plan, you can define the pseudo copied object by a rectangle profile or by a polygon profile. The program cuts the object at the boundaries of the rectangle or the polygon.



You can change the properties of the object created as a pseudo copy. In the group, you can modify the line type of the object. This method is very useful when e.g. you want to mark the location of the framing beams with a dotted line on other floors, too.



Buffer level



Garage level

3.5.6. Managing multiple buildings (for experienced users only)

In ARCHLine.XP® one drawing can contain *several buildings*. You can create these buildings:

- ❖ as separate projects, then you can place these on the same drawing by the *Import* command –*Merge to current drawing* option, or
- ❖ as new buildings within the drawing.

Depending on the terrain, you can assign different heights above sea level to each building. There is only one active building at once; others are displayed with lower colour saturation.

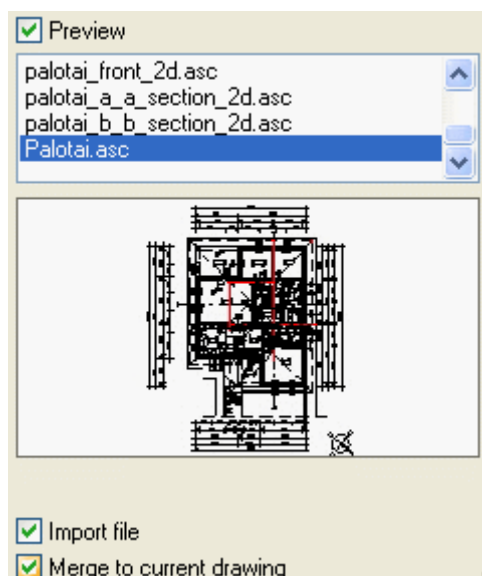


Buildings marked with grey (i.e. inactive buildings) will be printed in real colour.

3.5.6.1. Importing buildings

Having completed building drawings in separate projects:

- Open the project in which you want to place the building. This can be a new project.
- Load the floor plan from another project, which is imported into the open project as a new building. To do this, follow this method:
- Select the project desired in **File menu - Open project** dialog.
- In the *Open project* dialog box, enable **Import file** and **Merge to current drawing** options. Click Ok.

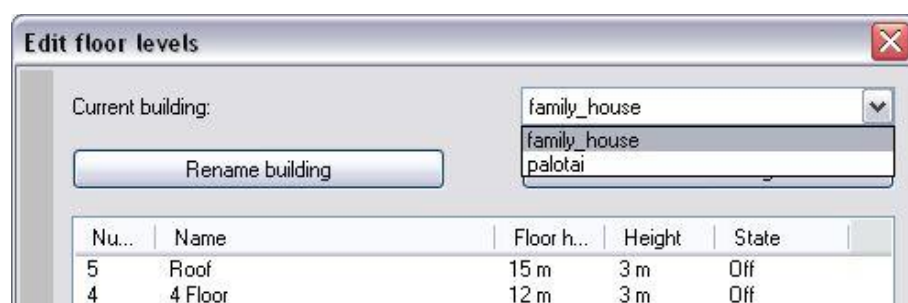


- Enable **Place with new origin** option in the dialog box.
- Enable Place as new building option.



If the floors of the building to be loaded differ from that of the building in the project, you cannot enable the **Place as new building** option (greyed) and the program creates a new building automatically.

Then you can find multiple buildings in the drawing.



The *Edit floor levels* dialog box contains the properties of the current building. Height above sea level applies to that current building only.

You can choose the building desired from the **Current building** pull-down list.

Building names correspond to the original floor plan file names.

To change the name of the current building, click **Rename building**.

Click **Delete building** to delete the current building. Once you accepted this command, you cannot undo it.

To activate the building, select its name. You can go on with the drawing of this building. The other buildings are visible, but you cannot modify them.

In the following example you can see three buildings placed on the terrain at different heights above sea level. The building in the middle is active. The other buildings have lower colour tones.



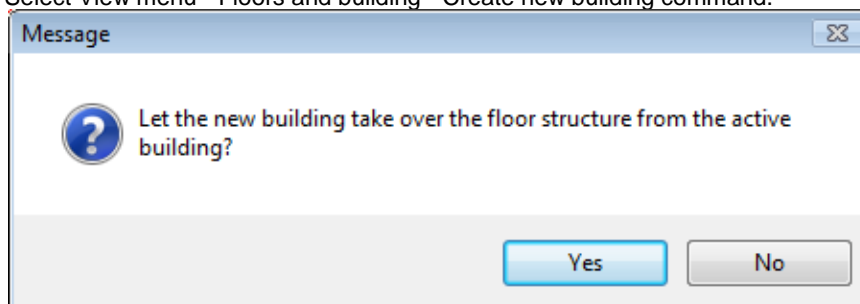
! When creating your 3D-model, enable the **Each building** option in the dialog box. The program will create a 3D model for each building.

3.5.6.2. Creating a new building

You can also draw multiple buildings in one project. In this case you cannot load the completed building from the project file, but you draw the building within the project.

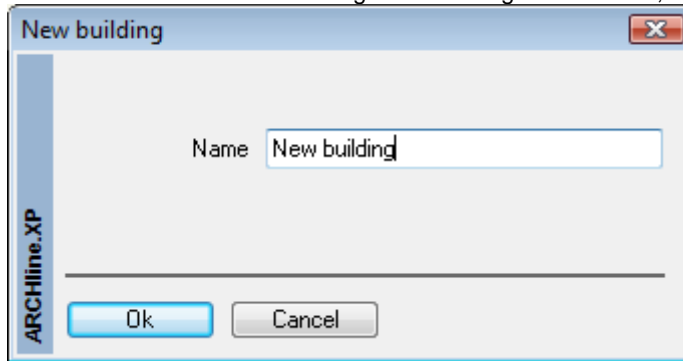
This happens as follows:

- Create a new project. Draw building as usual.
- Select View menu - Floors and building - Create new building command.



- You can take over the floor structure from the active building or you can define the number of floors independently.

- Give the name of the new building. This building will be active, although at this point it is an empty building.



- The new building is active from now on; other buildings are deactivated and displayed in lower colour tones.



You can define height above sea level in the *Edit floor levels dialog* box, and you can also modify the number of floors there.

3.5.6.3. Activating other buildings

You can activate another building by:

- ❖ Using the View menu - **Floors and building - Activate another building** command. Click the building desired.
- Or
- ❖ by selecting the name of the building desired from the **Current building** pull-down list in the *Edit floor levels* dialog box.

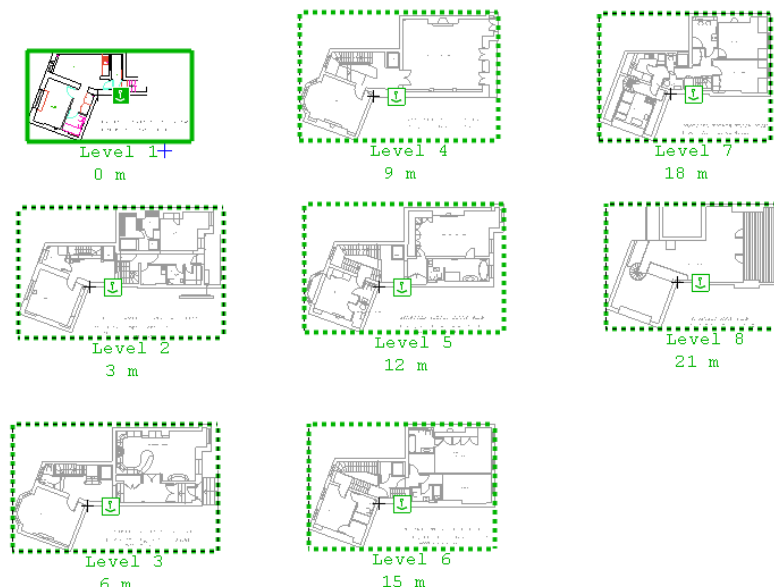
3.5.6.4. Deleting buildings

To delete redundant buildings:

- ❖ Click **View menu - Floors and building - Delete building** and select the building to be deleted, or
- ❖ select the name of the building to be deleted in the *Current building* pull-down list in the *Edit floor levels* dialog box and click **Delete building**.

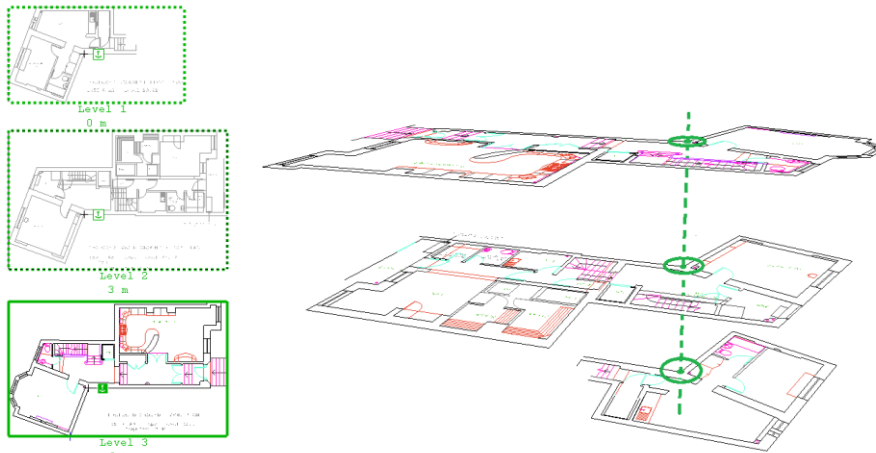
3.5.7. Horizontal floor management

Horizontal floor management allows you to handle the 3D vertical floor structure of your building in a horizontally aligned mode. It will let you handle floors as they would drawings next to each other, like it is used to do in some other 2D CAD software and AutoCAD as well.



This means that the content of your levels are visually aligned next to each other while they still keep their original position in the 3D model.

The horizontal floor management function comes with a couple of useful tools, which will help you to reorganize the contents and the connection between the objects and their floors.



If horizontal floor management is enabled, an anchor point belongs to each floor. The 3D model is built up based on these anchor points: the floors will be aligned so that the anchor points of different floors will get on a vertical line, above each other.

3.5.7.1. Creating the horizontal floor structure

Enabling / disabling horizontal floor management

If your model has more floors, these floors can be represented in a horizontal floor structure. Select **View menu / Floors and Building / Floors** command. You can enable/disable the horizontal floor management in the appearing dialog.

Edit floor levels

Current building: Default

Rename building Delete building

| Num... | Name | Floor he... | Height | State |
|--------|---------|-------------|--------|---------|
| 8 | Level 8 | 21 m | 3 m | Visible |
| 7 | Level 7 | 18 m | 3 m | Visible |
| 6 | Level 6 | 15 m | 3 m | Visible |
| 5 | Level 5 | 12 m | 3 m | Visible |
| 4 | Level 4 | 9 m | 3 m | Active |
| 3 | Level 3 | 6 m | 3 m | Visible |
| 2 | Level 2 | 3 m | 3 m | Visible |
| 1 | Level 1 | 0 m | 3 m | Visible |

Delete floor Add up

Copy objects to other floor Add down

Move objects to other floor Insert below the current

Absolute height of building compared to sea level 0 m

Level shift (shift current floor height with this) 0 m

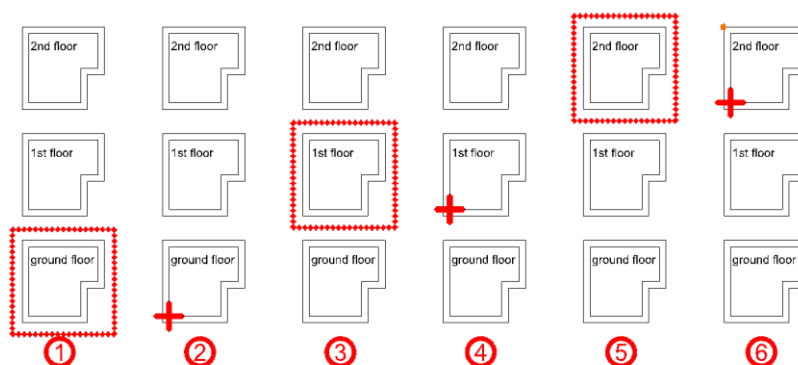
Environment floor will be visible in the floor plan ☒

Horizontal floor structure ☒ OK Cancel

If you enable the horizontal floor management for the first time, the floors will be shifted automatically to avoid overlapping each other. You can customize the resulting layout by using the Shift floor marker command on the active floor border.

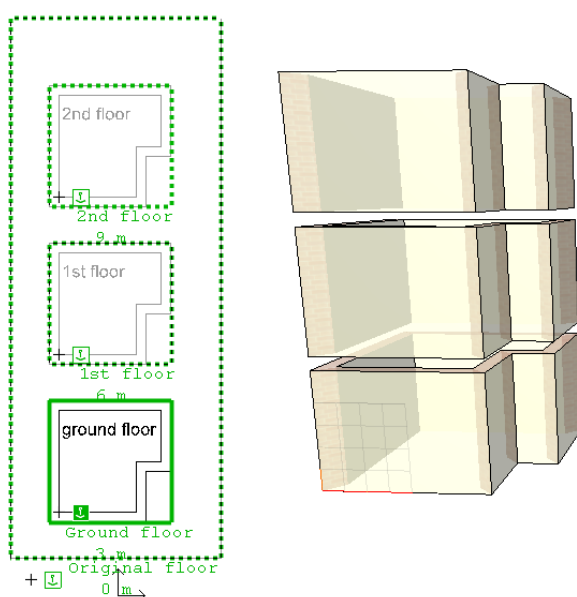
3.5.7.2. Building up a floor structure from a 2D drawing

You can start an ARCHline project by importing a DWG (or other 2D) drawing. These drawings haven't got floor structure, different floor levels are usually represented as simple floor plans next to each other. To build up a floor structure based on drawings like this select **View menu / Floors and Building / Build floor structure** command. Select an object of a floor, click on the reference point (anchor point) and repeat these steps for the other floors, finally press ENTER. The next figure shows how to build up a floor structure of a drawing with 3 floor plans in 6 steps:



Use a relevant point (like a corner of a chimney, a structural column, etc.) as reference point. Later you can refine or modify the position of these reference points selecting one of the anchor marker commands.

Once you have selected the objects of a floor and set the reference point a new floor will be created and the selected objects will be moved onto the new floor. Objects which do not belong to any floor created (like drawing stamps, frames) remain on their original floor. Therefore the previous example will contain finally 4 floors. You can delete the original floor if you do not need it anymore.



3.5.7.3. Marker commands

Once the horizontal floor structure is enabled, you can manage it by using the marker commands of the floor markers (borders and anchors).

Simple marker commands

You can access these commands if floor marker commands are enabled. If floor markers are disabled, you can enable them by clicking on the active floor marker (the solid border line) and selecting the Switch on/off floor markers command.

Activate floor

By clicking inside the dotted border of an inactive floor the clicked floor will be activated.

Floor name

By clicking on the floor name you can rename it.

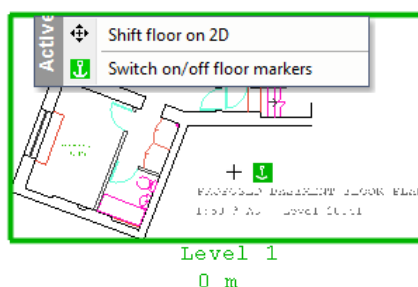
Floor elevation

By clicking on the floor elevation you can change it. Values which change the order of floors will be rejected. To change the order of floors see Move active floor... commands of an inactive floor.

Active floor commands

You can access these commands from the active floor.

Shift floor on 2D



by clicking the solid border of the active floor.

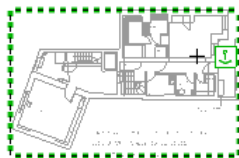
You can rearrange your floor plan by shifting the active floor. This command moves the whole active floor with the anchor; therefore this command has no effect in the 3D window.

3.5.7.4. Switch on/off floor markers

You can switch on/off the floor markers except for the border of the active floor. If floor markers are disabled, you can enable them again by clicking on the active floor marker (the solid border line) and selecting the Switch on/off floor markers command again.



Level 1
0 m



Level 2
3 m

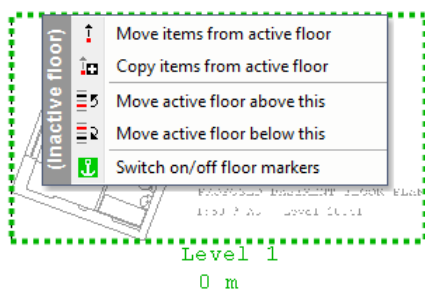


Floor markers enabled

Floor markers disabled

3.5.7.5. Inactive floor commands

You can access these commands by clicking the dotted border of an inactive floor. If floor markers are disabled, you can enable them by clicking on the active floor marker (the solid border line) and selecting the Switch on/off floor markers command.



Level 1
0 m

Move/Copy objects from active floor

Select objects on the active floor and press ENTER. The selected objects will be moved or copied to the inactive floor.

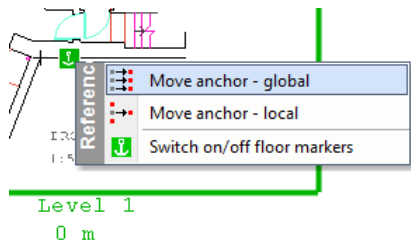
Move active floor above/below this

You can rearrange floors by using these commands. They remove the active floor from its current position and insert it above/below the selected inactive floor.


Switch on/off floor markers

You can switch on/off the floor markers except for the border of the active floor, see the Active floor commands.

3.5.7.6. Anchor Commands

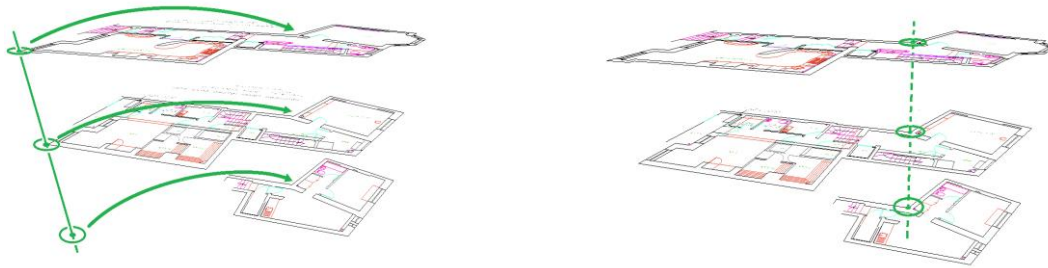


Level 1
0 m

You can access these commands by clicking the anchor marker  of the active floor.

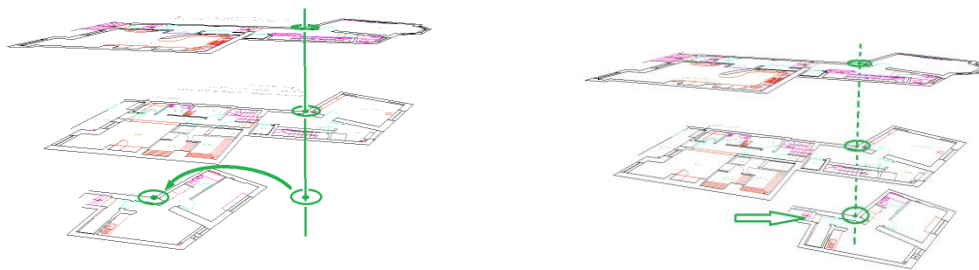
Move anchor - global

Moving the anchor globally means that you move the anchor points of each floor by a given vector. Use this command to find an appropriate point (like a corner of a chimney) to align two or more floors to each other. The position of anchor points relative to each other do not change, therefore this command has no effect in the 3D window.



Move anchor - local

Moving the anchor locally means that you move the anchor point of a given single floor only. Use this command to align a floor to other ones. In the 3D window the floors are aligned to each other based on the anchor points, therefore moving the anchor locally is interpreted in the 3D window as moving all the objects of the active floor while the anchor point keeps its position.



Switch on/off floor markers

You can switch on/off the floor markers except for the border of the active floor, see the Active floor commands.

3.5.7.7. Floor marker setting

You can set the colour of the floor markers in File menu / Preferences / General / Cursor and marker settings

4. File management

4.1. Introduction

In ARCHLine.XP® you can manage projects and standalone drawings.

4.1.1. Project management

Drawing management in ARCHLine.XP® is based on the project.

In ARCHLine.XP®, the project contains the whole description of a building or buildings and all of the information needed to represent it in construction plan and three-dimensional views, sections, and printing layouts. This method simplifies design work, helps clear navigation among the numerous projects of an architect.

All this information is stored together in one file with .pro extension.

ARCHLine.XP® saves all your settings together with the project and allows you to customize them at any phase in the design process.

Moving projects to another computer or giving it to a colleague become a single click.

As you edit the building design in any view, ARCHLine.XP® follows those changes throughout the project. This means that the 3D model, any views of the model, sections, the floor plan, and the printing layouts all automatically update to reflect the changes.

Project access rights

Other users may access your projects without any limitation. This means that any project created by user „A” can be open, modified, saved and copied by user „B”.

We recommend that you use project management.

Managing drawing files

In this case the drawing is made up of the floor plan. You can make a 3D model with sectional drawings and projections. Each drawing has an ASC file extension.

Disadvantages:

- Different views assigned to a floor plan are not saved when you save floor plans. You have to save each drawing file individually.
- The saved drawings are not connected to each other.
- You cannot restore the floor plan from different views.
- Materials and settings created by the user are not saved in the ASC file, so you cannot transfer them to another computer.

Importing and Exporting

ARCHLine.XP® is compatible with other drawing and display programs.

You can load drawings made with ARCHLine.XP® or earlier versions, AutoCAD® DXF, DWG, DWF drawings and 3D Studio or SketchUp model as well.

Besides ARCHLine formats, the program supports AutoCAD® DXF, DWG and DWF formats, and file formats of ARCHLine.XP® Render Studio, 3D Studio, Cinema4D, Artlantis, programs.

Template file

Creating the drawing template means setting the drawing surface and all the drawing tool properties. You can save personal settings as part of the template to speed up the drawing process. You can save the created templates to a template file with a SET extension.

The **File menu** includes the following:

- ❖ file operations for loading and saving drawings, projects files,
- ❖ settings,
- ❖ print preview and printing commands.



This chapter contains commands for file operations only.

For the description of individual settings, see chapter 2.10. *Screen properties* and chapter 3.1. *Architectural settings*. For printing instructions, see chapter 14. *Printing*.



If you double click on .pro and .asc files in the **Explorer**, ARCHLine.XP® starts automatically, and the selected file is loaded.

If ARCHLine.XP® is running, you can load any .pro and .asc or image file from the **Explorer** by drag and drop.

4.1.2. Building

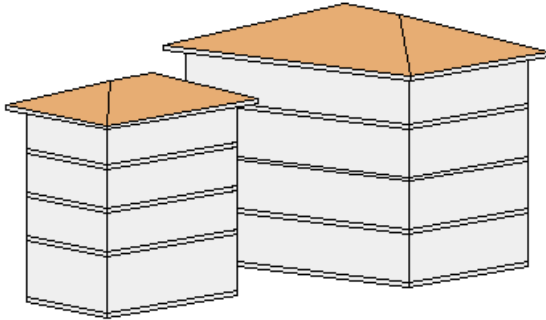
In ARCHLine.XP, the building is the highest logical unit.

The building is made up of multiple floors, the architectural objects on the floors, and the layers that help the visualization and grouping of the objects.

Architects can design several buildings within one ARCHLine.XP® project.

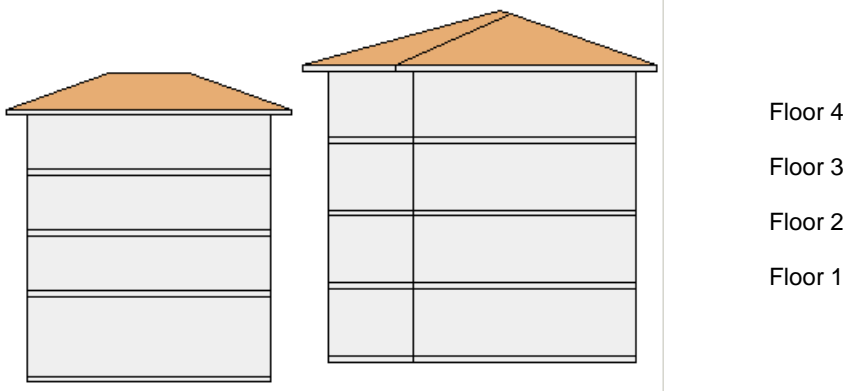
The buildings can be drawn separately in different projects or they can be handled in the same project.

One building is active at a time while the others are visualized with a lighter tone. Different altitudes can be assigned to the buildings.



4.1.3. Floor

In ARCHLine.XP® the building levels are defined as floors. *Structural objects* and *Component objects* are associated to these floors, so that changes to a floor's height automatically generate changes to the linked objects elevation and height. The floor corresponds to the architectural meaning of floor. Just as in reality a building is built up from floors, the plan is also realized floor by floor, level by level. Opening a new project Floor 0 is automatically created. Any other floors are to be created by the architect according to the needs of the design.



4.2. Project management

Running ARCHLine.XP®

We suggest you manage your drawing as a project.

After starting ARCHLine.XP® from the Start menu, select work with a project, i.e. enable the *Project* option.

In this all information will be saved in one file, i.e.: *filename.pro*.

In the first dialog box you can:

- ❖ start a new project,
- ❖ load any of the last 6 projects used,
- ❖ load a project saved before.
- ❖ or browse a project by name and folders.

Select any of the following four options:

Creating a new project

To create a new drawing, click on the first icon in the dialog box.

- Select a folder where you want to save the new project. By default, the program offers the path to the last project used. Project files in that folder are also displayed.

- Give the name of the new project.

If there is a project with the same name in the selected folder, the program displays a message asking if you want to overwrite the existing project.

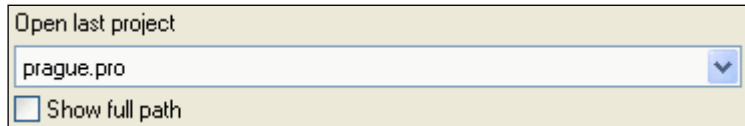


If you click Yes, you lose the project under the same name.

Opening the last used project

Here you can select any of the last projects. The program loads the selected project, including all windows, displaying them in the last saved arrangement.

You can display the full path name or only the name of the project. The latter is very useful when the path name is too long and you cannot see the name.



When you use the *Show full path* option you can read the full path information from the appearing tool tip.

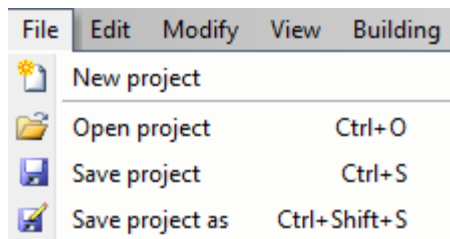
Opening an existing project

Click this button to find **Open project file** dialog box, where you can select the desired project file. By default, the program offers the path of the last used project.



See chapter 4.2.3. *Opening a project* for the description of this command.

Other commands concerning project operations are the following:



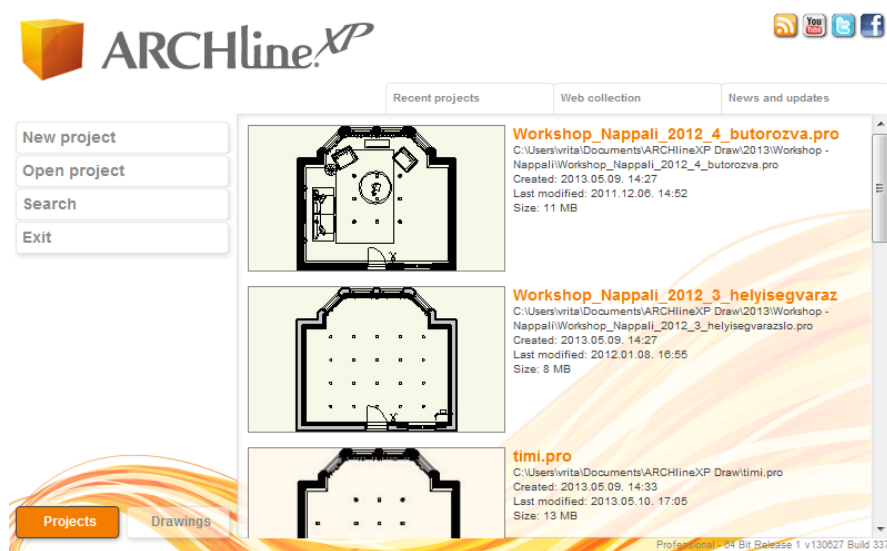
4.2.1. New project

With *File menu - New project* command you can start a new project or load an existing project.

- In the dialog click OK if you want to resave the current project.

If you click *Quit without save*, the message appears: "Are you sure to close the project without save?"

The following dialog box pops up:



4.2.2. Search projects

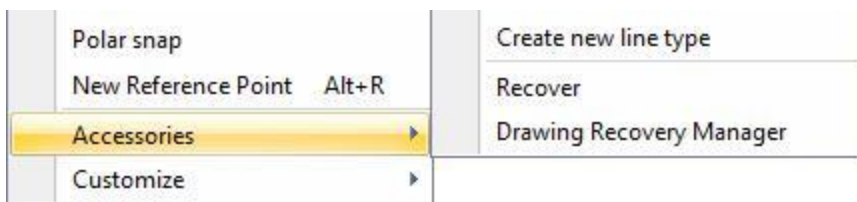
Introduction

ARCHLine.XP gives an efficient helping hand to search former projects and drawings on the hard disks of the computer. You can use it simply, just determine the search position and conditions then you just have to select the proper one from the found projects or drawings.

This function can be used excellently for searching former used works or their backup copies.

Use search function

You can start the command from the Tools menu – Accessories submenu or using the File menu – New project – Search icon.



In the appearing dialog window determine, in which folder you want to search and give the name you are looking for, and the type of the file:

Project / Drawing

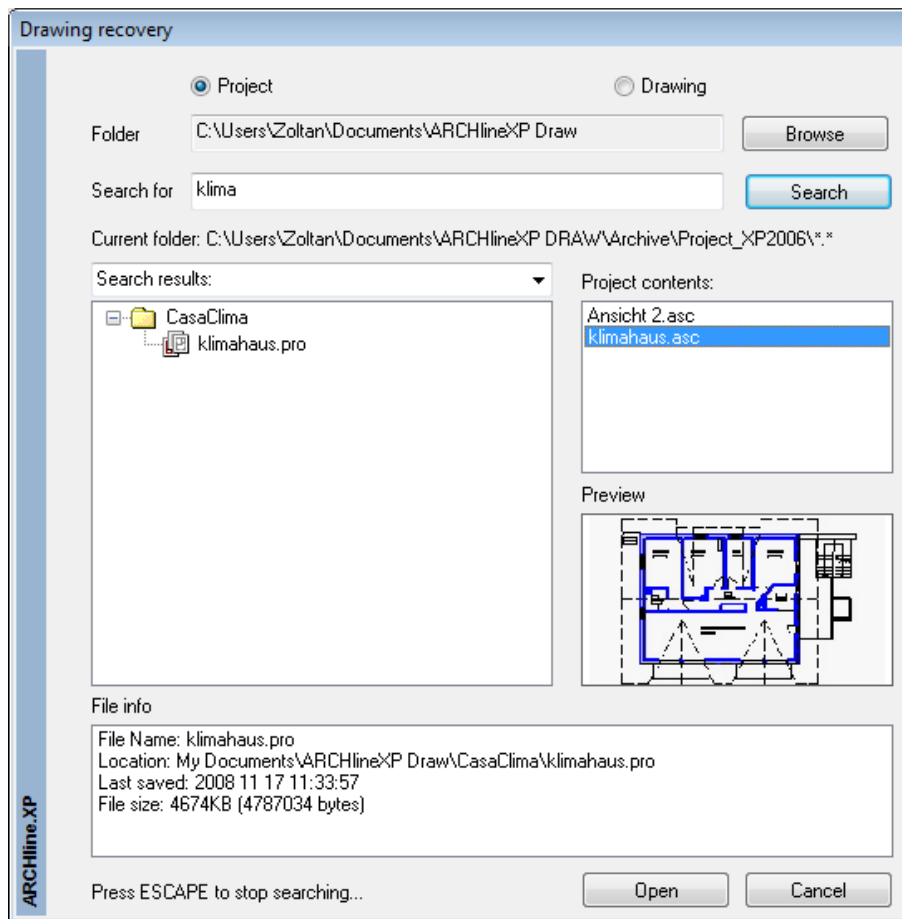
You can set what and where you are looking for. Select the proper option.

Folder

Here can be seen that access path, where the program is searching. Click on the Browse button, you can select another folder or driver. The searching happens in all subfolder too.

Search for

Here you can determine the name of the file or the part of it, which you want to search for. For example, if you look for the original „klimahaus.pro” file, it is enough to write in the „klima” search condition. After clicking on the Search button the program is searching files in the given path that contain the „klima” detail.



The search results appear similarly as above.

Search results

You can fine the search results. In course of searching the ARCHLine.XP® search not only among the saved projects according to the given conditions, but among the backup copies (PR\$ extend files) and the automatically exist archives (Archive folder) as well.

Select the proper option from the drop down list, if it is necessary.

Project contents

In this field you can select one design, which is in the selected project.

Preview

It shows the preview of the selected drawing from project contents list in miniature form.

File info

The program represents essential information from the selected file.

Open

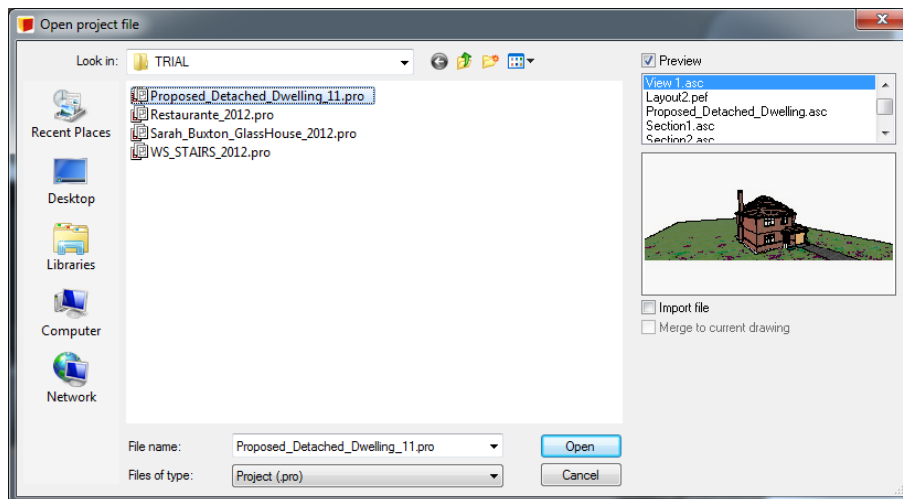
You can open the selected project or drawing, if you click on the Open button.



You can interrupt searching with pressing down the ESC button.

4.2.3. Opening a project

The program loads the desired project with *File menu - Open project* command. After opening the project, each related drawing is displayed in a separate window.



When you activate the *Open project* command, a dialog box appears where you can select which *.pro* file you want to open. By default, the program offers you the path of the last project you worked on. If you cannot find the desired file in the list, choose another directory.

- Select the project to be open.

Preview

Enable the *Preview* option to display the name of the drawings related to the selected project in the right hand side of the dialog box.

This helps you to clearly identify the project.

The program displays images only if you click on the name of the drawing. This way you can scroll the names of the drawings within each project.

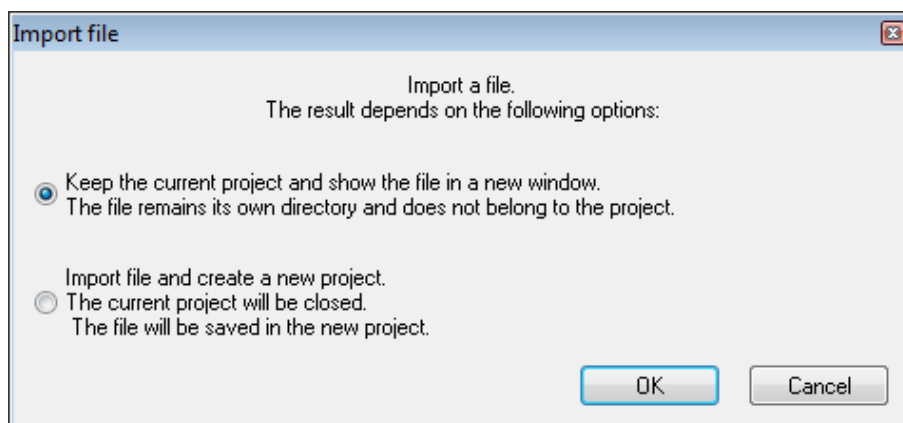
Importing of ASCII file from another project

If you enable this option, the program will load the selected drawing **only**.

- Click **Open**, and the program asks you the following question:
„Are you sure you want to import a file from this project?”

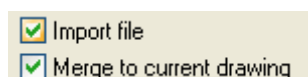
If you click Yes, you can:

- ❖ either merge the imported drawing file into the current project, and then the drawing is created in a new window as a part of the project,
- ❖ or create a new project. In case of a new project, give the name and the path of the project. By default the program offers the path of the last used project.



Merge into current drawing

If the *Import file* option is enabled, you can add the imported drawing file to the active drawing of the current project by enabling *Merge into current drawing option*, so as to make it a part of the project.





Use this option if you want to place a finished drawing saved as a project onto the terrain. If you manage multiple buildings, you should load the buildings with this option. To do so, select the floor plan from project drawings.

If you want to place the reference point of the drawing to a selected point instead of the global coordinate origin, press **Open** and enable the **Place with new origin** option in *Merge files* dialog box. The reference point of the drawing is the (0; 0) point.



You can make full use of this option if you place the first object of the drawing to be merged at the (0, 0) point. Then the starting point of the first object will be the point of reference.



Import file option is similar to **File menu - Import** command; however, you can only import project files here.

After selecting the name of the desired project (the *File import option* is switch off) and pressing *Open*, click OK in the *Save project* dialog box. If you have not saved changes to the current drawing, the program asks you if you want to do so.

If you click *Exit without saving*, the program asks “Are you sure you want to exit without saving?”

Drag and drop files in ARCHLine.XP

To open a project, there are other options than using a dialog box.

You can open files by drag and drop that is by dragging and dropping files from Windows Explorer to ARCHLine.XP®, as it is used in Windows. You can use the following files:

Projects, ASC drawings, DXF, DWG, DWF drawings, image files (e.g. BMP and JPG files), 3D Studio objects (3DS).

Double click on filename

If ARCHLine.XP® is not running, double click the project file name (.pro) or the .asc file name in Windows Explorer to start the program; the project and the drawing will be loaded.

Opening last used files

The last used 6 projects appear on the bottom of the *File menu*. You can load any of those by selection:

File name rules

Inside a project the renaming of files is not allowed, thus you can avoid creating name conflicts in a project. Only the changing of the pseudo name is possible in the Project properties dialog box. This new rule makes easier the handling and identifying of drawings on plot layouts, too.

- ❖ The name of the first floor plan window is derived from the name of the project.
- ❖ At the opening of other floor plan windows you have to define the new window name (e.g. 2D sections, 2D facades etc.).
- ❖ At the opening of a 3D view window the new window name is generated automatically (View 1, View 2, etc.).
- ❖ At the creation of a 3D section window the window name is generated automatically (Section1, Section2 etc.).

4.2.4. Import and export files

ARCHLine.XP® is able to import and export data from a wide variety of CAD software.



See the Chapter 4.5. Import/Export.

4.2.5. Import file into a project

Importing of files can be done in three ways:

- ❖ with the *File menu - Import* command,
- ❖ with the drag & drop method: for example dragging from the Windows Explorer.
- ❖ *File menu – Open project - Import file* command

Importing of DXF/DWG file into a project

If we import into an active a 2D floor plan with the *File menu - Import* command, the *Merge to current drawing* option is the default setting. The same applied when you use the *drag & drop* method. This way the unnecessary increasing of the number of 2D floor plan windows can be avoided.

If we import into an active 3D window, the two methods work different:

In case of *File menu - Import* command the *Merge to current drawing* option is the default, the drawing will be imported to a given drawing. When you use the *drag & drop* method, the drawing will be loaded into a newly created window.



See the Chapter 4.5.2. DXF/DWG import/export.

Importing of ASC file into a project

If we import into an active 2D floor plan with the *File menu - Import* command, the *Merge to current drawing* option is switched off by default, therefore a new window will be created. In case of *drag & drop* method the drawing will be imported into a given drawing.

If we import into an active 3D window with the *File menu - Import* command, the *Merge to current drawing* option is switched off by default, therefore a new window will be created. Also, in case of *drag & drop* method, a new window will be created and the drawing will be loaded there.

If name conflict occurs at new window generation, the new window name will be generated by the concatenation of the original file name and the extension of .1.



See the Chapter 4.5.1. ASC Import.

ASC file import from project into project

If the drawing to be loaded is part of project, the *Import* command can't be used. In this case, use the *Open Project* command, and select the *Import file* and *Merge to current drawing* option.



See the Chapter 4.2.3. Opening project – Import file option.

4.2.6. Saving project


When you save the project, each drawing (floor plans, facade views, sectional drawings and perspectives) goes into one file, with a **.pro** file extension.

This project file contains all the information including materials created by the User, object properties, architectural settings, display settings, hatch patterns and line types.

Only those sets are saved in the projects that are used within it.

The 3D database is not saved in the project by default, only upon your request.



You can save your current projects with their names in the selected directory by *File menu - Save project* command, or with the *Edit toolbar* -  icon.

Exit the program

When you exit the program or load another project, the program displays the *Project properties* dialog box showing the states of the drawings, and asks for confirmation. At this point you can cancel the deletion of the drawing.

You can select the *Quit without save* option. In this case you are to lose all changes made since the latest save.

Making copies

When the program saves the projects, it also saves the previous status as **filename.pr\$**. This way you can always find a copy of the previous saving. The next saving will overwrite the copies.

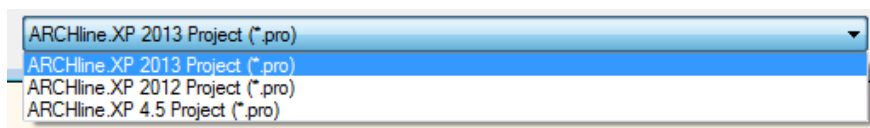
4.2.7. Saving project as...

You can save your project under a new name. The appearing dialog box corresponds to the one popping up for *Save project*.

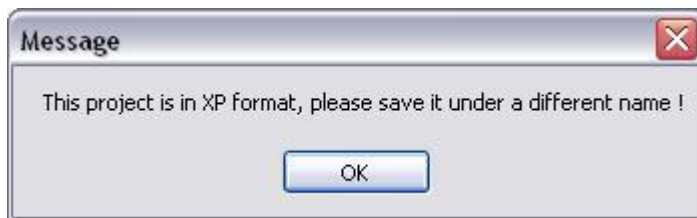
After closing the dialog box, you can define the new name and path for the project in *Save project* dialog box.

- ❖ If you want to export the project to earlier version of ARCHLine.XP®:

In the *Save project file* dialog select XP project format. You can open the project saved this way with the previous program version.



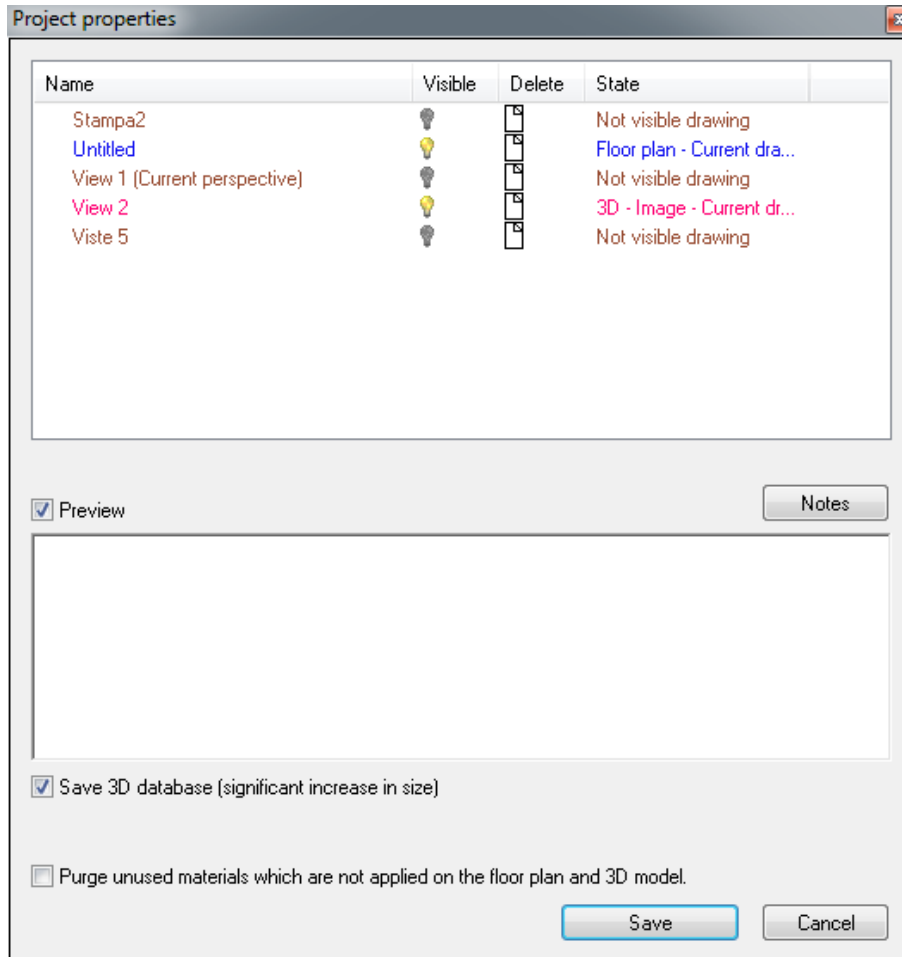
- ❖ You can load any project created with the previous versions. When saving the project, the following message pops up:



This means that the program will not overwrite the previous file version, and you can save the project with a new name in ARCHLine.XP® format.

Drawings that make up the projects are also listed in the dialog box.

Floor plans are marked with blue, 3D drawings are marked with black, and plot layouts are marked with green.



Renaming

Double click on the selected File name. You can overwrite the pseudo name of the drawing but the File name of the drawing is not changed with this.

State

You can change the state of any drawing.

You can delete any selected drawing in a project or you can turn them off temporarily. Drawing files can have three states: active, not visible and drawings to be deleted from the project.

| Name | Visible | Delete | State |
|-----------------|---------|--------|------------------------------|
| view | | | 3D - Image - Current drawing |
| 2d section | | | Floor plan - Current drawing |
| 2d view | | | 2D - Not visible drawing |
| office_building | | | Floor plan - Current drawing |

Active drawing:

An active drawing is displayed on the screen and is part of the project.

Not visible drawing:

If you turn off the Light bulb icon, the selected drawing will be temporarily invisible, i.e. it will not have a window but it *will remain part* of the project. If you reload the project later on, the last saved state will be displayed, i.e. only the active drawings will appear. Click on the Light bulb icon in the **Save project** or **Project properties** dialog to activate the invisible drawing.

You can also make the drawing invisible if you disable the window of the drawing.

Drawing to be deleted:

Click on the *Sheet* icon of any drawing to delete the drawing from the project; this also means that you delete the drawing from the hard disk and so it will not be accessible any more.

Checkboxes:

-Purge unused materials:

The materials which are not applied on the floor plan and 3D model will automatically deleted from the project, if this function is switched on. As a consequence your project size may decrease significantly.



Remember not to delete the floor plan unless you do it for some specific reason.

-Save 3D database

❖ Off:

It is switched off by default therefore the 3D database is not saved in the project. The 3D model can be created from the floor plan any time.

If we use the 3D solid modeller and we do not save the object in the object library, we need to save the 3D model.

In a case like this the program recognizes that the plan contains 3D objects which have not connection to the plan and when the project is saved the program offers the possibility of saving the 3D model as well.

❖ On:

If it is switched on the whole 3D database is saved. In this case the project size considerably increases.

4.2.8. Archive

It is possible to archive drawings (.asc floor plans) of projects.

In a pre-defined folder the application creates a subdirectory with the current date. Partial backups of newly created or modified projects are created here in subfolders named according to the project names.

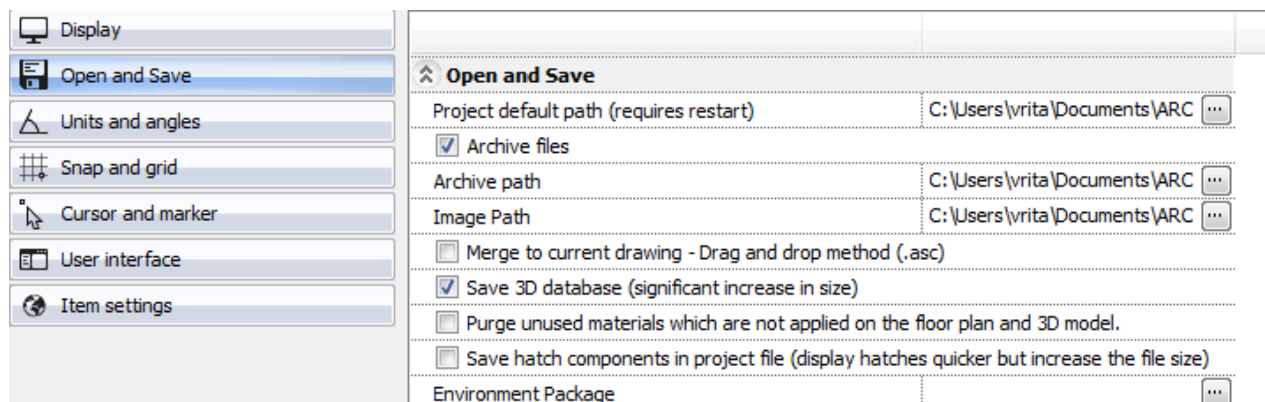
During the archiving procedure the .asc floor plans and plot layouts of projects will be archived here.

This archiving option makes enable for the user to create automatic backups on each day of the working procedure, making easy to search back for a given state of the working procedure by date.

Folders created this way are not deleted automatically. After finishing the work the users should ensure the deleting of unnecessary files themselves.

Switching the archiving option on:

- Switch the *Archive* option on in the *File menu -Options – File locations* dialog. (The *Preferences* dialog is also available by clicking on the measurement unit in the Command line.)
- Specify the directory where the archived files should be saved into. By default this is the ...\\Draw\\Archive subfolder in the installation directory. You can change this.



With the archiving option you cannot save projects but drawing (.asc) files!

4.2.9. Auto save

With auto save you can avoid data losses due to black-outs or any other unexpected events.

After a definite number of drawing commands, the program saves the current drawing. When you restart the program after the unexpected events, the last used project will be loaded automatically from that folder.



This temporary folder will be deleted when you exit the program, so auto save **does not substitute** the saving of the project. If you fail to save your drawing, and then exit the program, your entire work will be lost.

You can enable Auto save under Save in **File menu - Preferences - General - Other** dialog box:



A very frequent auto save will slow down drawing commands because of increased disk usage. For this reason, it is preferable not to set a very low step number.

4.2.10. Project locking

File locking is a mechanism that restricts access to an open project, allowing only one user to work on it and meanwhile the other users can open it only in read only mode. ARCHLine.XP locking system prevents the interceding update, so the project is editable only for the user who accessed the project first.

Other users can open the same project on the network but only in locked mode that disables to save any modifications

4.3. Project navigator

When you save the project, each drawing (floor plans, facade views, sectional drawings and perspectives) goes into one file, with a .pro file extension.

This project file contains all the information including materials created by the User, object properties, architectural settings, display settings, hatch patterns and line types.

Only those sets are saved in the projects.

The 3D database is not saved in the project by default, only upon your request.

Drawings that make up the projects are listed in the Project Navigator.




As a consequence of the new Project Navigator feature the previous release Project management dialog is cancelled in the ARCHLine.XP® 2010 release.

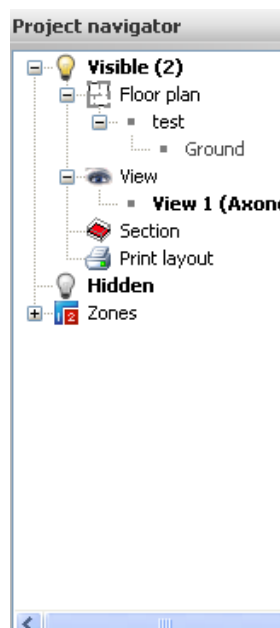
4.3.1. Project navigator in details

The drawings that make up a project are grouped as *visible* and *hidden* drawings. What is the difference? The hidden drawings have no assigned window but remain part of the project when you save it. You can also move a drawing to the hidden drawings group if you click X button of the window as you close it. These *visible* and *hidden* folder contain the following sub groups:

- ❖ 2D drawings (floor plans)
- ❖ View (perspective and axonometric views, wall views)
- ❖ Section (sections)
- ❖ Print layout (list of print layouts)

You can visualize the buildings and floors of the 2D drawings as well with a click on  sign or with a double click on the drawing name.

There is also a section named zones, detailed in 4.3.6.



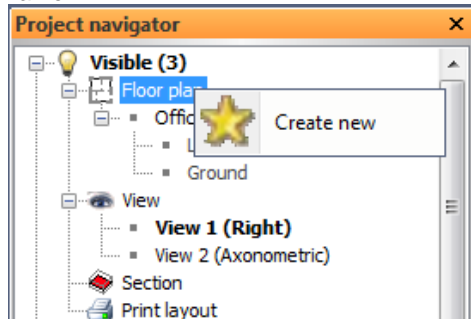
4.3.2. How to use the Project Navigator?

Active drawing

The mouse left double click makes the selected drawing to active drawing. When the selected drawing is in the **Hidden** category it will be displayed on the screen and will be moved to the **Visible** category.

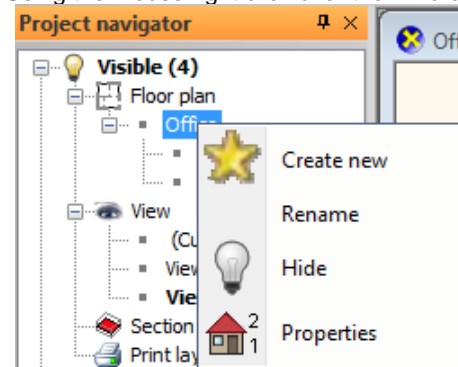
New drawing

The mouse right click makes over the folder name offers to create the appropriate new drawing according to the folder name.



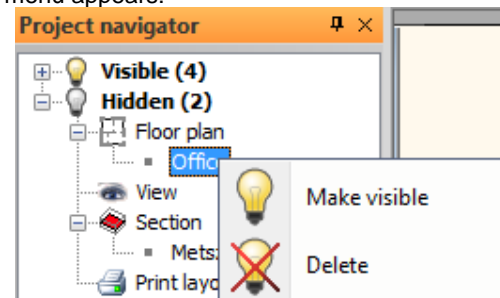
2D drawing management

Using the mouse right click over the 2D drawing name the following menu appears:



- ❖ **Create new** enables to create a new 2D drawing.
- ❖ **Rename** command enables to change the pseudo name of the drawing. You can overwrite the pseudo name of the drawing but the real file name of the drawing will not change.
- ❖ **Hide**. The selected drawing will be temporarily invisible, i.e. it will not have a window but it *will remain part* of the project. The drawing moves to the Invisible group.
- ❖ **Properties** command opens the 2D drawing related floor management dialog where you can modify the current floor structure.

When you chose a 2D drawing in the **Hidden** folder with the mouse right click over the 2D drawing name the following menu appears:



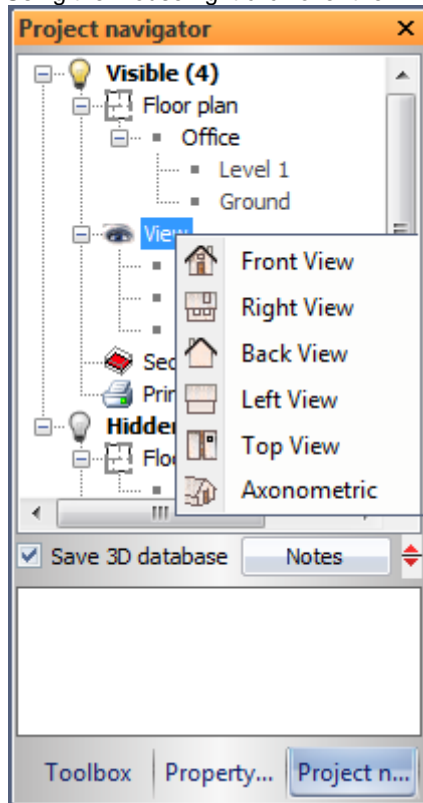
- ❖ Click on the Light bulb icon the **Make visible** command activates the hidden drawing and moves to the **Visible** folder.
- ❖ Click on the **Delete** command to delete the drawing from the project. This means that you delete the drawing from the hard disk and so it will not be accessible any more.



Remember not to delete the 2D drawing (floor plan) unless you do it for some specific reason.

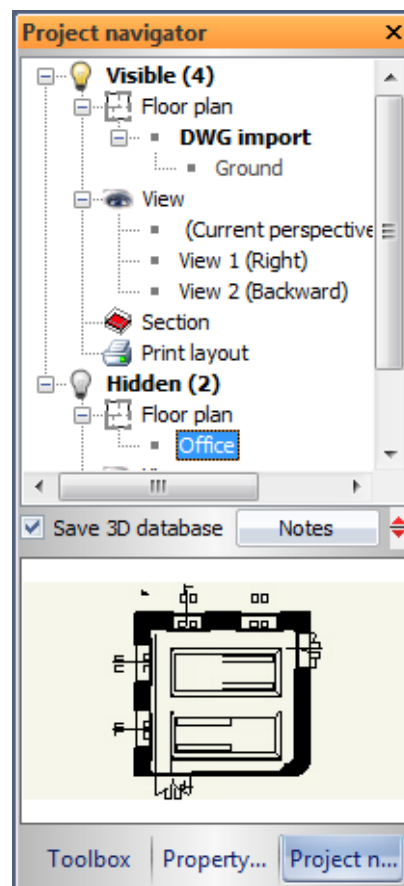
3D view management

Using the mouse right click over the 2D drawing name the following menu appears:



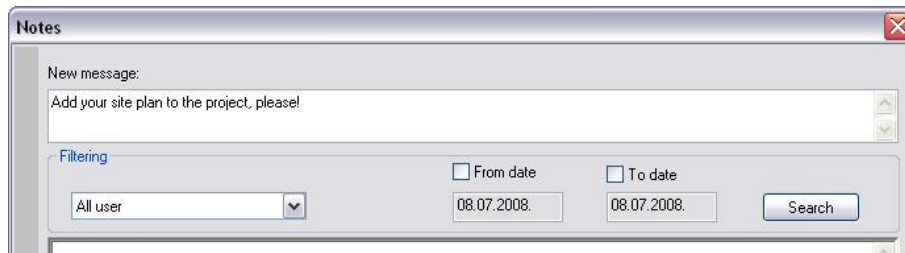
4.3.3. Preview

The Project Navigator encapsulates a preview control that displays the image of the selected drawing in the **Hidden** folder. Use the mouse left click over the file name and the preview displays the image when available.

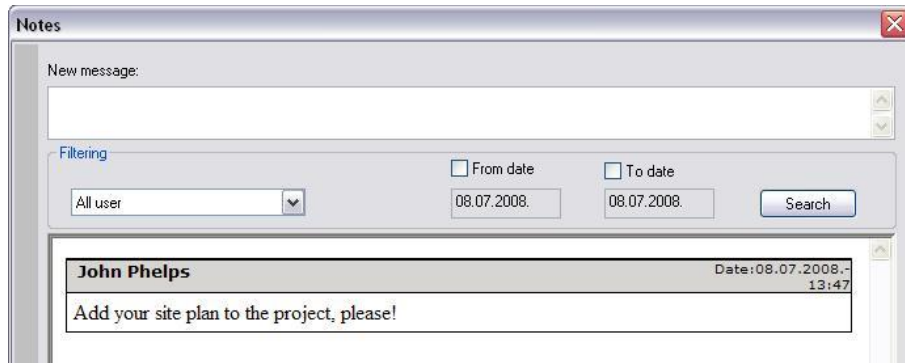


4.3.4. Notes

You can add notes to the project.



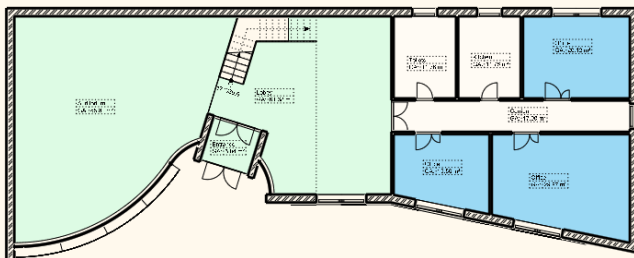
You can submit a note with the *Enter* key. For the case you exit from the dialog by clicking the *Ok* button, the new message will be saved, too. The messages appear in the message list. Click *Cancel* if you want to quit without saving the message.



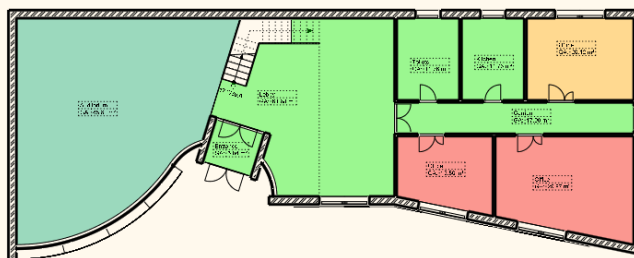
4.3.5. Zones

Concept

Zones can be defined in a building. They are groups of several rooms. You can use zones to represent ownership, to design heating or air conditioning systems, to visualise areas with different acoustic requirements, etc.



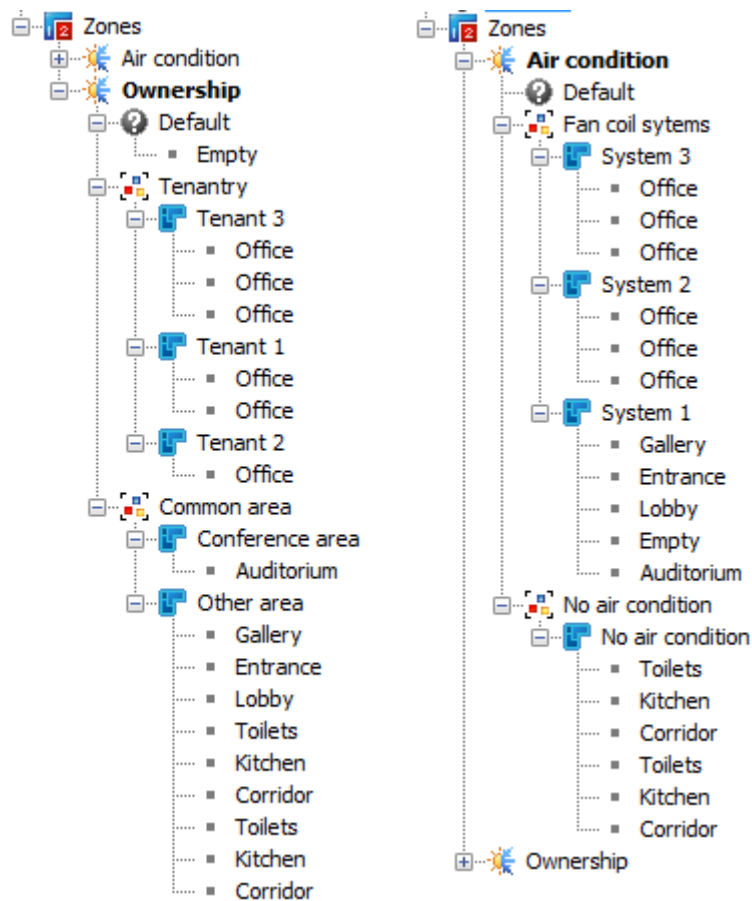
Air conditioning systems



Ownership

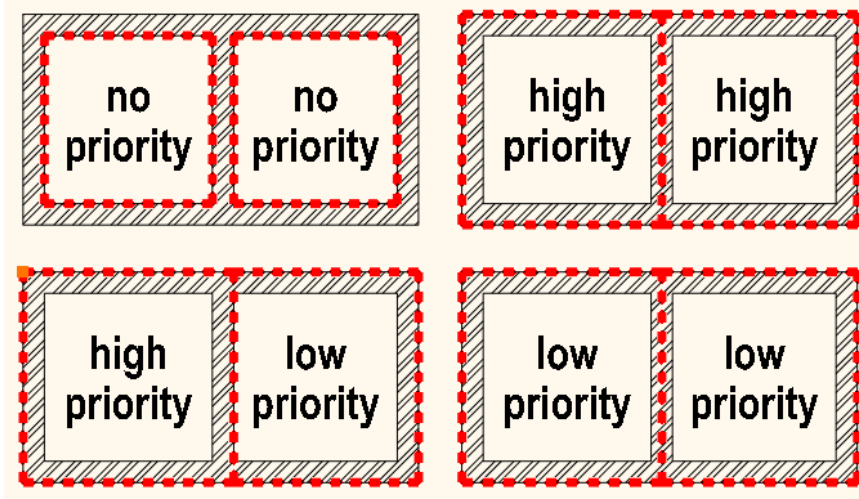
Categories

You classify rooms on a building in many ways. As for the ownership you can differentiate between tenants, if you would like to deal with air condition it is possible to define zones based on the required cooling and heating systems.



Groups and priorities

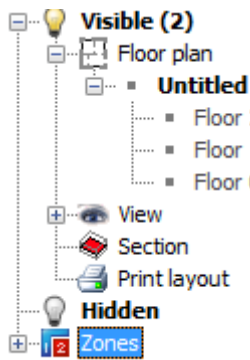
You can sort zones into several groups, if necessary. For zone groups you can define high or low priorities. Priorities are taken into consideration while calculating zone areas and volumes. If you use zone group priorities in a zone category, zone areas are extended by the thickness of the surrounding wall and slab structures according to the following figure:



Colours

Finally you can define zones and add rooms to them. In a zone category every room can be added to one zone. Zones can be visualised by a unique zone colour.

Managing zones



Project Navigator's tree structure is extended by a new object: Zones. You can expand or collapse branches by clicking the +/- signs in front of the tree objects. By clicking on an object you can rename it.

By clicking on an object with the right mouse button a Local pop menu appears and you can select a command in it. Below you can learn about local pop menus of different tree objects.

Zones (main tree object)

Create new category

A new zone category is added to the tree, with a default name. You can rename it by clicking on its name with the left mouse button.

Show zones with colours

Rooms will appear with zone colours of the active zone category.

Hide colours

Rooms will appear as empty polygons.

Zone category

Activate

It activates the current zone category. Area calculation and zone colouring is based always on the active category.

Create new zone group

A new zone group is added to the tree, with a default name. You can rename it by clicking on its name with the left mouse button.

Rename

It renames the current zone category.

Priorities and colours

The Priorities and colours dialog appears, here you can set the colours of the zones and the priorities of the zone groups in the current zone category.

Delete

Deletes the current zone category.

Uncategorized rooms

Add rooms to this zone

Select rooms on the floor plan and then press ENTER. The rooms are moved to the uncategorized zone.

Zone group

Create new zone

A new zone is added to the tree, with a default name. You can rename it by clicking on its name with the left mouse button.

Rename

Renames the current zone group.

Priorities and colours

The Priorities and colours dialog appears, here you can set the colours of the zones and the priorities of the zone groups in the current zone category.

Delete

Deletes the current zone group.

Zone*Add rooms to this zone*

Select rooms on the floor plan and then press ENTER. The rooms are moved to the current zone.

Rename

Renames the current zone.

Priorities and colours

The Priorities and colours dialog appears, here you can set the colours of the zones and the priorities of the zone groups in the current zone category.

Delete

Deletes the current zone.

Room*Show on floor plan*

Selects the room on the floor plan.

Rename

Renames the current room.

Room properties

Opens the Properties dialog of the current room.

Remove from zone

The room is moved to the uncategorized zone.

4.4. Drawings

As you may see in the Introduction, the program allows you to manage individual drawings. In this case the drawing is made up of the floor plan. You can create a 3D model from the floor plan with several projections and cross sections. Each file has an ASC extension. In this case the different views connected to the floor plan are not saved when saving the floor plan.

You have to save each drawing file individually and these files will not be connected to each other. You cannot recover the floor plan from views. Materials and settings created by the user will not be saved in the ASC file, so you cannot transfer them to another computer.

Note:

If you insist on using ASC files, we recommend you the following method, to be able to manage views in the ASC file, too:

When you finish the front view, the cross section and the pre-set perspective etc., by using **Edit menu - Copy** or **Paste** commands, copy e.g. the cross section from the cross section window to the floor plan to any floor not used for floor plan drawing, e.g. to Floor -1. The drawing created this way will lose its connection to the 3D model. If you modify anything on the floor plan that will not be followed by changes on the cross section on Floor 1 i.e. this will be a 2D drawing that you can modify, calibrate and label as you like. This way you can keep different views of different floors and save them into a single ASC file. You can transfer this single ASC file to another computer.

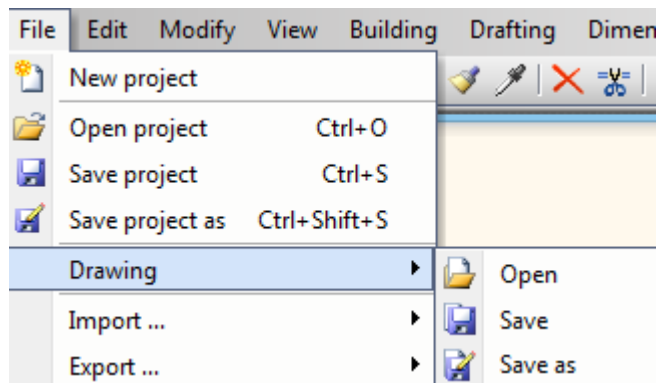


You can also convert views and sectional drawings into 2D drawings in projects.

Commands for managing drawings:

New project

...



4.4.1. New project or drawing

This command allows you to create a new drawing or to load an existing drawing.


If you have not saved changes of the current drawing, the program will ask you if you want to save the drawing.

- Enable the **Drawing** option in the dialog box. The last specified status will be active.

In the dialog box you can:

- ❖ Create a new drawing, or
- ❖ Open any of the last drawings, or
- ❖ Open an existing drawing.



You can start a new floor plan with the  **New** icon of the **Edit** toolbar, and then you have to give the name of the new floor plan window.



The use of this dialog box corresponds to that of the *New project* dialog box. For a detailed description, see chapter 4.2. *Project management*.

4.4.2. Opening drawings

If you activate the *Open drawing* command, a dialog box appears, where you can select the drawing you want to open. The program automatically offers the path of the last used drawing.

In drawing mode the next rules are applied for opening a drawing:

- ❖ Each file keeps its name and location,
- ❖ Renaming of files are not allowed,
- ❖ A drawing can be loaded only once,
- ❖ File name on the window title bar appears with its short path name.

You can open multiple floor plans at one time. Please note, that the 3D models of different drawings will be displayed in the same 3D window.



The use of this dialog box is similar to that of the *Open project* dialog box; for a detailed description, see chapter 4.2. *Project management*.



You can also open a drawing with *File menu - Import* command. Select .ASC for file type.

4.4.3. Saving drawings

With this command, you can save the current drawing under its name to the selected library.











Exit

When exiting the program or loading a project, the program asks if you want to save drawing files.

If you click No, you will lose all changes made since the last saving.

Creating backup copies

When the program saves the drawing, it also creates a backup of the previous version with the name **filename.as\$**. This way you can always find the copy of the previous saving. Backup copies are always overwritten by the next saving.

| | | |
|---|-----------------------|-----|
|  | bak_Dwelling_Bourbo.. | asc |
|  | bak_Dwelling_London | asc |
|  | bak_Electr_Building | asc |
|  | bak_Farm | asc |
|  | bak_Fifth_Ave_Office | asc |
|  | Dwelling_Bourbon_Str | asc |
|  | Dwelling_London | asc |
|  | Electr_Building | asc |
|  | Farm | asc |
|  | Fifth_Ave_Office | asc |

4.4.4. Save drawing as...

With Save as you can save the drawing under a new name. Type in the name of the drawing in the dialog box and give a new path if necessary.

As a file format you can set:

- ❖ ASC: saves the drawing in ARCHLine.XP® format, whether or not you have saved the floor plan or the content of the 3D window
- ❖ 3AS: saves the 3D model.

Compatibility with the previous version

ARCHLine.XP® 2010 is compatible with ARCHLine.XP® 2009, 2008, 2007. This means that you cannot read new drawings with the previous version.

You can save the drawing as the drawing format of the ARCHLine.XP® version that is in ASCII mode, which is readable with ARCHLine.XP. You can also save the content of the 3D window as .3as format of the ARCHLine.XP® version.

4.5. Import/Export

ARCHLine.XP® is compatible with other design and display programs.

Import

The drawings to be loaded can be the next files:

| | |
|-------------|---|
| .asc | drawings created with ARCHLine.XP® and a previous version |
| .dxf | AutoCAD® DXF format |
| .dwg | AutoCAD® DWG binary format |
| .dwf | Autodesk Design Web format |
| .skp | SketchUp file format |
| .3ds | 3D Studio format |
| .obj | Wavefront format |
| .hou | drawings created with ARCHLine® 4.x versions |
| .drw | drawings created with ARCHLine® 4.x versions |

Export

In case of export, the ARCHLine.XP supports the following file formats:

| Format | Description |
|---------------------------------------|-----------------------------|
| AutoCAD DWG (*.dwg) | Drawing file |
| Autodesk DWF (*.dwf) | Autodesk Design Web Format |
| AutoCAD DXF (*.dxf) | Drawing file |
| SketchUp (*.skp) | Sketchup 3D model |
| 3D Studio (*.3ds) | 3D Studio 3D model |
| Wavefront (*.obj) | Wavefront 3D model |
| Autocad 3D DXF (*.dxf) | 3D model |
| Autocad 3D DWG (*.dwg) | 3D model |
| ARCHLine.XP Render Studio (*.tgif) | 3D model |
| ARCHLine.XP ASCII (*.asc) | Drawing file |
| ARCHLine.XP ASCII 2004 format (*.asc) | Drawing file |
| ARCHLine.XP 3D (*.3as) | 3D model |
| Metafile (*.wmf) | Microsoft Windows® Metafile |
| Cinema 4D (*.c4d) | 3D model |
| Atlantis Render (*.atl) | 3D model |
| Indigo Render (*.igs) | 3D model |

| | |
|---------------------------|--------------------------------|
| Autodesk FBX (*.fbx) | 3D model |
| Portable Document (*.pdf) | Drawing file or 3D model |
| JPEG (*.jpg) | Device-independent bitmap file |
| Thea Render (*.igs) | 3D model |

Importing SketchUp Files

ARCHLine.XP comes with the reader for SketchUp (.skp) file format.

You will find it in the File menu - Import - , SketchUp menu point.

You can change the size of the SketchUp files are imported by using the New general import dialog Scale option before you place the SketchUp object into the 3D window.

The program is compatible with AutoCAD® 2010 and SketchUp 8 formats.

4.5.1. ASC Import

Besides allowing file transfer from other applications, the *Import* command is very useful when you want to merge a drawing saved as ASC into an existing drawing. This happens very often when you place a building on a terrain. To do so, enable *Merge to current drawing* option.

If the drawing to be merged is the part of a project, you cannot use *Import*. In this case, you have to use *Open project*, and choose *Import file* and *Merge to current drawing* options.

Importing of files can be done in three ways:

- ❖ with the drag & drop method: for example dragging from the Windows Explorer.
- ❖ with the *File menu – Import* command,
- ❖ with the *File menu – Open project - Import file* command

Importing of ASC file into a project –using drag & drop method

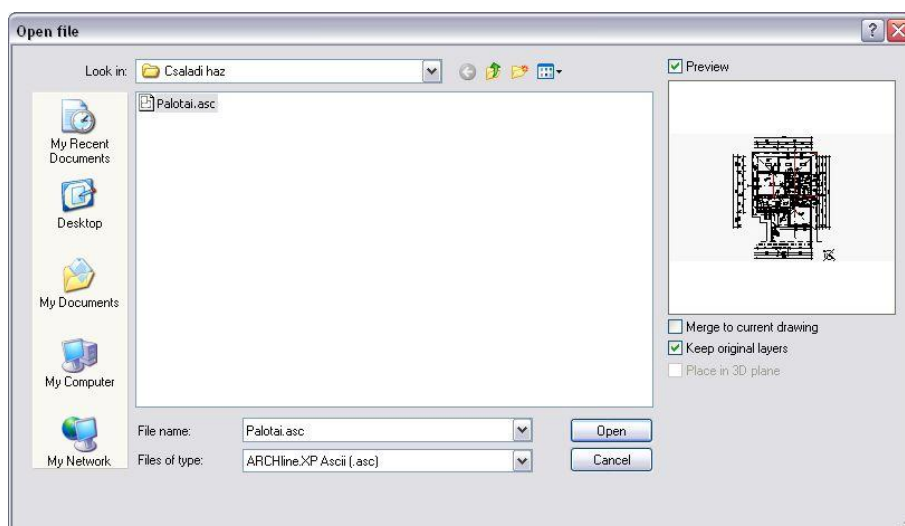
If we import into an active 2D floor plan using the *drag & drop* method the drawing will be imported into a given drawing.

If we import into an active 3D window with the *drag & drop* method, a new window will be created and the drawing will be loaded there.

Importing of ASC file into a project – using File menu –Import command

Import allows you to merge the imported drawing to the current drawing or place that into a new window.

If we import into an active a 2D floor plan/3D window with the *File menu - Import* command, the *Merge to current drawing* option is switched off by default, therefore a new window will be created. In case of *drag & drop* method the drawing will be imported into a given drawing.



- Select drawing file format: .asc
- Select the drawing you want to open.

Preview

Enable this option to display the selected drawing in the dialog box in an optimized size.

Merging to current drawing

Enable the option to merge the imported drawing file to the current drawing; the imported file will be part of the current drawing.

Disable the option to display the drawing in a separate window.

Keeping original layers

If you enable *Keep original layers*, the program loads the drawing while keeping the layers of the drawing. Disable the option to place each object on the current layer.

ASC file import from project into project

If the drawing to be loaded is part of project, the *Import* command can't be used. In this case, use the *Open Project* command, and select the *Import file* and *Merge to current drawing* option.



See the Chapter 4.2.3. *Opening project – Import file option*.

4.5.2. DXF/DWG import/export

DXF/DWG file format allows you to exchange your drawings with other CAD users. You can export or import even DWF (Design Web Format) files as well. You can quickly select the file format you wish to save your work in.

4.5.2.1. DXF/DWG import

Importing of files can be done in two ways:

- ❖ with the drag & drop method: for example dragging from the Windows Explorer.
- ❖ with the *File menu – Import* command,

Importing using drag & drop method

If we import into an active a *2D floor plan* with the *drag & drop* method, the drawing will be imported to a given drawing. This way the unnecessary increasing of the number of 2D floor plan windows can be avoided.

If we import into an active *3D window*, the drawing will be loaded into a newly created window.

Importing using File menu – Import command

If we import into an active a *2D floor plan* / *3D window* with the *File menu – Import* command, the *Merge to current drawing* option is the default setting. This way the unnecessary increasing of the number of 2D floor plan windows can be avoided.

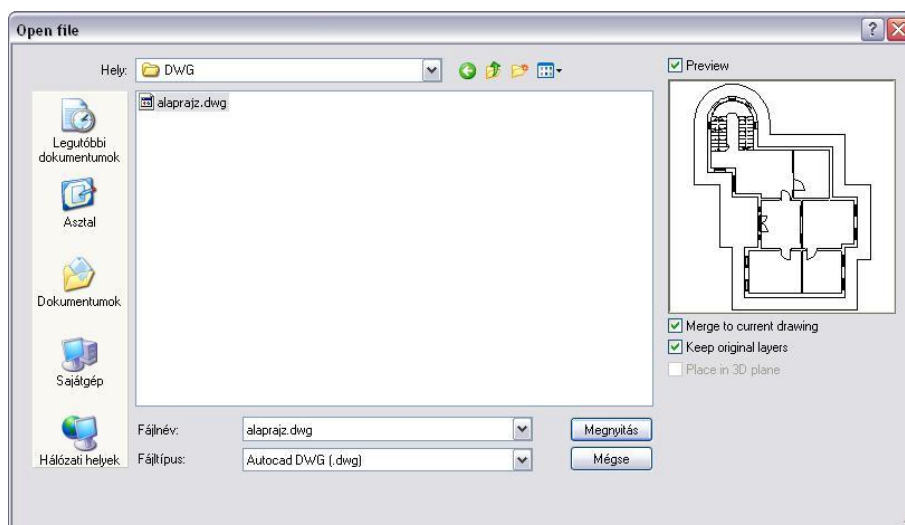
The program is capable to process the latest DXF, DWG and DWF file formats and to load these files into your own project either as part of your project or as external references.



See chapter 11.11. *External References*.

If a DXF/DWG file is imported and the file is placed in a new window, the floors are not available in this window. This way the number of real floor plan windows is not increased when a DXF/DWG file is imported. Architectural objects cannot be placed in this window, of course.

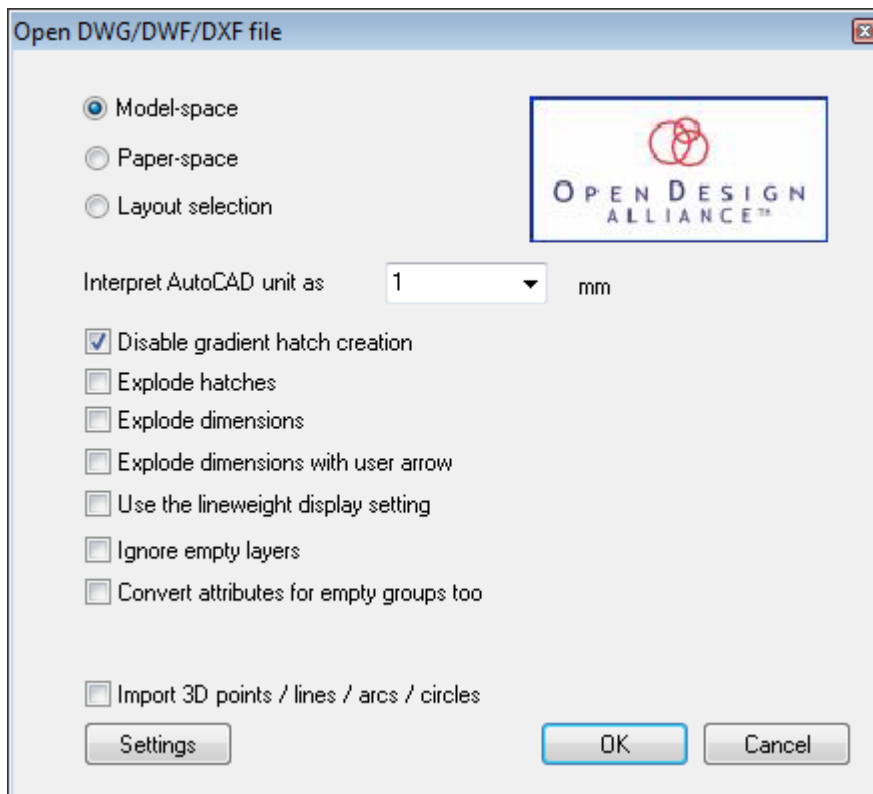
If the goal is to place the DXF/DWG drawing as a base and build the model on it, when the file is imported, switch on the *Merge to current drawing* option. The drawing will be placed in the real floor plan window, the design can be continued.





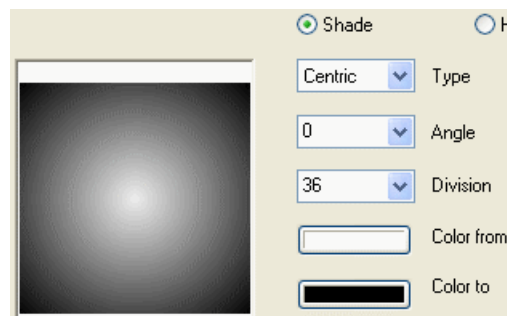
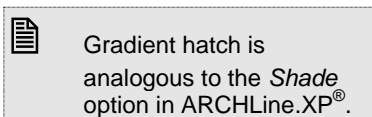
See the Chapter 4.5.1.ASC *Import* command.

At DXF/DWG drawing import you can choose the following settings in the dialog. With these settings you can make the display of the imported drawing correct and fast.



Disable gradient hatch creation

Importing of gradient hatches can slow down the displaying of the imported drawings in ARCHLine.XP®. To avoid this problem, it is possible to have all gradient hatches displayed as solid hatches.



Explode dimensions

With this option you can load the dimensioning exploded, so these will be handled as general drawing objects instead of real dimensions. The advantage is that the look will be identical with the AutoCAD® display. The drawback is that you lose the dimensioning properties.

Explode dimensions with user arrow

The look of dimensioning with user-defined arrows in ARCHLine.XP® is not the same as in the original AutoCAD® drawing. That's why you have the possibility to explode these dimensioning. The advantages and drawbacks are the same as it was described above.

Use line weight display setting

In the *File menu - Options - Other* dialog there is a *Line width ON* switch. By selecting this option, lines will be displayed with their own thickness, otherwise all lines will be displayed with zero (the thinnest) thickness.

In AutoCAD® drawings you can also apply the line weight settings.

At file import it is possible to take over this setting. With this setting you will overwrite the *Line width ON* option found in the *File menu - Options - Other* dialog, and this option will be applied to the whole project. For this you have to select the *Use line weight display setting* option, so the program will use the AutoCAD® setting.



If we have imported several of drawings into the project, the settings applied in the last drawing will be in force in the whole project, of course.

Colour table handling

A higher level of colour table handling is available in the imported drawings, too.

The program is able to recognize the original AutoCAD® colours of the objects in the imported drawings, which can be modified later in the specific colour table. When you export a drawing like this, there is no need to convert the colours because the drawing uses the same AutoCAD® colour table.

Import 3D points / lines / arcs / circles

By selecting this option, the points / lines / circles / arcs are created in the 3D.

In this way the visualization measure up to the AutoCAD®

Extension of DWG import

The AutoCAD® DWG files can contain 3D surfaces, which are created by drawing out lines, arches, and polygons in 3D, by determining the so-called Thickness of the objects.

You can also create such surfaces in the ARCHLine.XP® (see in *3D extension of line nature objects* chapter), and the program can import the AutoCAD® DWG files containing these objects.

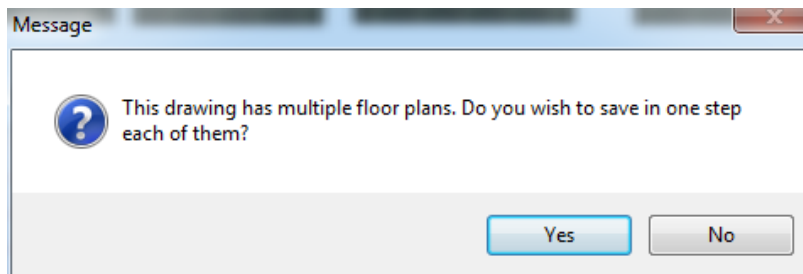


The AutoCAD® creates a surface from the straight lines that it draws out the line into the space perpendicularly to that plane, on which it was designed.

DWG export – multiply floors together

You can export a multiple floor plans workspace into a series of DWG files as one file for each floor in one step.

Menu: File > Export

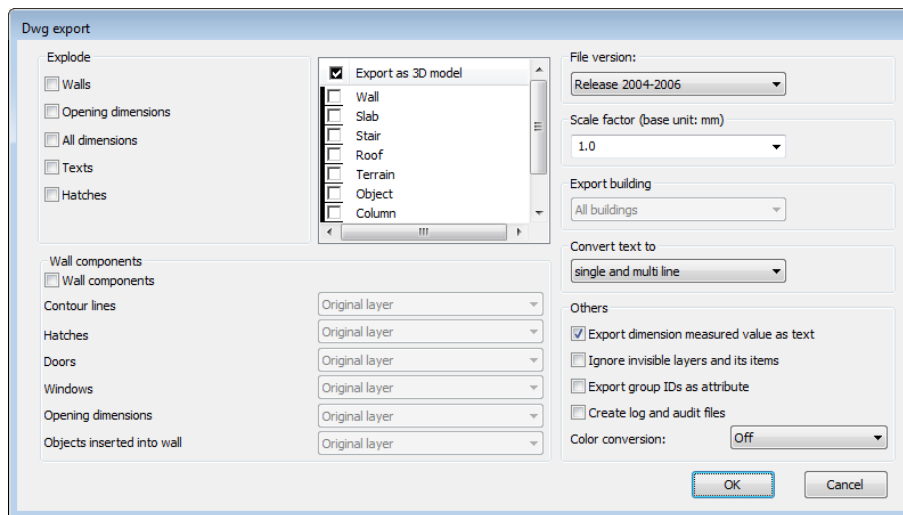


4.5.2.2. Export

If you wish to send your work to your colleagues who use other CAD systems, for example, this is the simplest method you can use.

In *File menu - Export* specify a file name and file type.

If you select any of the dwg or dxf file formats, you can customize the export settings in the appearing dialog.



The following options are available:

Explode

You can export objects to other CAD programs in an exploded format (with lines). Select the objects you want to explode: walls, opening dimensions, all dimensions, texts and hatches.

The aim of this function is the following:

To offer the option to print drawings in AutoCAD® where the printed drawing will correspond 100% to that printed from ARCHLine.XP®. In this case, for example, it will not be a problem if certain fonts are missing from the other computer.

Wall components

You can explode walls in such a way that their main constituents (contour lines, hatches, doors, windows and opening dimensions) are placed on separate layers.

The aim of this function:

You can continue drawings in AutoCAD® using the groupings applied on the layers.

Example: create a Wall contour line layer and use this layer for wall contours.

File version

You can choose from the released AutoCAD® versions. The exported file will be compatible with the selected AutoCAD® version. This way the exported file can be used by users with previous AutoCAD® versions.

Scale

You can rescale your drawing by setting a scale.

The aim of this function:

You can export your units of measurement to AutoCAD®.

AutoCAD® will use mm in the exported drawing, so dimensioning will also use mm. You can define your units of measurement in ARCHLine.XP, e.g. if you set m, dimensions defined so far will be displayed in meters. This way dimensions in AutoCAD® will be given in m and mm (the program will display the values set in ARCHLine.XP® multiplied by 1000). To solve this problem, make sure to type 0.001 in the Scale factor field.

Convert multiline texts

AutoCAD® can use one-line and multiple-line texts. When exporting, you can define whether you want to export ARCHLine.XP®'s multiple-line text as multiple one-line texts or as a single multiple-line text.

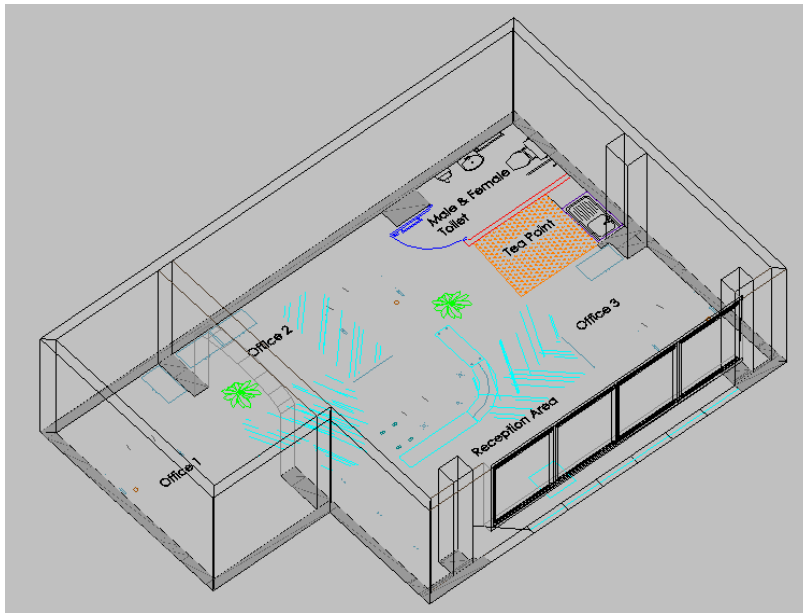
Experience shows that it is advisable to use multiple one-line texts.

Exporting buildings

In the case of multiple buildings, you can define which building to export. With the building to be exported, you can also export the terrain of the plan. If you select the All building option, the terrain will also be exported to the AutoCAD® file.

Export as 3D model

You can specify whether you would like to export the plan view or the 3D model of the selected object. This way you can create plan view what contains special 3D objects

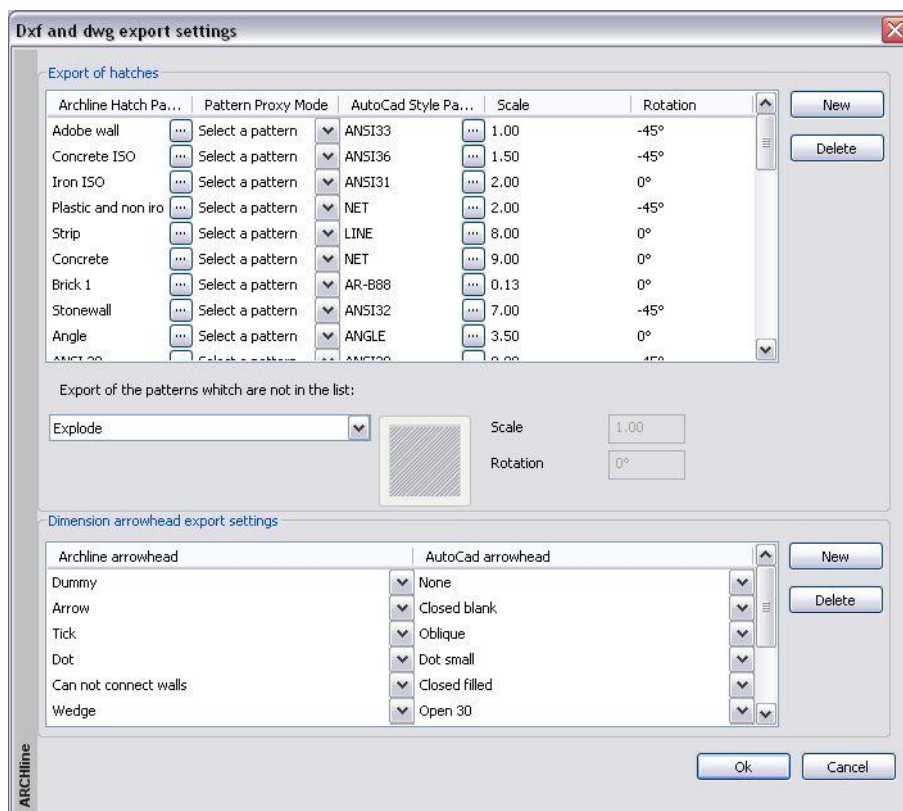


Others

Using these options you can enhance the appearance of your drawing objects in other CAD applications.

- ❖ **Export dimension measured value as text:** the measured values of a dimension will be exported as fix values. This means that the dimension value of an object in AutoCAD® will not change automatically if you modify its size, for example.
- ❖ **Ignore invisible layers and its objects:** invisible layers and the objects belonging to these layers will be ignored during the export.
- ❖ **Export group IDs as attribute:** the ID numbers of groups will be exported as block attributes (you can see them among the block attributes).
- ❖ **Create log and audit files:** during the export of a drawing two additional files can be created; a log file with the <filename>.log file name format and an audit file with the <filename>.aud file name format. The both files may include useful information for ARCHLine.XP® developers. Send these files along with the original end exported drawings to your local distributor if you find some errors in the exported file.



Other export settings are available in the *File menu - Options - Dxf and dwg export settings* dialog.



The following options are available:

Export of hatches

You can define hatch conversion rules between ARCHLine.XP® and AutoCAD® hatches. You can

- ❖ add new rule by clicking the *New* button,
- ❖ delete a selected rule by clicking the *Delete* button,
- ❖ modify a hatch pattern in the by clicking the  button,
- ❖ modify a pattern proxy mode by clicking the  button. You can select either the *Export as solid* or the *Explode* options. Both selections will ignore the hatch conversion and only the ARCHLine hatch patterns will be exported in exploded or solid state. If you export exploded ARCHLine hatch patterns, the size of your exported file may increase substantially.

Export of the patterns which are not in the list


Because of the differences between CAD applications you may not find the proper rule for a hatch conversion or you simply do not want to create rules one by one.

In that case you can export ARCHLine style hatches.

- ❖ as exploded objects (*Explode*)
- ❖ as solids (*Export as solid*)
- ❖ as a hatch with the selected hatch pattern (*Select a pattern*). With this selection you can also specify the scale and rotation of the selected pattern.



Dimension arrowhead export settings:

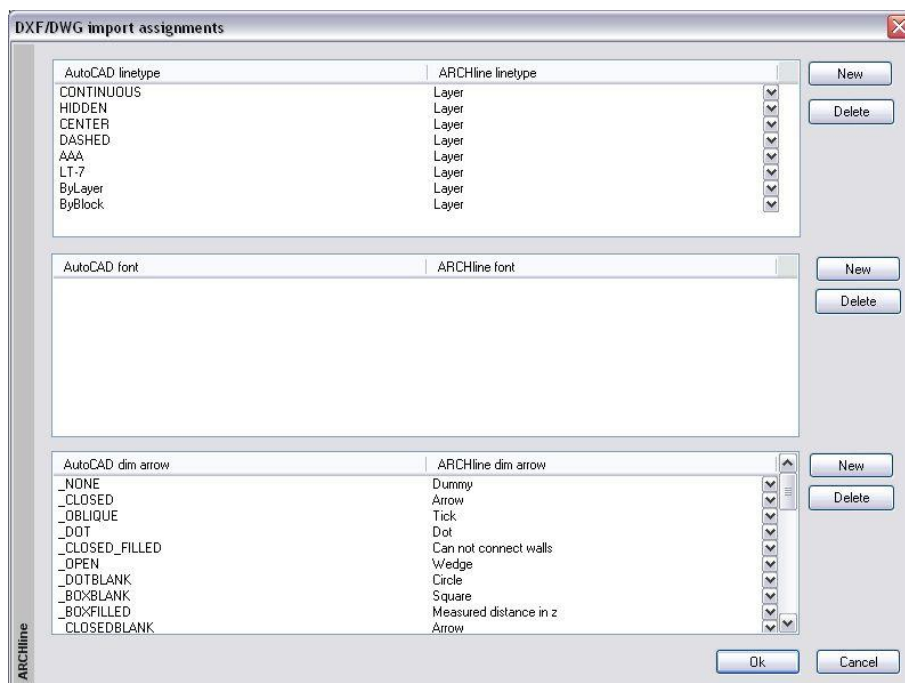
Similar to the hatch conversion rules you can define conversion rules between ARCHLine and AutoCAD® arrowheads. You can add new rule to the list by the *New* button, delete a selected rule by the *Delete* button, or change an existing conversion rule by the  buttons.

4.5.2.3. Settings: line type, font and dimensioning arrow assignments

- By clicking on the Settings button you can make assignments between AutoCAD® and ARCHLine.XP® for special AutoCAD® line types, fonts (true type fonts not found in Windows by default) and dimensioning arrows. The assignments are saved and you can use them afterwards.



You can reach these settings through the *File menu - Options - DXF and DWG import settings* command.



The user's assignments are stored in the *_dxfass.xml* file in the *Support* subdirectory of the installation folder.

In all the three cases you can find the list of AutoCAD® objects in the column on the left, while the columns on the right side include the assigned ARCHLine.XP® objects.

Modify

- Click the arrow beside the ARCHLine object.
- Select the appropriate object from the list.

New

- Click the *New* button. The program adds a new ARCHLine object to the end of the list. You can modify this object.
- Specify the AutoCAD® object that belongs to the new assignment.

Delete

- Select the row you want to delete, and then click on the *Delete* button.

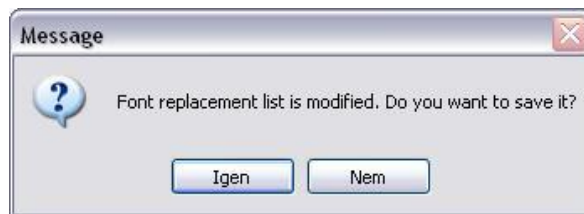
In the imported file there can be line types, fonts or dimensioning arrows which are not listed in the table. After the file import:

- ❖ These line types will appear as user-defined line types in ARCHLine.

- ❖ The program tries to use the same font type as the original. If it is not found, the program asks for a substitution.



- ❖ After specifying the font substitutions in this dialog you can save it into the font assignment list.



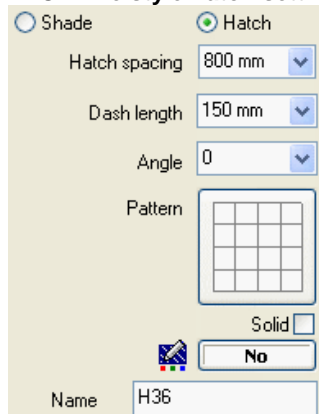
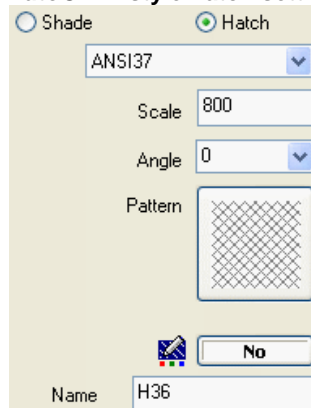
- ❖ To the arrows not listed in the assignments, the program assigns the default dimensioning arrow.



The *Explode dimensions* and the *Explode dimensions with user arrow* settings will override the arrow assignments, of course.

4.5.2.4. AutoCAD® style hatches

In case of importing AutoCAD® drawings, default AutoCAD® style hatches are recognized automatically and handled differently from ARCHLine style hatches. This means that scaling and rotating are the only possibilities for AutoCAD® style hatches, similarly as users can do it in AutoCAD®.

ARCHLine style hatch settings**AutoCAD® style hatch settings**

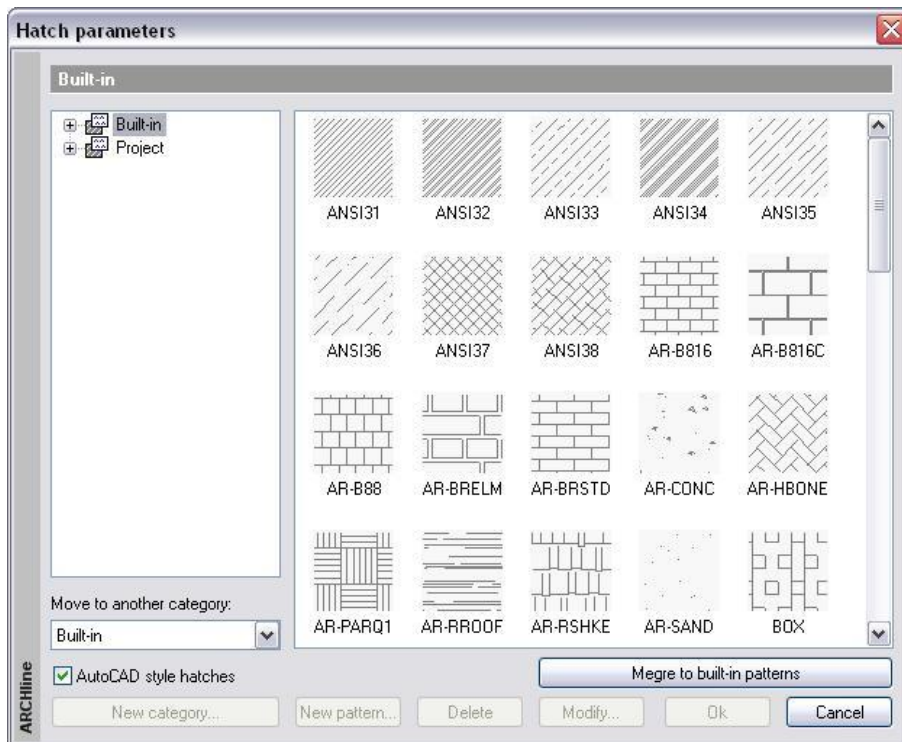
AutoCAD® style patterns data are stored in the *acpatterns.xml* file. This file can be found in the *Support* subdirectory of the program installation.

4.5.2.5. AutoCAD® style hatch selection

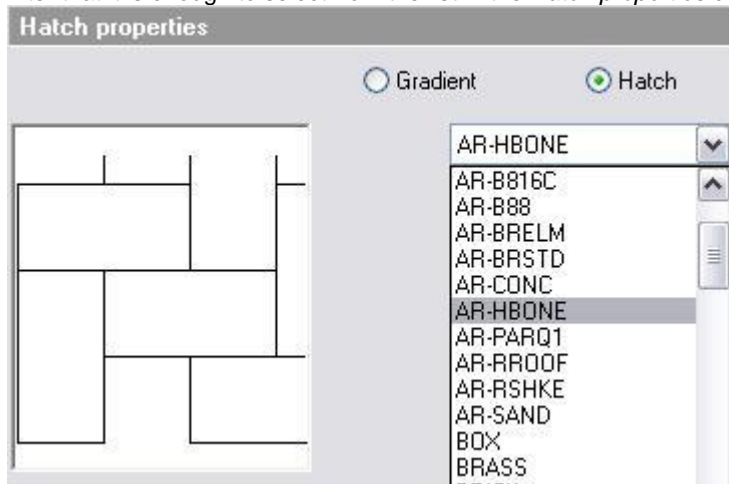
For the selection of an AutoCAD® style hatch:

- Click the **Pattern** icon in the *Hatch properties* dialog.

- In the appearing window select the AutoCAD® style hatches option.
- Double click on the required hatch.



- After that it is enough to select from the list in the *Hatch properties* dialog:



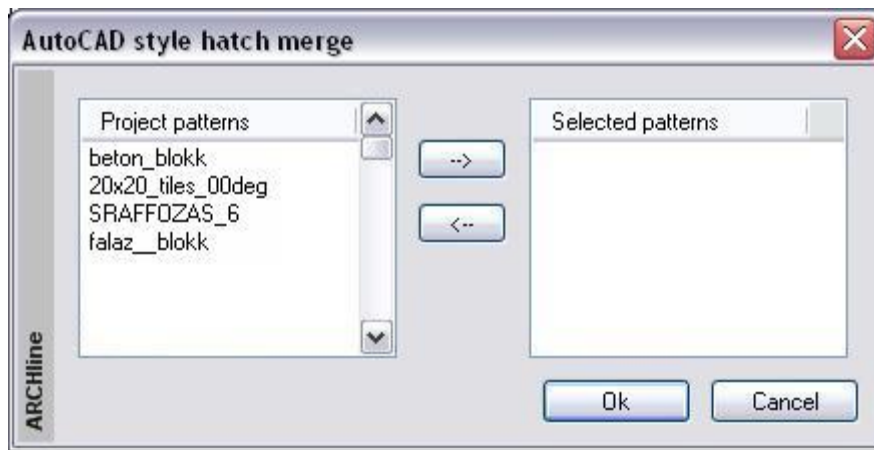
4.5.2.6. Merge to built-in patterns

There are two categories of AutoCAD® style hatches.

- ❖ AutoCAD® style hatches coming from the default program installation files are handled as *Built-in* category.
- ❖ The user-defined AutoCAD® style hatches coming from the DXF/DWG import are put automatically into the *Project* category. In the *Hatch parameters* dialog these hatches are displayed with the same pattern and different names.



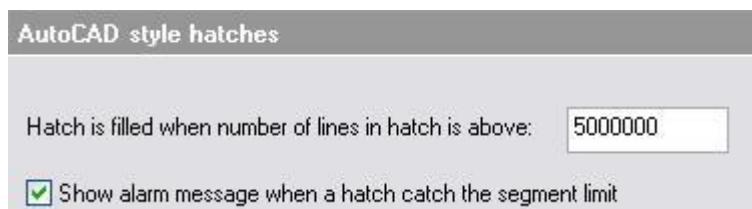
Hatches in the *Project* category can be used only in the actual project (similarly to the new project materials). In a new project those will not appear automatically, therefore you have the possibility to move hatches from the **Project** category to the *Built-in* category by clicking the **Merge to built-in patterns** button.



- Select pattern names from the *Project* category and click the right arrow button.
- Click *Ok* to move the selected *Project* patterns to *Built-in* patterns. Later you can use these hatch patterns in any other project.

4.5.2.7. Limitation – maximum number of lines

In the *File menu - Options - AutoCAD® style hatches* dialog you can set a limit for the maximum number of segment in a hatch. If any hatch on the drawing requires more segments than this limit, the drawing of hatches will stop when the limit is reached. By this the memory usage can be limited. This is handled analogous to AutoCAD®.



4.5.2.8. Extension of DWG import

The AutoCAD® DWG files can contain 3D surfaces, which are created by drawing out lines, arches, and polygons in 3D, by determining the so-called Thickness of the objects. You can also create such surfaces in the ARCHLine.XP® 2009 (see in *3D extension of line nature objects* chapter), and the program can import the AutoCAD® DWG files containing these objects.



The AutoCAD® creates a surface from the straight lines that it draws out the line into the space perpendicularly to that plane, on which it was designed.

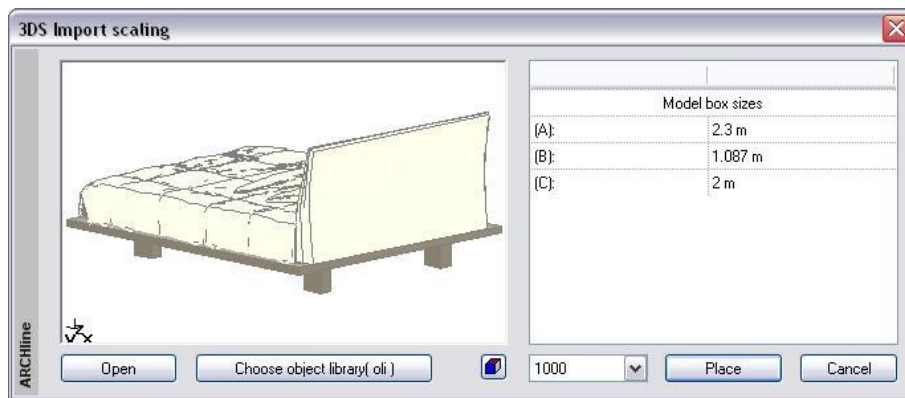
4.5.3. 3DS Import

ARCHLine.XP® program supports the using of objects given in 3DS (3D Studio) format. The objects imported in this way keep the materials assigned originally, too. You can import in three different ways:

- ❖ With *File menu – Import* command
- ❖ Dragging onto the drawing area by drag and drop
- ❖ Dragging into the Design Center by drag and drop

File menu - Import

- Import any .3ds format object with the *File menu - Import* command. After clicking the *Open* button, the following panel pops up:



- Select the scaling and sizes you want to apply when importing the object. Click OK.

Open

If the object is not appropriate, here you can open another one.

Place

The object is created as a 3D solid in the 3D window. In this case we recommend saving the 3D solid into the object library with the *Building – Object – Define custom object* command. The object saved in this way can be used as an architectural object thereafter.

Dragging onto the drawing area by drag and drop

You can *drag and drop* the object directly from the file manager. If you drag and drop the object onto the drawing area of the program, the above *3DS Import scaling* dialog box appears.

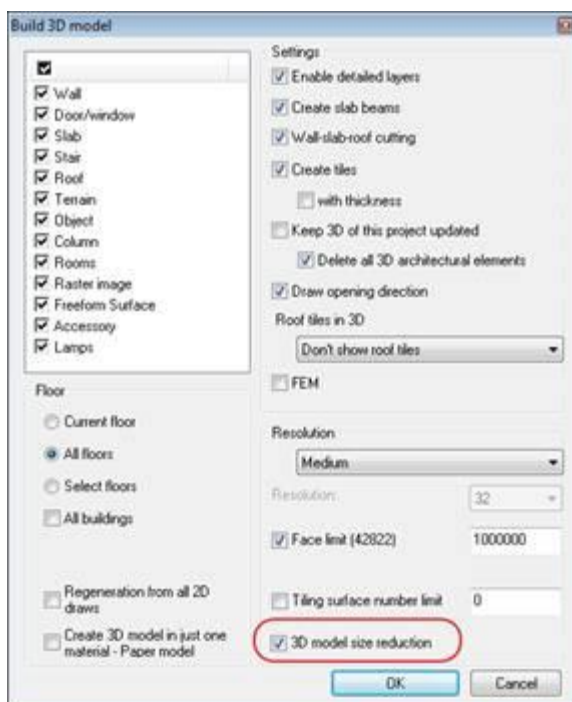
Dragging into the Design Center by drag and drop

If you drag and drop the object into the Design center, the program offers to save it to the appropriate oli directory displayed in the *Choose library* dialog box.

4.5.3.1. 3D model size reduction

The 3D model size reduction option makes large 3D models easier to work with by automatically reducing the number of polygons. Using the process named decimation; the ARCHLine.XP eliminates polygons only where their absence will not greatly affect the model's accuracy. The local geometry of the model's surface is used to determine whether a vertex may be removed. When a vertex is removed, the ARCHLine.XP fills the resulting hole with larger polygons.

Menu: View > 2D -> 3D > By classes

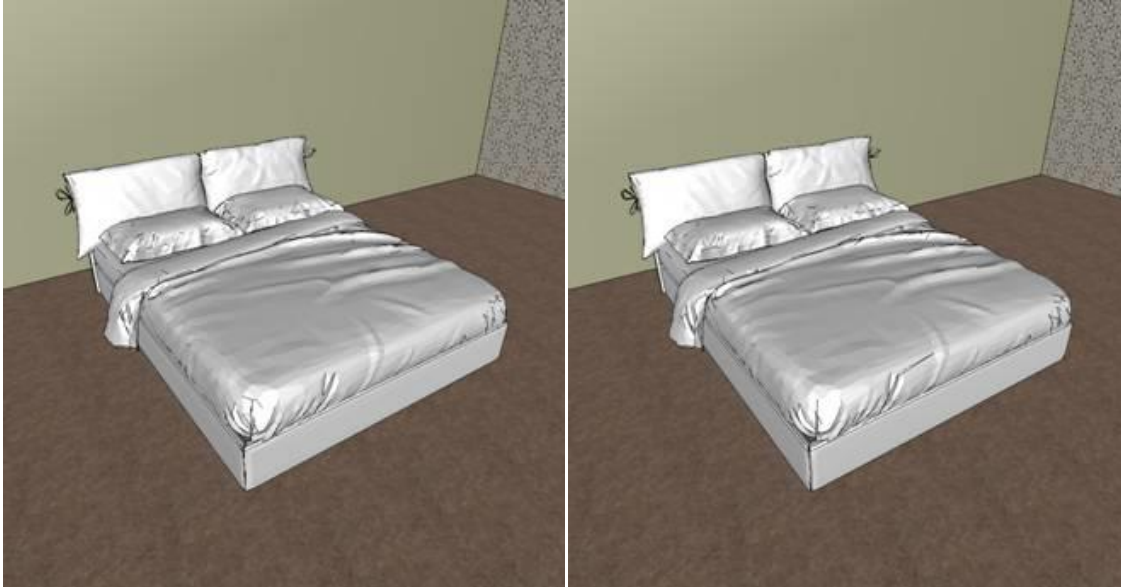


Decimate never creates new vertices; the vertices of the new model are a subset of the original vertices. This approach preserves the model's original structure, surface normal vectors (which indicates the model's 3D orientation at each point) and texture mapping.

Reductions of up to 90 percent with only slight loss of detail are common.

Example

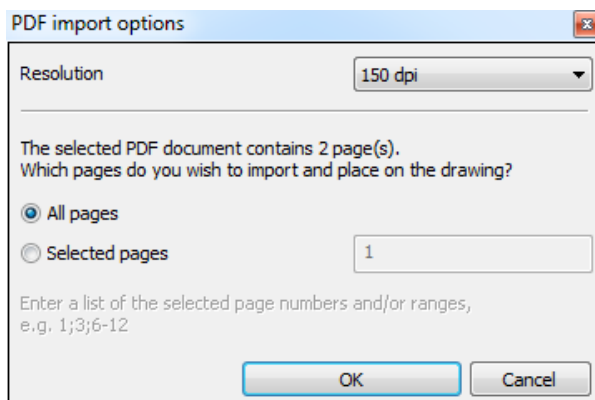
Original model with number of edges: over half million Decimated model with number of edges: 62.000



4.5.4. PDF import

The PDF Import allows you to import a PDF documents in ARCHLine.XP as a raster image.

Menu: File > Import > PDF as Image



Resolution

The PDF importer converts PDF files to image format. The resolution option enables to customize the resolution quality in DPI.

You can choose among standard resolution values as:

- ❖ 72 DPI
- ❖ 96 DPI
- ❖ 150 DPI
- ❖ 300 DPI
- ❖ 600 DPI

All pages

The converter supports single and multiple-page PDF file import as well. When the option All pages is enabled, every pages is imported as a new image.

Selected pages

If you import a multiple-page PDF file you can specify a selection to import. Type the page numbers or page ranges separated by semicolon for example: 1; 3; 6-12

4.5.5. Showroom

Virtual Showroom is an accompanying website for ARCHLine.XP containing high-quality fabric and wallpaper collections, colors, profiles, furniture, lamps and other 3D models from leading online suppliers.

Virtual Showroom helps to our interior designers' community discovering your company products, downloading and using them directly into their projects.

Showroom is the optimal tool to visualize realistic high-quality online products instead of generic ones.

Using your products during the design phase, clients will more likely to purchase your products.

Downloading an element from Showroom

- Please be sure that you have a live internet connection.
- Click **Showroom** in **File menu – Export ...**
- In the appearing categories/brands browse to the element you would like to download.
- To start downloading, click **Download**. Wait until the downloading process is finished.
- In case of successful downloading, a confirmation dialog appears with the appropriate information about the downloaded element.
- Click **Ok** to accept the element. The element will be stored in the appropriate library for instant placement and/or further usage.

Uploading elements to Showroom

If you wish to add your products to Showroom, please follow the steps as follows:

- Please be sure that you have a live internet connection.
- Click **Showroom** in **File menu – Export ...**
- Click **Add Your Brand** and follow the instructions in the pop-up window.

4.5.6. Indigo render export

ARCHLine.XP supports the Indigo native render file format. Indigo Renderer is an unbiased, physically based and photorealistic renderer.

See more:

<http://www.indigorenderer.com/>

Menu: File > Export

- Activate the 3D model workspace.
- In the Export dialog box, choose the type „Indigo render (.igs).
- Enter a file name, and click Save.

ARCHLine.XP creates the file with „. igs” extension and a folder with the same name and „.tex” extension that contains all the textures referenced in their 3D model.

Note: In order to import properly the file with „. igs” extension with other applications on another computer remembers to copy the „.tex” extension folder together!

4.5.7. Autodesk FBX export

ARCHLine.XP supports the Autodesk® FBX® file format. Autodesk® FBX® provides higher-fidelity data export to several Autodesk packages as Autodesk® 3ds Max® and Autodesk® Maya® software.

See more:

<http://en.wikipedia.org/wiki/FBX>

Menu: File > Export

- Activate the 3D model workspace.
- In the Export dialog box, choose the type Autodesk FBX (*.fbx)
- Enter a file name, and click Save.

ARCHLine.XP creates the file with „.fbx” extension and a folder with the same name and „.tex” extension that contains all the textures referenced in their 3D model.

Note: In order to import properly the file with „.fbx” extension with other applications on another computer remember to copy the „.tex” extension folder together!

4.6. Managing styles

Template management allows users to efficiently manage the design process. Using groups of the object properties optimizes the design speed and enables to create professional documents.

You can save the group of object properties in a container called style.

When you work with often-used object settings (such as wall or slab height, structure, 2D representation, cover materials etc.) styles can be a very useful way to store the settings and recall them later at any time.

The styles are grouped in a template file. Template file let you store and organize the styles and the software allows you to load and merge more template files extending your existing styles with new ones.

Templates can be stored on the local computer or a shared drive on the network. This allows users to prepare a local factory default which can be updated by an administrator and used by all other users. (Please note that read/write user privileges must be set by your system administrator on the network and not in ARCHLine.XP®.)

4.6.1. Styles

Style is a container that groups all the object properties.

When you apply a **style**, all of the object properties in that **style** are applied at one time.

When you start the program the objects are displayed with their default properties as saved in the default style.

By default you can find three categories organized in a tree structure. The three categories are Project, My and Factory. All three categories include styles arranged by object types. Styles of an object can be sub-grouped in a tree structure.

Project template

Styles created and saved in a project are included in this category. Please be aware that these styles are not available in separate template file. These styles are denoted by yellow folder icon (📁).

My template

Users's favourite styles are stored here in order to make those available in a newly created project. These styles are loaded from a My.set file and modifications are saved into this file. My styles are distinguished from other template categories by a portrait icon (👤).

Factory (built-in) template

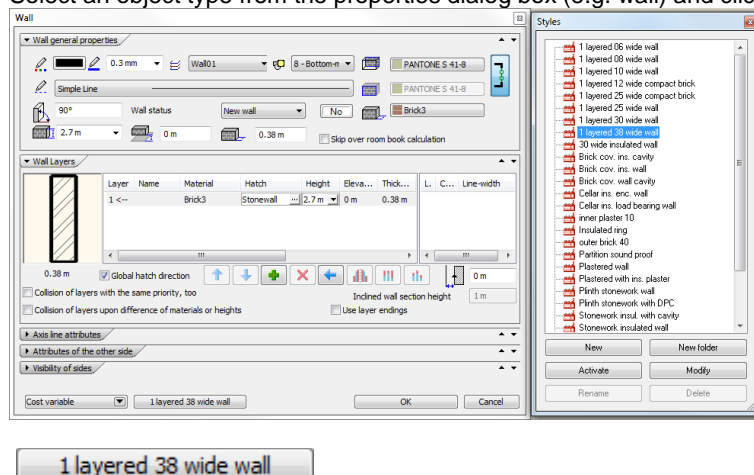
Styles found in Factory template come with the first installation of the program. These built-in styles are represented by red factory icon (🏭). You have to know that these styles have read only property. These styles are stored in Factory.set file.

Loaded/Created template

These templates include styles that have been loaded from an existing template file or copied into a newly created template file. These styles are represented by grey folder icon (📁). Behind each category there is a physical template file with .set file extension.

4.6.2. Using styles in the property dialog

Select an object type from the properties dialog box (e.g. wall) and click the style button displaying the current style name



When no style is loaded, the word **No style** is displayed.

A new dialog box appears on the right where the program lists predefined styles.

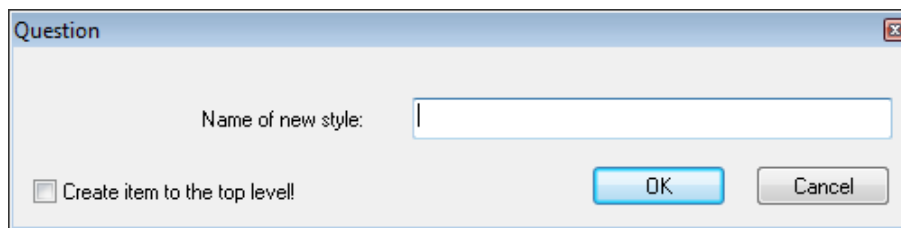
You can do the following operations with styles:

- Create style
- Activate style
- Modify, delete, rename style
- Export
- Activate style and create new object with the active style
- Copy properties with style

4.6.3. Create new style / new folder

Once you have specified all properties of a given object in the **Properties** dialog box:

- Click the Style button.
- Click **New**, and
- Enter the name of the new style.



! The created style is saved only into the project file. If you would like to access it from another project you will need to make a copy of it into another template.

Creating new folder

You can group the styles to folders. Use the New folder button to do this.

! We suggest grouping the new styles to folders! It makes the content less confusing and easier to manage.

4.6.4. How to create a new template file?

New category (template file) can be created to the existing ones.

- In **Project Navigator** click **Templates** with right mouse button.
- Select **Create template** command from local menu.
- Enter a template file name in the appearing file browser. This file will be the container of the styles created in this template. The same name will appear in **Project Navigator** under **Templates**.

4.6.5. How to load / save a template file?

New category (template file) can be loaded to the existing ones.

- In **Project Navigator** click **Templates** with right mouse button.
- Select **Load template** command from local menu.
- Select a file with .set extension in the appearing browser. Of course, it makes no sense to select My.set or Factory.set because those are for the already existing My and Factory categories. It makes sense to use this command if you want to load a category that have been imported from another PC or if you want to load again a previously created and saved template file on your PC.

4.6.5.1. Activate style


By activating a style you can recall all the settings stored in it. This makes the workflow smoother and quicker when you need to use an object with different settings. You can activate a style when you define the settings of an object.

You can activate a style in the **Properties** dialog box

Properties dialog box

- Open the **Properties** dialog box of an object.
- Click the Style button to display the list of styles, then
- Select the desired style from the list and click Activate
or
- Double click the style name

OK Close the dialog box.

 You may use this method in setting properties or modifying objects as you work.

4.6.5.2. Modify, rename, delete style

You can modify the properties of the current style, and rename or delete the style.

Modify properties

- Open the **Properties** dialog box and click the Style button.
- Activate the style you wish to modify.
- Change the properties you want to modify, then
- Click Modify.
- In the message box displayed, click Yes to overwrite the selected set.

Rename style

- Open the **Properties** dialog box and click the Style button.
 - Choose the desired style from the list.
 - Click Rename.
 - Enter the new name of the style.
- OK** Close the dialog box.

Delete style

- Open the **Properties** dialog box and click the Style button.
- Choose the desired style from the list.
- Click Delete.
- Click Yes to reconfirm and delete the selected style.

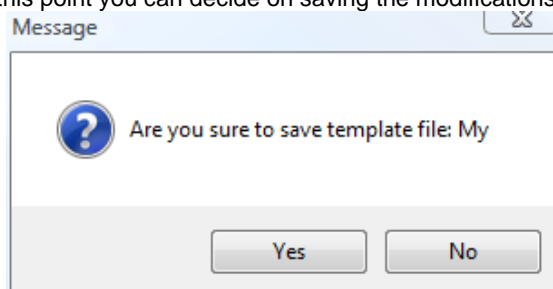
How to save the modifications in templates?

When you create a new style in a template, there is not automatic saving in the connected template files and folders. There are more possibilities for saving the modifications:

- In **Project Navigator** click **Templates** with your right mouse button.
- Select **Save all templates** command in the local menu. All modifications in all templates will be saved then.
- In **Project Navigator** inside **Templates** group click a template with your right mouse button. Select **Save this template** command in the local menu. Only the selected template file will be saved then. Of course, this option is not available in the case of Project template because it doesn't have separate template file. All settings and styles in Project template are saved in the project file.

! If you work with drawing files (.asc) instead of project file (.pro), settings and styles are not saved into the drawing (.asc) file.

- At program exit a Yes/No question dialog appears if there are unsaved modifications in any of the used template files. At this point you can decide on saving the modifications or not.



4.6.6. How to move template files to another computer?

You may want to move your favourite settings or newly created templates to another computer. All styles except with styles in the Project template are stored in separate template files. These separate template files can be moved from one computer to another. This operation is recommended only for experienced PC users who have a good knowledge in file handling operations. To avoid undesired data loss, before doing anything with copying template files, it is highly recommended to archive all files and folders involved. This way you can recover files and folders you may delete/overwrite accidentally.

4.6.6.1. Moving of My template

Styles in **My template** are stored in My.set file and the connected My.tex folder. You can locate this file and folder on your computer by using the **Load template** command. This command is available in the **Project Navigator** when you click **Template** with right mouse button.

A file browser appears then, showing the content of folder where My.set file and My.tex folder are located.

In Windows 7 operating system this is the location by default if you use English language setting:

C:\ProgramData\Cadline\ARCHlineXP2012\Support\Templates\Eng

As soon as you located My.set file and My.tex folder, close the program and move My.set file and My.tex folder to the appropriate folder on the target computer.

When doing this moving operation, please check the followings:

- Be sure that you want to move settings for the same *ARCHLine.XP*[®] version. For example, when you want to move template files from the source computer with ARCHLine.XP 2012 installation, you have to search and replace files and folders that belong to ARCHLine.XP 2012 on the target computer.
- Before copying files and folders, create a backup copy of the original files and folders you have to replace.

4.6.6.2. Moving of a newly created template

Newly created templates are stored in a *.set file and the connected *.tex folder, where “*” means the name of the template. For example, when you create a new template with the name of ‘New_template’, New_template.set file and New_template.tex folder will include the styles and settings for that template. You can locate this file and folder on your computer by using the **Create template** command. This command is available in the **Project Navigator** when you click **Template** with right mouse button.

A file browser appears then, showing the content of folder where My.set file and My.tex folder are located.

In Windows 7 operating system this is the location by default:

C:\ProgramData\Cadline\ARCHlineXP2012\Support\Templates\Custom

As soon as you located *.set file and *.tex folder, close the program and move *.set file and *.tex folder to the appropriate folder on the target computer.

When doing this moving operation, please check the followings:

- Be sure that you want to move settings for the same *ARCHLine.XP*[®] version. For example, when you want to move template files from the source computer with ARCHLine.XP 2012 installation, you have to search and replace files and folders that belong to ARCHLine.XP 2012 on the target computer.

After copying *.set file and *.tex folder, start *ARCHLine.XP*[®] on the target computer and load the template in the Project Navigator.

4.6.7. Template preferences

A style with the same name but different settings may appear in different templates (Project, My, Factory, created or loaded templates). In that case the program takes the template preferences into consideration.

Project template has the highest preference, followed by My and Factory. Between My and Factory templates you can find the newly created or loaded templates. Their preferences correspond to their listing order under the Templates group. You can change the preference order by clicking on a template with right mouse button and selecting from the Up/Top/Down/Bottom commands.

Template preferences and even the representation of templates can be hidden by the **Unified mode** command. This command is available in the Project Navigator by clicking on Templates with right mouse button. Similarly, you can set back the visibility of templates and their preferences by the **Detailed mode command**.

4.6.8. Other operations with templates

Other operations are available by clicking on the template name with right mouse button in the Project Navigator:

Share template

It is simply a **Save as** function for the *.set template file and the connected *.tex folder. After saving the file and folder to a commonly used storage, other users can easily access and load it into the program. This command is not available for Project, My and Factory templates.

Unload template

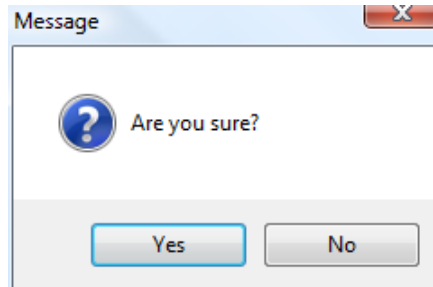
This is the opposite of **Load template** command. Styles of the unloaded template will be unavailable. This command is not available for Project, My and Factory templates.

Rename

When you load a template file, its name appears under the Templates group in the Project Navigator. You can modify the name with this command. This command is not available for Project, My and Factory templates.

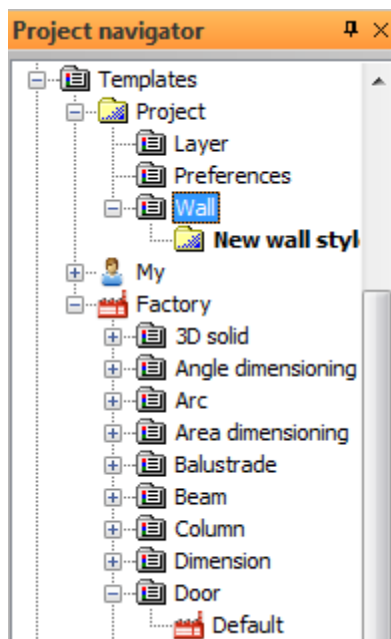
Copy from one template to another

With this command you can copy all styles from one category to another. Be careful with using this command because identical style names in the source and target template may result in overwriting styles in the target template. To avoid accidental overwriting, a Yes/No message window appears:



Template files can be stored on your local computer or on the network by sharing a storage drive. This makes available for users to create company-wide customized default settings/styles that can be controlled by an administrator. (Please be aware that file access rights for reading/writing are controlled by the network administrator and not by ARCHLine.XP®.) Handling and using styles in the Project Navigator

If you don't need to modify the properties of styles but you want to arrange, use or set the availability of styles, or you simply want to use the styles available in templates, it is recommended to use styles in the Project Navigator.



4.6.9. Handling styles in the Project Navigator

By clicking with right mouse button on a style, the following commands are available:

Activate

With this command you can activate a style of a specific object. Next time the object will be placed with the properties stored in the style.

Rename

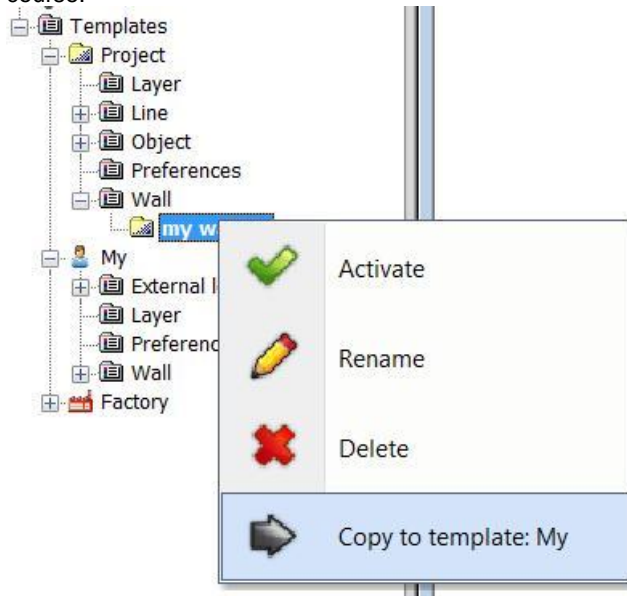
With this command you can rename a style. The property of objects that have been placed earlier with this style will not change. The name of built-in Factory styles cannot be modified.

Delete

With this command you can delete styles. Styles in Factory template cannot be deleted, of course.

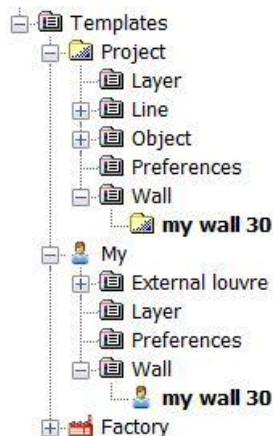
Copy to template

With this command styles can be copied from one template to another. Styles cannot be copied to the Factory template, of course.



Right click on the new style and click on the Copy to template: My.

The new style will be copied in to the My template. You can use it in the new project as well.



4.6.10. Using styles in the Project Navigator by drag and drop

More commands are available with styles by drag and drop method:

- In the Project Navigator click on a style, press and hold down your left mouse button and drag the mouse cursor into the drawing area.
- A local menu appears then, where you can select from the following commands:

Activate

By activating the style of a specific object you can set the properties of the specific object you place onto the drawing afterwards.

Create new

With this command you can start to draw a new object with the selected style.

Copy properties

With this command all the properties stored in the selected style can be copied to an existing object on the drawing area. Before copying the properties you have to select the target objects you would like to apply the changes to.

Beside the above mentioned commands – depending on the object type – you may apply other drag and drop commands, too.

4.6.11. Template Import Wizard

Import from the previous versions

After downloading and installing ARCHLine.XP at the time of first run of the program the *Template Import Wizard* appears. You can select the previously used (in the previous version of ARCHLine.XP) templates, user objects and load them into the actual version.

Please use the *File menu – Import – Template* command if you missed this method at the first run.

- Choose the previous programversion (You can choose from the installed programversions on your computer.)
 - Select things you want to import (Template file, Shortcuts, Material libraries, etc.).
- The program is going to search the previous version and:

- ❖ styles in the template will be merged to your current settings,
- ❖ Object library contents will be merged.

4.7. Directory settings

| | |
|---|----------------------------------|
| Open and Save | |
| Project default path (requires restart) | C:\Users\zoli\Documents\ARC... |
| <input checked="" type="checkbox"/> Archive files | |
| Archive path | C:\Users\zoli\Documents\ARC... |
| Image Path | E:\Design\Services\Alex Andre... |
| <input type="checkbox"/> Merge to current drawing - Drag and drop method (.asc) | |
| <input checked="" type="checkbox"/> Save 3D database (significant increase in size) | |
| <input type="checkbox"/> Purge unused materials which are not applied on the floor plan and 3D model. | |
| <input type="checkbox"/> Save hatch components in project file (display hatches quicker but increase the file size) | |
| Environment Package | |
| DXF/DWG | |
| DWG/DWF/DXF Import path | C:\Users\zoli\Documents\ARC... |
| DXF/DWG import assignments | |
| DXF and DWG export settings | |
| Colour exchange dialog | |
| *Save autorecover information | |
| AutoRecover file location | C:\Users\zoli\AppData\Roamin... |

You can modify your project default directory path in the *File menu -Options – Open and Save* dialog box:

❖ Project default path

It is useful to change directory settings when you work in a network, as this way other users can see the same materials and objects and they may save their drawings to the same folder.



If you set the Project directory, the program will offer the last used directory when opening a new project.

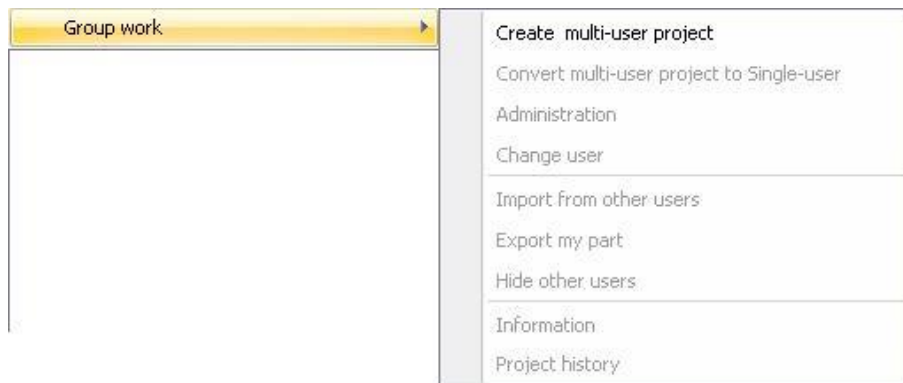
4.8. Group work

ARCHLine.XP® supports group work. This means that engineers with different skills can work on different parts of the same project simultaneously. The project has an owner, who can assign authorization rights to different parts of the project. Only the engineers with the appropriate authorization rights, and the owner, of course, are allowed to work on different parts of the project. The others can load others' plan but not allowed to make modifications on those.

This method can be applied effectively when the architect, the building engineer and the electric engineer are working together, for example. They can involve the interior designer in the flooring design.

4.8.1. Group work settings

Working on a project in group requires special authorization rights. First of all, you have to switch to *Group work* mode. You have to create the first user, namely the owner. The owner has administrator rights, who can add or delete users. He can cancel the group work mode, making all parts of the project accessible.

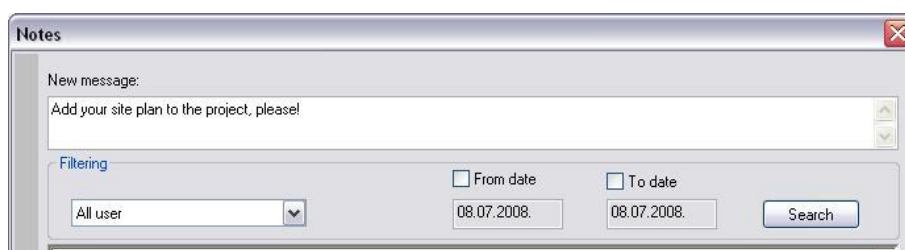


Creating a multi-user project

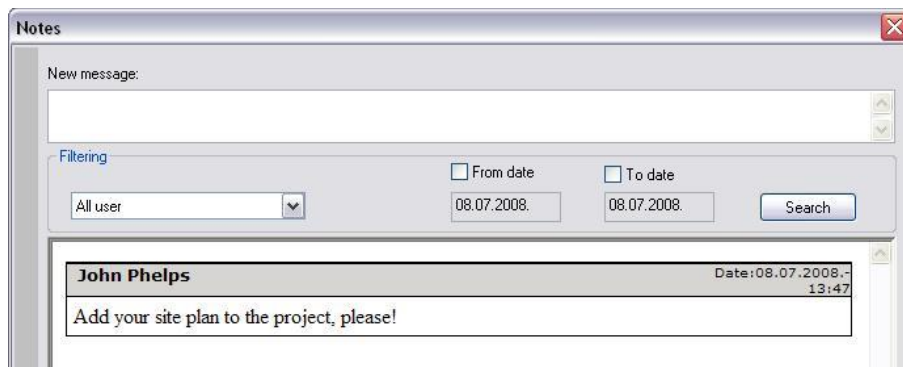
- Select *File menu - Group work - Create multi-user project* command. In the appearing dialog create a user with name, password and status.



You can start group work at project start up, or you can switch this mode when you are working on an existing project. At project save you can add notes to the project.



You can submit a note with the *Enter* key. For the case you exit from the dialog by clicking the *Ok* button, the new message will be saved, too. The messages appear in the message list. Click *Cancel* if you want to quit without saving the message.



In case of multi-user projects, messages can be viewed or added by selecting the *File menu - Group work - Project history* command.

Opening a multi-user project

In group work mode, at project file opening, first you have to select the user and enter this user's password. Then you can open the project.

Click on *Did you forget your password?* button if you forgot your password. In the dialog you will get a temporary password created by the program. Enter that password then.

This problem can be avoided by selecting the *Remember my data* option at first start. If you do that, next time, at file opening, the password will get into the password field automatically.

If there are more users with authorization rights, you can select user names whose project parts you want to load in. The actual user's project part will always be loaded.



Canceling group mode

With this command the project will be switched from multi-user mode to single-user mode.

- Select the *File menu - Group work - Convert multi-user project to single user* command.
 - Save the project.
 - Exit from the project.
- Open the project again. From that point you can work in normal (single-user) mode.

Administration

The owner has administrator rights, with the possibility of adding or deleting users. The owner cannot be deleted. By deleting a user, the user's rights will be inherited by the owner



Change user

Designers can hand over their work to each other even on the same computer. After selecting the *Change user* command the program suggests to save the project. At this point you can add notes to the project.

In the *User logon*, which is analogous to the dialog that appears at opening a multi-user project, you have to select another existing user and enter the password. You can select other users whose project parts you want to load in. The actual user's project part will always be loaded.

You can also change user by saving the project and exit, then again, load the project in. In case of large projects this method is slow.

Export my part

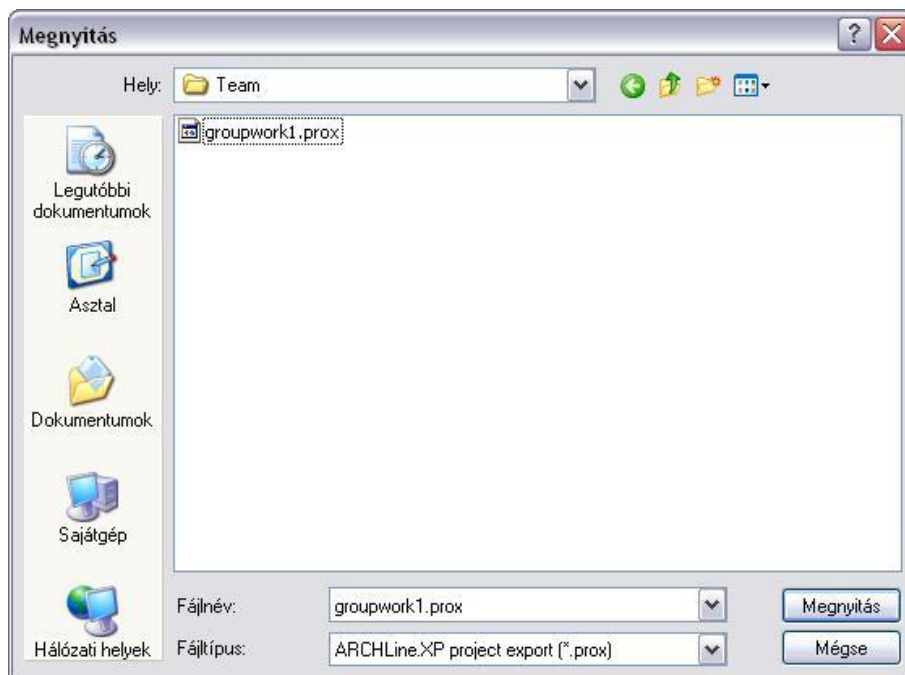
Each user can export his/her own project parts (for which he/she has authorization rights) into a file with a special extension: .prox. If the name of the group work is *groupwork1.pro*, the exported parts will be saved as *groupwork1.prox*. The first user hands over only this file to the second user.

- Select File menu - Group work - Export my part command.
- Save the project, if necessary.

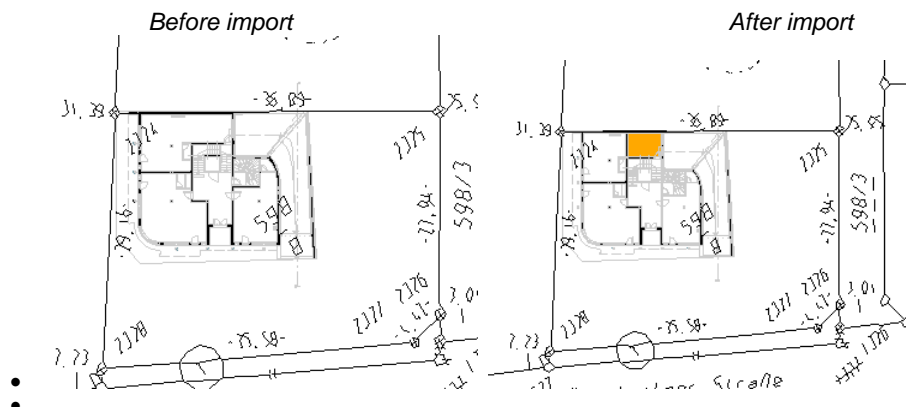
Import from other users

Second user gets *groupwork1.prox* project parts from the first user.

- ❖ If this file is found in the same directory where the *groupwork1.pro* is, and then he/she opens the project, project parts from the first user will be loaded automatically. After saving that project, *groupwork1.pro* will include both users' work.
- ❖ If the file has been saved into the same directory but the project was actually open at the time of saving, or, the file is found in another directory, the import must be done by the user.
- Select File menu - Group work - Import from other users command.



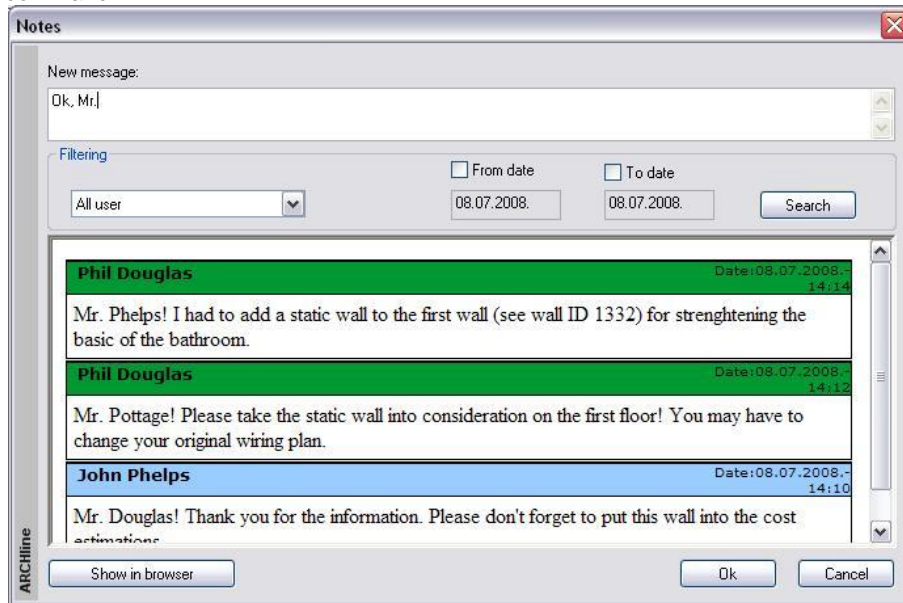
- Specify the file name to import.
- Exit from the project. Save it, if necessary.
- Log in as user, save the project and continue your work.
The project will include both users' work.



4.8.3. Project history

Different users can leave messages to each other with the help of a message box.

Messages can be submitted at saving the project, or, by using the *Select File menu - Group work - Project history* command.



On the top of the dialog you can enter flat texts. Press *Enter* key to save the message you entered. Messages can be filtered by users and date.

Click *Browser* button to display the messages in your default html viewer. Messages can be filtered by users and from-to date

5. Data entry

You can define data (numeric and alphanumeric values, points and vectors) by using

- ❖ the keyboard,
- ❖ toolbar icons, or
- ❖ pop-up menus.

This way you can easily specify values and use special points and vectors, which greatly simplifies the drawing process. In the following we will look at how to define *points* and *vectors*.

Defining points

You can define the value of a point the following ways:

- ❖ by typing X and Y global or local coordinates
- ❖ by moving the cursor in the preferred direction and typing the length
- ❖ by clicking on the drawing area
- ❖ with snap grid
- ❖ by using special points
- ❖ by fixing coordinates, distance or vector.

Defining vectors

The vector of the drawing can also be defined in various ways:

- ❖ with snap angle
- ❖ by pressing SHIFT
- ❖ HV indicator cursor
- ❖ with arrows
- ❖ with the Reference toolbar.

5.1. Defining coordinates

In ARCHLine.XP®, coordinates can be specified either globally, when the program calculates values in relation to the origin of the drawing, or relatively, when values are calculated in relation to the last point.

This can be set in the Status bar.

Global coordinate input

Coordinates, values are calculated in relation to the origin of the drawing.

Relative coordinate input

Coordinates, values are calculated in relation to the last point.

If you press any key, the command line or input field on the drawing area comes up automatically depend on the *File menu - Options - Cursor and Marker* option.



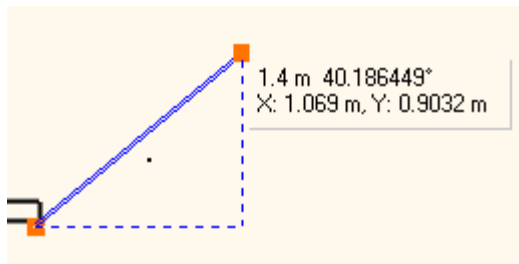
See the chapter 2.11.1. *Defining values*.

- Enter the X and Y coordinate values, following each other, separated with a space:



- Click Enter to close it.


! Starting the project we suggest you to switch on the **Global coordinate input** and to place the first point of the drawing in the 0, 0. Later switch on the **Relative coordinate input**. In practice this simplifies notably to specify further points.




Coordinate field

Coordinate values can be attained from the coordinate fields in the drawing status line.

x: 4.58 y: 5.9

In case of global input (), the field displays the absolute X and Y coordinates of the cursor.

In case of relative input (), the field displays the DX and DY values of the cursor in relation to the last point.

5.1.1. Defining points with snap grid

Snap grid is of great help when defining points. It locks the cursor into alignment with the grid points.

You can enable this option with the *Tools menu - Snap* command.



See grid settings in detail in chapter 2.19. *Screen settings*.

5.1.2. Defining points by using special points

ARCHLine.XP® offers many possibilities to specify points in a simple way.

Defining a special point with Reference commands:



See in detail in chapter 2.16.5 *Reference toolbar*.

5.2. Defining angle

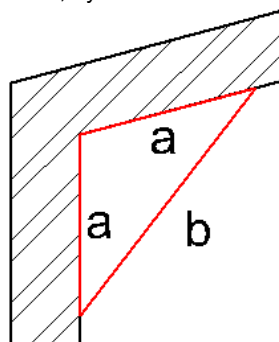
5.2.1. Direction by triangle

Simple survey

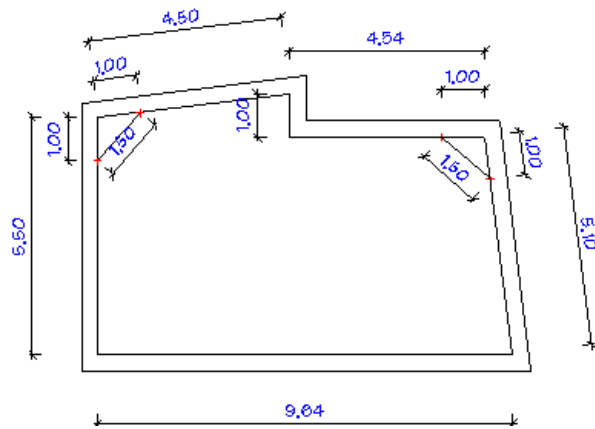
In the example below we demonstrate a very simple method for surveying. This method is not so complex like the survey module of ARCHLine.XP® but you can quickly define irregular rooms with a help of it. (As it is known, in the survey module the program uses a room-based surveying method, by which the walls with uneven thickness are come into existence.)

The method is the following:

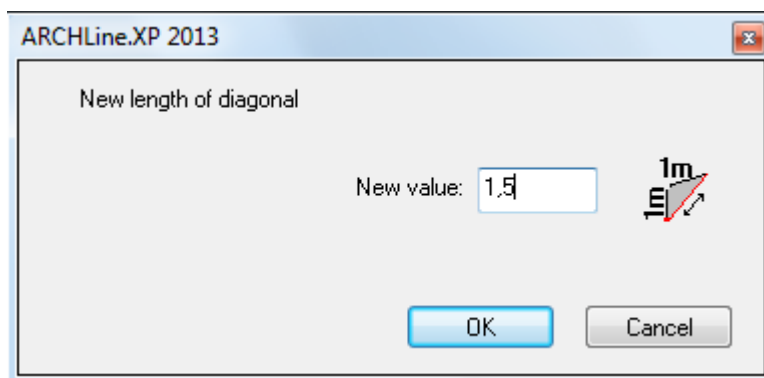
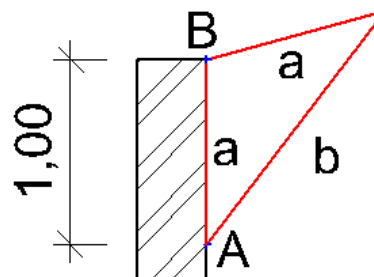
Starting from the corner point, measure 1 meter distance on the two adjacent walls. Using the constructed triangle gained from the measured data, the direction of the second wall relative to the first can be defined by the program. With this you can avoid the measuring of angles. On the figure the value of **a** is 1 m, **b** is the measured hypotenuse.



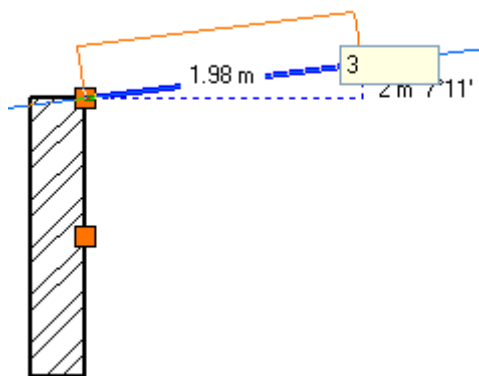
Following this method it is easy to create the floor plan below:



- Draw the first wall.
- When you get to point B, choose *Direction by triangle* command on the reference toolbar
- The program asks for point A, which is located on the wall 1 m far from point B. Move the cursor downside along the wall and type 1 m. At this point you have got the point A.
- In the appearing dialog enter the length of hypotenuse b.



- The direction of the second wall becomes fixed because of the triangle. Enter the length of the second wall.



Defining direction with Angle snap



See the detailed description in 2.20.1. Defining direction with Angle snap.

Angle snap

Select this option to enable or disable angle snap.

If you enable angle snap, the cursor can only move towards the defined directions. This is a very strong control and can be used only in special cases. We recommend that you disable this option.

When you define *Length* or press the *Shift* button, the program finds the default angles even if the Angle snap option is disabled.

Ortho snap

Using the *Tools menu - Ortho* command you can switch on the ortho snap. In this case you can move the cursor into horizontal and vertical direction.

If the Angle snap and the ortho snap are switched on the program prefers the ortho snap.

Using angle snap with disabled snap option

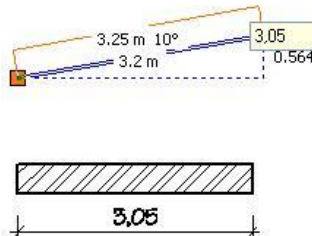
When you have specified the first point of an object:

- Move the cursor to the desired direction.
- The program is waiting for you to specify length or distance.
Enter the appropriate values.
- The second point snaps to the nearest special angle.

Example:

To draw a 3,05 m long horizontal line:




- Specify the starting point.
- Move the cursor near the horizontal direction.
- Enter the value: 3.05.



Direction control by using the Shift button

You can also enable **Angle snap** by pressing the *Shift button*. If you press the *Shift* button continuously, the cursor moves towards the nearest predefined direction. After defining a direction, you can carry on with the command you want to apply. The *Shift* button is most frequently used to reinforce vertical or horizontal directions.

You can combine *Shift* with cursor snap. With the help of the last three icons of the *Reference toolbar*, you can define which reference direction of the selected reference point to intersect the locked direction to specify a new point.

- ❖  Reference direction perpendicular
- ❖  Reference direction horizontal
- ❖  Reference direction vertical



If you do not use the icons, the reference direction will be defined by the actual status of the icon last used.

Perpendicular is the default direction.

These icons can also be used when the direction is not controlled by *Shift*, but specifying direction is contained in the command e.g. modifying the length of a simple wall.

5.2.2. Defining direction with the HV cursor

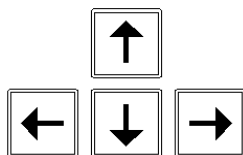
The *HV indicator cursor* can also show horizontal or vertical direction. You can enable the cursor in the *File menu - Preferences - General - Other* dialog box.

The HV indicator cursor appears when you select a point and move the cursor in horizontal or vertical direction. (In this case, recognizing a special point also means selection.)

5.2.3. Defining direction with arrows

You can define in which direction to create an object with the **arrow** keys of the keyboard.

In this case the **arrow** keys substitute the direction definition of the polar coordinate.



- Press any arrow button to define drawing **direction**.
- Specify the **length** of the object to be created.

The program creates the object of the specified length in the direction defined by the arrow.

5.2.4. Defining direction with Reference toolbar

You can use the Reference toolbar icons if you have to specify an angle different from the default directions.

You can define directions with an angle, you can use the angle of an existing object or you can lock a direction.



For description see Chapter 5.1 Defining points by fixing coordinates, distance or vectors.

5.2.5. Quick relative polar input

Quick relative polar input is a handy way to draw walls, lines and other linear objects by defining their length and angle. This feature is turned on by default and works automatically if you use the following expression when drawing:

length>angle

How to use?

- ❖ Start a tool to draw a linear object (e.g.: line) and set the first point.
- ❖ Type the desired length, a ">" mark without quotation marks and the desired angle.
- ❖ Finally press Enter.

It is essential to not to use spaces in the expression as it will lead to a different result.

5.3. AutoCAD® compatible coordinate input

The comma as separator

Oposited to the conventions in ARCHLine.XP® 2007 you can use the comma as separator for coordinate inputs. For this you have to switch off the *Comma (,) in Decimal point allowed* option in the *File menu - Options - Units and angels*

☒ Accept comma (,) as decimal separator during input


For example if you want to draw a line from point X=0; Y=0 to point X=3; Y=4, it is enough to do the followings:

- Start the line drawing command.
- Type 0,0 and press Enter to specify the coordinates of the start point of the line.
- Type 3,4 and press Enter to specify the coordinates of the end point of the line.



By switching off the option the comma (,) is interpreted as a separator instead of a decimal point. Use the dot (.) character for decimal point.

You can specify relative or global coordinates.

Set the **Global / Relative coordinate** icon in the status bar to  global.
With this setting the coordinate input works as follow:

Absolute coordinate input

In case of absolute coordinate input the syntax is the following:

X,Y ENTER

In that case the global origin is taken into consideration and the coordinate input is relative to this point.

The symbol of the global origin on the floor plan is represented as follows:



Relative coordinate input


In case of relative coordinate input the syntax is the following:

@X,Y ENTER

In that case the last specified point is taken into consideration and the coordinate input is relative to this point.

Use this possibility if it is easier to specify a point relative to previous point than specifying the global coordinates.



If the **Global / Relative coordinate** icon is set to  relative, it is enough to use the **X, Y ENTER** syntax for the coordinate input.

Polar coordinate input

Often you know only the angle and length values. In that case use the polar coordinate input. It can be very helpful if you wish to draw a line with a length of 2.53 m and an angle of 32°. You can specify absolute or relative polar coordinates as well.

Absolute polar coordinate input

In case of absolute polar coordinate input the syntax is the following:

numR<numFi, where

numR is the distance from the global origin,
numFi is the angle.



Use this input method when you know the distance and angle relative to the global origin.

Relative polar coordinate input

In case of relative polar coordinate input the syntax is the following: @ *numDr*<*numFi* , where
numDr is the distance from the previously specified point,
numFi is the angle.

6. Views

6.1. Setting view

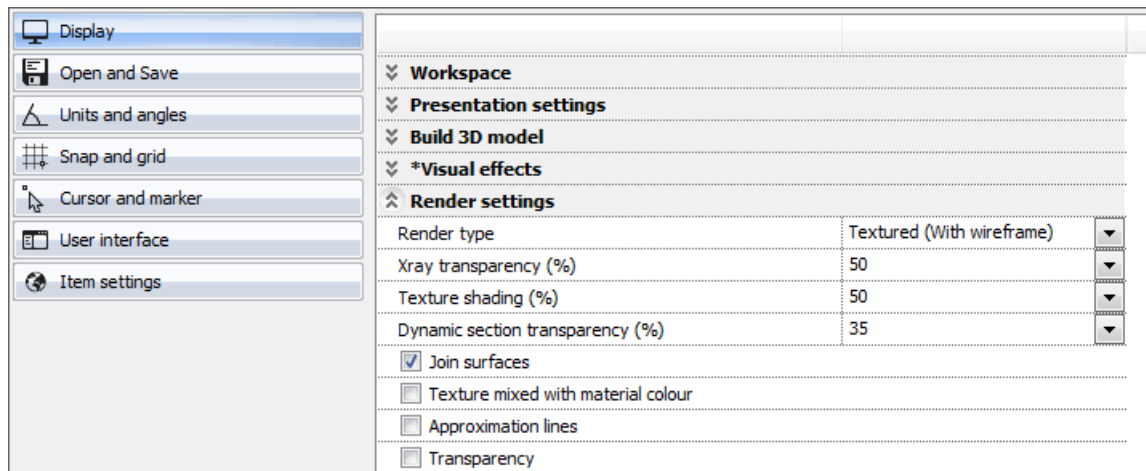
When you draw it is very important to be able to change the view of the windows you are using. Changing View can be e.g. increasing or decreasing the apparent size of objects in the drawing, moving views of drawings or refreshing drawings.

In the 3D window you can set the view of the model; you can set named views, axonometric or perspective.

You can also set how to display objects in 3D. You can set named views, wireframe model, hidden lines, shaded or colour modes.

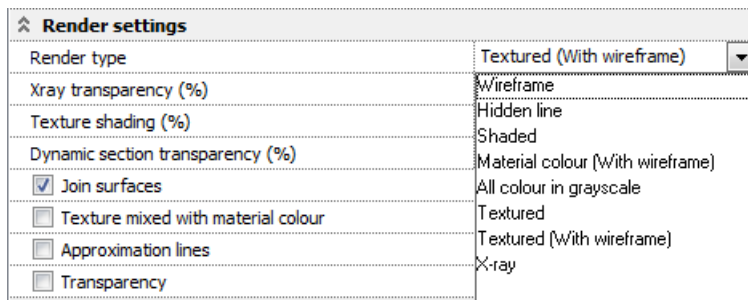
6.1.1. 3D view graphics settings

In the **File -Options - Display** dialog box or in the Property grid you can manage the 3D view graphics settings.



Render type

With the options found here you can set the rendering type used for the representation of the model.



Wireframe

In wireframe representation each edge of the model is visible.

You can also display a wireframe model with the **3D view toolbar**  **Wireframe model** icon.

Hidden line

In hidden line representation the program displays only the edges of the model that can be seen from the current view. The program doesn't display the hidden lines in the background.

You can also display hidden-line removal with the **3D view toolbar**  **Hidden lines** icon.

Shaded

Shaded means that the surfaces of the model are represented with the colour properties specified for the used materials. Only the surfaces that can be seen from the specific view are displayed.

Material colour (With wireframe)

This representation is the combination of Shaded and Hidden line rendering types.

Textured

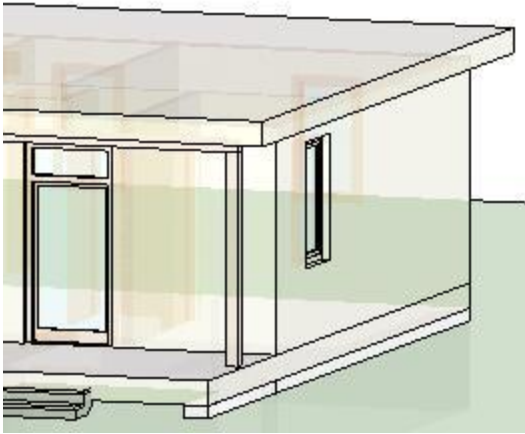
Textured representation means that the surfaces of the model are displayed with the texture properties specified for the used materials (if the texture property is not specified for a material then the material colour is used instead). Only the surfaces that can be seen from the specific view are displayed.

Textured (With wireframe)

This representation is the combination of Textured and Hidden lines rendering types.

X-ray

The X-ray rendering type is similar to the Textured (with wireframe). The difference is that non-transparent surfaces become transparent and therefore the structure of the model can be overviewed in unique and spectacularly way, similarly to an X-ray photo.



X-ray transparency (%)

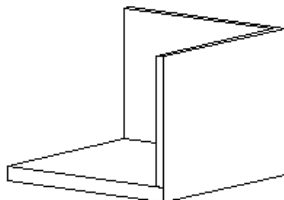
When X-ray is selected from the Render type options, you can specify the amount of transparency. You can specify a value between 0% and 100%.

Join surfaces

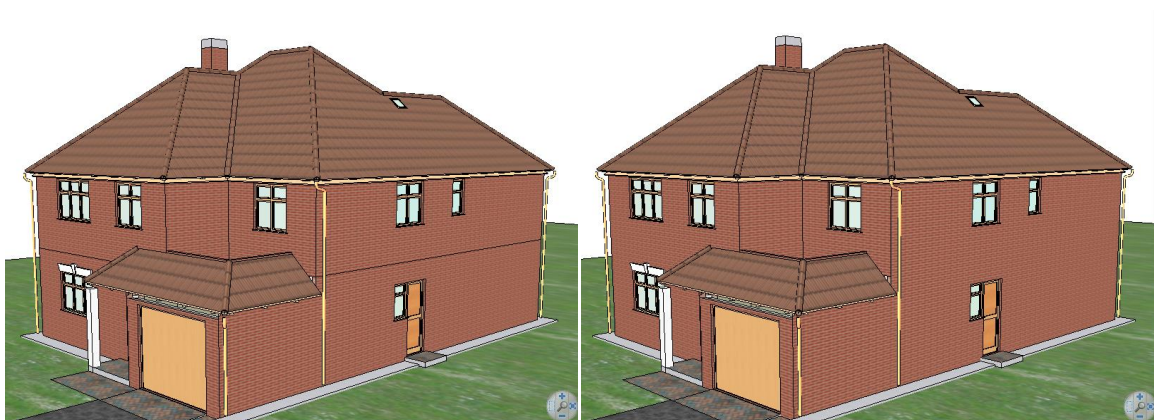
Join surfaces shows or hides the common edges of different surfaces.

This option enables the quality of display of solids with same material to be controlled. When two surfaces have edge that match up entirely or partly, you can force to join them with the 'Join surfaces' checkbox.

If you activate the **Join surfaces** option, the common edges between **wall and wall**, **wall and slab** are displayed in hidden-line mode, provided that the material of the joining surfaces is the same.



These views are captured as 'Join surfaces' off and on.

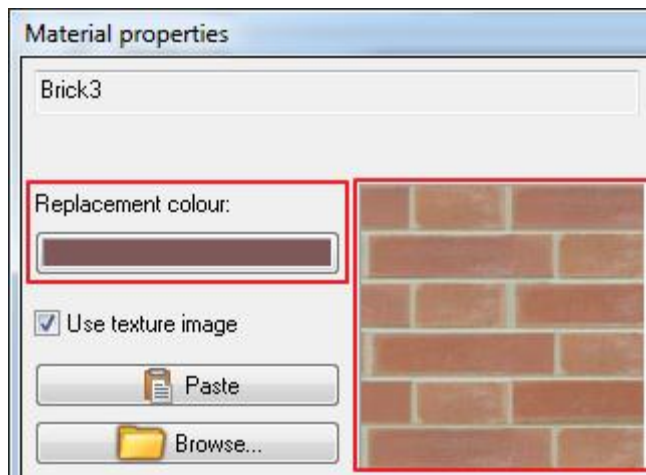


Approximation lines

For the representation of arc surfaces you can switch on the displaying of approximation lines.

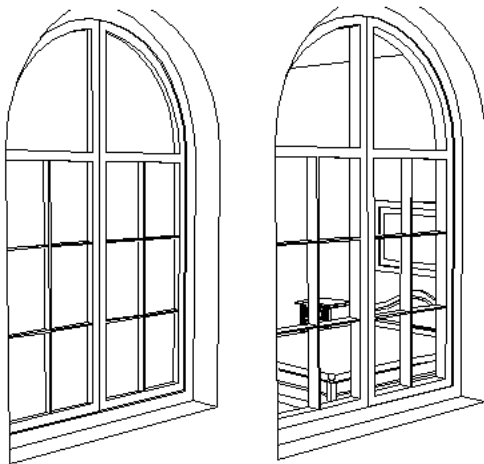
Texture mixed with material colour

This option displays the texture and its replacement colour together in texture view mode.



Transparency

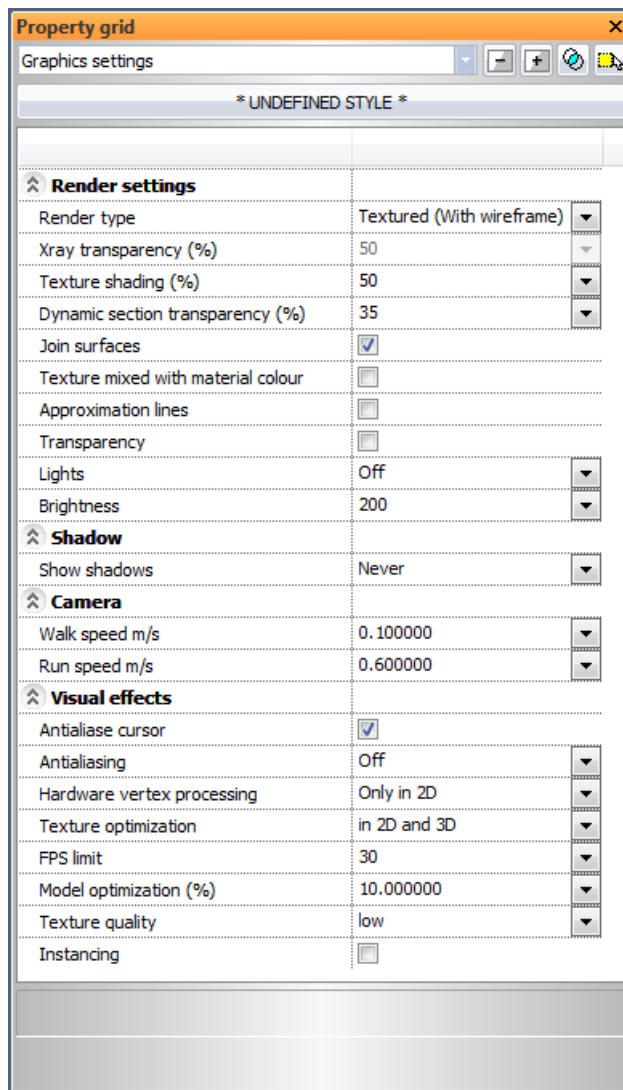
Using this option you can make the edges behind surfaces with transparent materials visible. By default, only doors and windows have transparent surfaces.



6.1.2. 3D view graphics settings in Property grid

3D view graphic settings are the following:

- ❖ Render settings
- ❖ Shadow
- ❖ Sunlight
- ❖ Camera
- ❖ Visual effects



6.1.2.1. Further Render settings

Texture shading

You can change the strength of the texture shading effect.

Dynamic section transparency

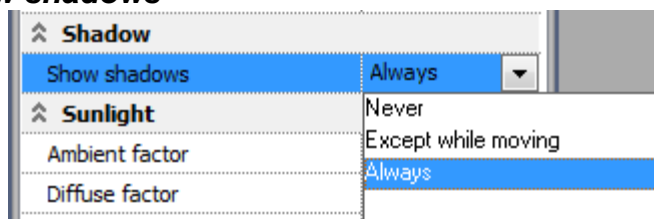
You can change the transparency of the dynamic section plane in the 3D model window.

Lights

You can set the visibility of light sources in the 3D model. You can choose from the following options: Off, Light solid only, Light effects only and Light solid and light effect. This option doesn't control whether the lights are on or off but their visibility only in the 3D model windows.

6.1.2.2. Shadow

Show shadows



Always

The shadows will appear continuously. Choose this option only with proper computer configuration; otherwise the moving of the model will slow down considerably.

Except while moving

With this option selected the shadow will appear only when the model is staying.

Never

With this option the model will appear without shadow.

6.1.2.3. Camera**Walk speed**

It is called walking when we move the camera in the Walk or Fly function with the move keys. The speed of walking can be specified here. The measure of this is meter/second.

Run speed

It is running when we move the camera in the Walk or Fly function with the move keys, while the Shift key is pressed and hold. The speed of running can be specified here. The measure of this is meter/second.

6.1.2.4. Visual effects

Properties that can be set in the Visual effects group are equal with the ones we have already mentioned in chapter Visual effects settings in the 2D window, completed with Hardware mesh handling and Texture quality.

Antialiasing cursor

You can enable cursor antialiasing, which results smoother cursor lines. Cursor lines appear in many cases during the drawing process, for example when drawing a line, a wall or other object.

Antialiasing

Antialiasing can make the lines of the 2D or 3D content smoother. It has the following options:

- ❖ Off
- ❖ Only in 2D
- ❖ Only in 3D
- ❖ in 2D and 3D

With these options you can turn on or off antialiasing in the corresponding 2D and 3D content windows.

Hardware vertex processing

Hardware vertex processing can be used with video cards with large memory. In case of hardware vertex processing the whole model is stored in the memory of the video card and therefore the result of this is a much faster work.

Texture optimization

Using this setting, the program will apply antialiasing only to the visible content of a window, while the appearance of the content outside the window (which is not visible) is simplified substantially.

FPS limit

FPS stands for frames per second or images/second. When the program detects that it is not possible to keep the limit value, it starts to simplify the representation of the content by texture optimization.

Model optimization

When a given (%) change has been made in the project, the program checks whether the FPS limit can be kept or not. If no, then it switches on the texture optimization automatically to increase the speed.

Texture quality

Here you can specify the representation quality of the materials used by the model in 3D windows. Depending on the selected option the program may override the original texture resolution and represents the materials of the model with poorer quality than the original.

The following options are available:

- ❖ Low
- ❖ Medium
- ❖ High
- ❖ Maximum

Example

Low

Medium



High Maximum

6.1.3. View toolbar

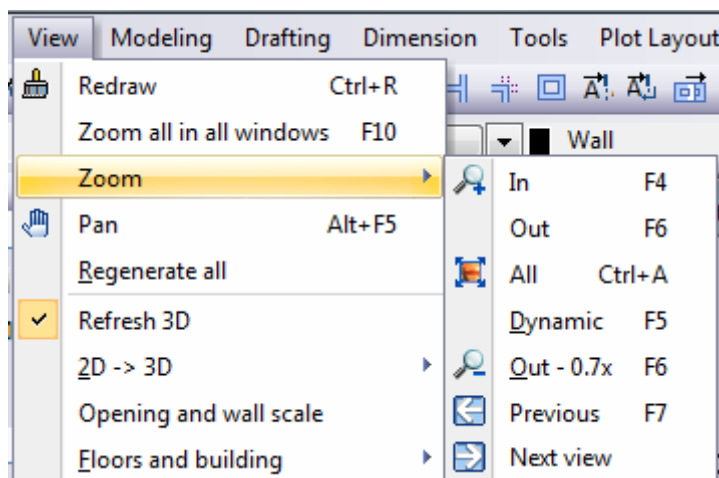


See the detailed description in 2.8.4.

6.1.4. Enlarging with View menu - Zoom

With the **View menu - Zoom** commands and the **Zoom all in all windows** command you can increase or decrease the view.

Zoom contains the following commands:



You can also activate these commands from *View toolbar*. For description, see the previous chapter: 6.1.3. *View toolbar*.

6.1.4.1. Zoom out

This command decreases the size of the drawing with the specified value. Proportions do not change in the window.

- Define the view box by its two opposite corners.

6.1.4.2. Zoom all in all windows (F10)

The command modifies the zoom scale so that the whole drawing (all visible objects) would be placed within the window. The same is done in each window.

6.2. Building 3D models

The program offers several possibilities to create a 3D model of the designed building. You can display all objects of the model on every floor, or just certain floors or selected objects or a selected part of the model.

The command can be activated from:

- ❖ the **View menu - 2D -> 3D** submenu.
- ❖ the **Status bar** -  **Build 3D model** icon, and
- ❖ the **F3**, **Alt + F3**, and **Alt + T** keyboard shortcuts.

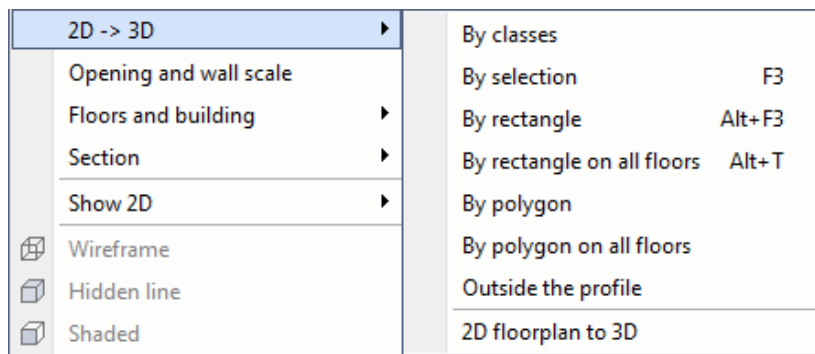
When you create new 3D models, the program opens a new 3D view window to display the 3D model of the floor plan.

The model is shown in the *Show hidden object* display mode. This means that every object is displayed with hidden lines, but the objects do not hide the edges of other objects. You can change settings with the *3D toolbar* icons.

The 3D view follows the changes made on the original drawing.

6.2.1. 2D -> 3D

The menu contains the following commands to create and display a 3D model:



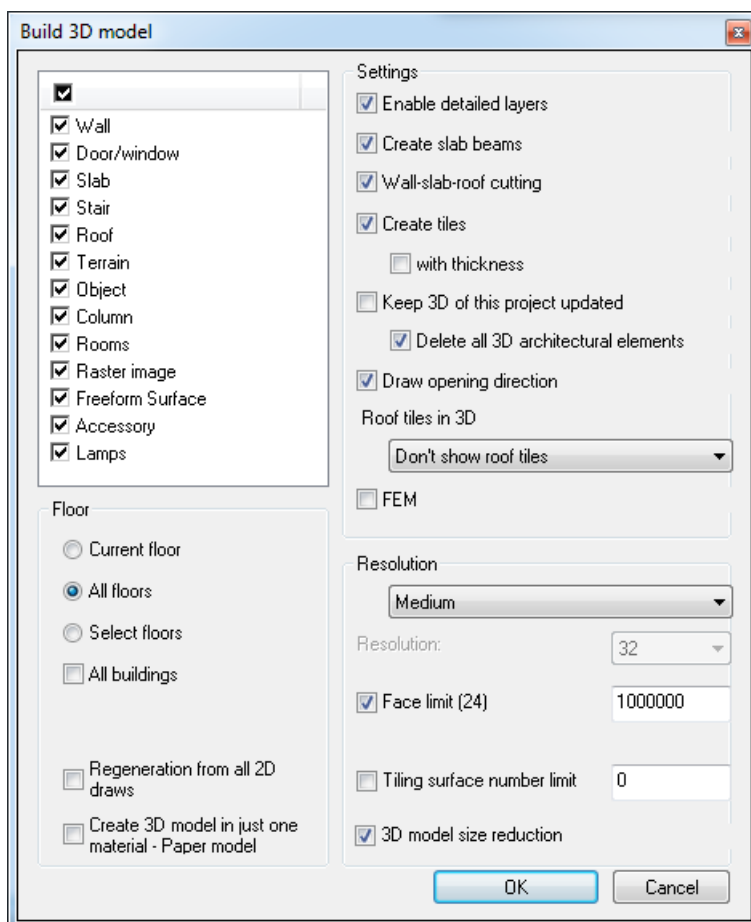
The commands don't modify the object itself, only the 3D appearance of it.

6.2.1.1. Building 3D view - by classes

To display the **Build 3D model** dialog box, go to the **View menu - 2D -> 3D - By classes** command, or click on the



Build 3D model icon in the **Status bar**.

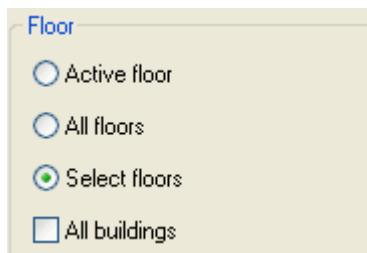


Classes

- Select the object classes to display in 3D or click the box on top to select all objects.

Floors

- Select an option:



Active floor

The program only displays the active floors of the building.

All floors

All floors are displayed.

Select floor

For more complex buildings with a number of floors it is not enough to use the *Active floor* or *All floors* options to create the proper details of the 3D model. The *Select floor* option enables more varieties in the 3D model representation:

- The *Select floors* dialog appears.
- Select the floors from you wish to include in the 3D model generation. Use the SHIFT or CTRL keys for multiple selections.
- Click *Ok* to close the dialog.
- To change the floor selection, select either the *Active floor* or *All floors* option first, and then select the *Select floors* option again.

All buildings

Enable this option if you have more than one building in the drawing and you want to display all of them in 3D. If this option is disabled, the program only displays the active building.



Read about managing multiple buildings in Chapter 3.5. *Floor management*.

Settings

With laminate

- Enable this option if you want to display the layers of the walls.

Slab beams

- Enable this option if you want to display the beams of slabs.

Wall - slab - roof cutting



With this option you can fit:

- ❖ wall to slab,
- ❖ slab to roof,
- ❖ wall to roof.

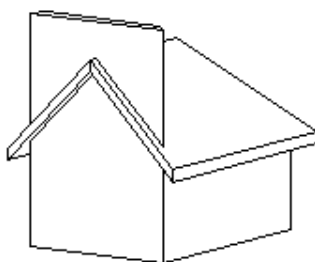
If you enable this option, the program automatically cuts the walls higher than the roof where they intersect it. To do this,

you have to enable the cut option in roof properties.

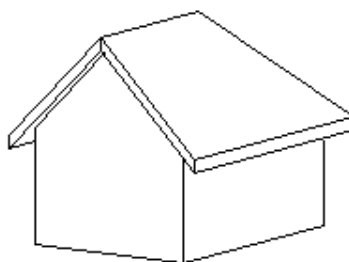


Similarly, slabs overhanging the roof,  and walls reaching beyond the slab  are cut. To do this, you have to enable the Slab cut option in the Slab general properties dialog box.

Off



On



Keep 3D of this project

If you enable this option, the program creates a new 3D model only for the selected object types, while keeping the contents of the previous 3D display.

Delete entire 3D model

If you disable the *Keep 3D of this project* option, the **Delete entire 3D model** option comes up. If you enable this option, it deletes the entire 3D model and creates a new one.

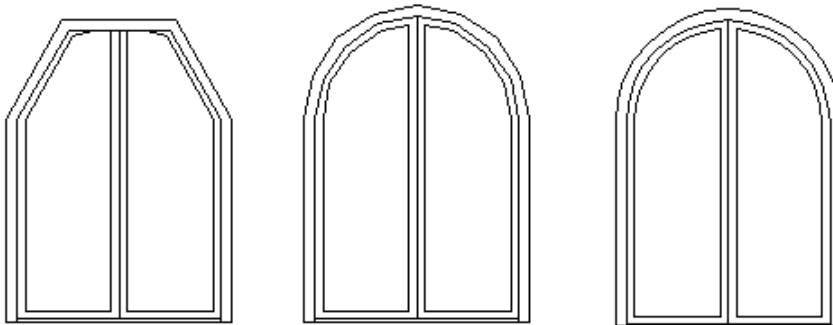
Create tiles

Enable this option to display the tiles that belong to layers of the wall or the slab. After enabling this option you can create tiles with zero or real width. If you use zero width, it significantly speeds up the display.

Resolution

With resolution you can set the smoothness of arched surfaces. The higher the resolution is, the smoother the arched surfaces are. However, high resolution can greatly slow down the speed of display.

If you select high resolution, you can set the precise resolution value.



Low

Medium

High

OK

Closes the dialog box.

Face limit

When you want to display a 3D model you can define the number of displayed surfaces. If there are too many surfaces, the number of the displayed surfaces can be decreased, so the display of the model can be optimized.

Tiling surface number limit

The 3D model size can be limited if you define the maximal number of displayed tiles. If there are too many tiles, the 3D model size may result too many surfaces, so the display of the model can be optimized with this number.

3D model size reduction

The 3D model size reduction option makes large 3D models easier to work with by automatically reducing the number of polygons. Using the process named decimation; the ARCHLine.XP eliminates polygons only where their absence will not greatly affect the model's accuracy. The local geometry of the model's surface is used to determine whether a vertex may be removed. When a vertex is removed, the ARCHLine.XP fills the resulting hole with larger polygons.

Decimate never creates new vertices; the vertices of the new model are a subset of the original vertices. This approach preserves the model's original structure, surface normal vectors (which indicates the model's 3D orientation at each point) and texture mapping.

Reductions of up to 90 percent with only slight loss of detail are common

6.2.1.2. By selection (F3)

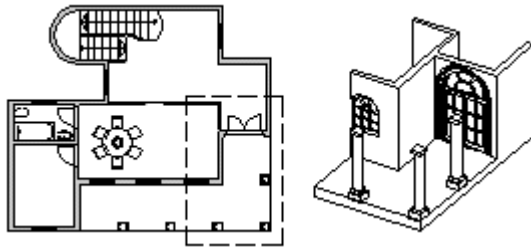
The command displays the selected objects in 3D.

- Select the objects you want to display in 3D:
Enter Completes the selection.

6.2.1.3. By rectangle (Alt + F3)

A rectangle-based block cuts the three-dimensional model; the outside parts are discarded and the rest is displayed. This command only selects and cuts objects on the active floor.

- Define the view box by its two opposite corners.



6.2.1.4. By rectangle - on all floors (Alt + T)

A rectangle-based block cuts the three-dimensional model; the outside parts are discarded and the rest is displayed.



- Define the view box by its two opposite corners.

6.2.1.5. By polygon

A polygon-based block cuts the three-dimensional model; the outside parts are discarded and the rest is displayed. This command only selects and cuts objects on the active floor.

- Define the points of the polygon.



If you need help to draw a polygon, read the description of **Polylines**   in Chapter 11.2.2. *Creating lines*.

6.2.1.6. By polygon - on all floors

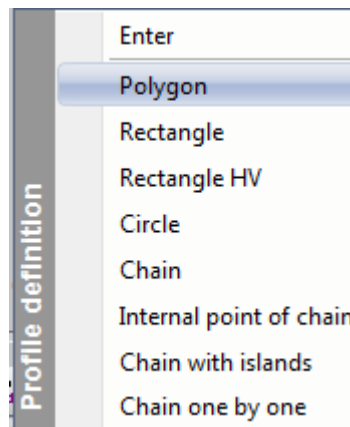
A polygon-based block cuts the three-dimensional model; the outside parts are discarded and the rest is displayed. This command only selects and cuts objects on the active floor.

- Define the points of the polygon.

6.2.1.7. Outside the profile

A profile-based block cuts the three-dimensional model; the outside parts are discarded and the rest is displayed. This command only selects and cuts objects on the active floor.

- Select the **POPMENU** keyword in the command line and define the type of profile in the *Profile definition* menu.

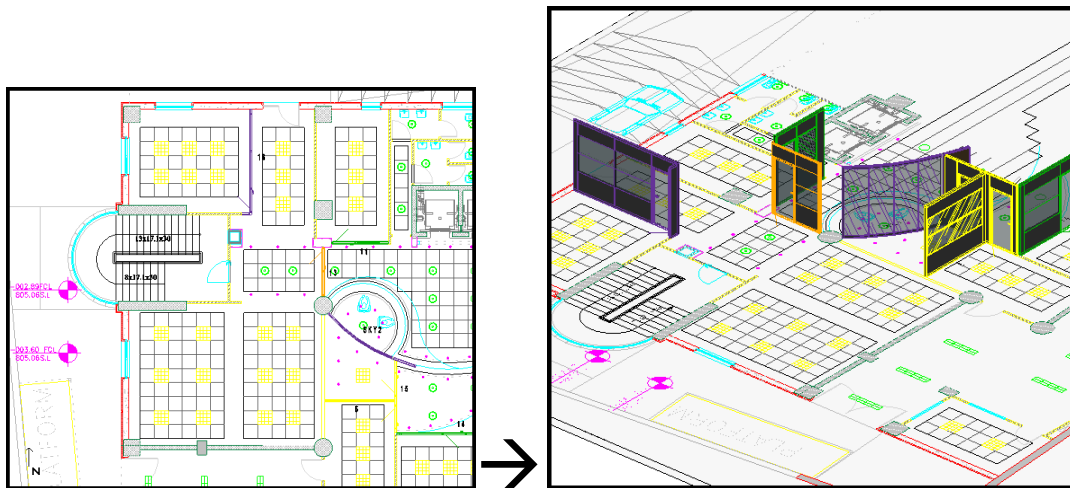


6.2.1.8. 2D floor plan to 3D

Using this command you can represent your 2D floor plan in the 3D model space as well.



The components of the floor plan – simple vector entities like lines, polygons, arcs, dimensions – are visible together with your 3D model. This way you can visualize the imported source data, such as DXF and DWG files or imported sketches together with the newly created building model containing walls, windows, doors, columns and other objects

This example shows a part of an imported DWG drawing, and the newly created 3D model



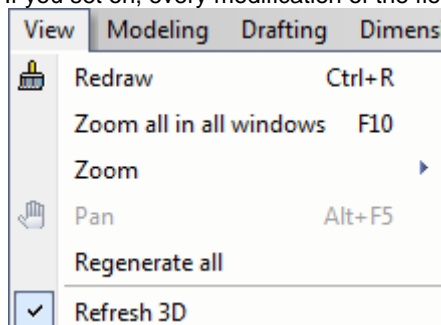
6.2.2. Creating 3D models with keyboard shortcuts

You can also create 3D models with keyboard shortcuts. These are summarized in the following table:

| | |
|---|---|
| Alt + T | Creates a rectangle, which cuts the model. The part of the 3D model which is enclosed in the rectangle becomes visible in the 3D view. The program displays the objects of all floors. |
| Alt + F3 | Creates a rectangle, which cuts the model. The part of the 3D model which is enclosed in the rectangle becomes visible in the 3D view. The program only displays the objects of the active floor. |
| F3 | Select an object and press the F3 button. The 3D model of the selected object appears, or if nothing is selected, press the F3 button. Select the objects on the floor plan you want to display. The program only displays the objects of the active floor. |
|  | If you select an object and click the  Build 3D model icon in the Status bar, the program only displays the selected objects in 3D. In this case the program does not activate the Build 3D model dialog box, but applies the previous settings. |

6.2.3. View menu – Refresh 3D

This command enables to refresh the 3D model. A tick marks if the command is enabled. If you set on, every modification of the floor plan becomes visible in the 3D view.



6.3. 3D views

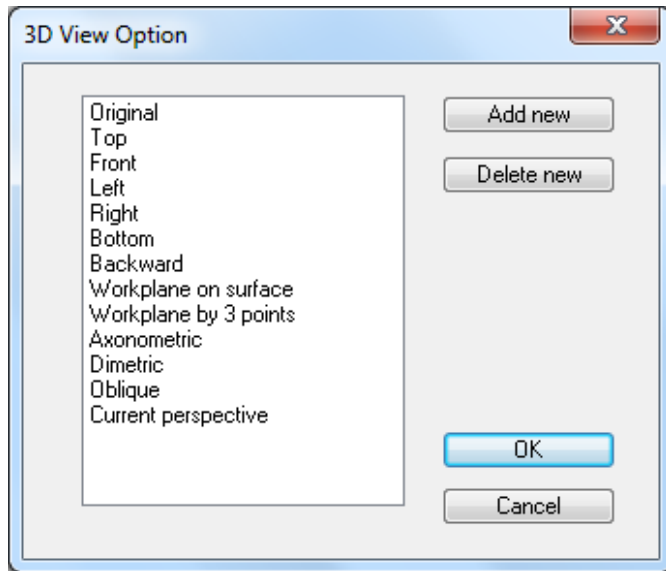
After creating the model, you can display it in different views. When a 3D window is active, to set views you can use: the **View menu – View Properties – Define View** dialog box, or

- ❖ the last six icons of the **3D view toolbar**  for the main views: right side view, front view, top view, axonometric view, back view, left side view or

- ❖ the objects of the **3D view** shortcut menu, which comes up if you right-click the header of a 3D window. The commands of the shortcut menu are the same as the commands in the **View** dialog box.
- ❖ When you apply these views, the contents of the open window are not deleted; the selected view appears in the actual representation mode and with optimal zoom.
- ❖ While working you can use different views at the same time in different 3D windows.

6.3.1. View menu - View Properties – Define View

You can choose from the following views in the dialog box:



Add new

With this command you can save the current 3D projection and assign a new name to it. This new view is added to the list of default view options so later you can select this view from the list too. This command is useful mainly when you save different perspective projections.

Delete new

You can delete a 3D projection that you previously added to the list.

6.3.1.1. Original

Restores the original view and deletes all relative view transformations from the current window.

6.3.1.2. Perpendicular projections

These are the following:

Top view, front view, left and right view, bottom and back view.

6.3.1.3. Work plane on surface

You can define the view with a plane surface of a selected object. It means that the view is the plane surface defined by the object's surface area.

The normal vector of the object surface aims at the viewer.

In this case the origin of the local 3D coordinate system is the perpendicular projection of the global origin on the work plane.

- Select the desired surface, or
if it is not clear which surface to select, first click on the **Select Solid** and click a certain surface of the desired solid.

ENTER Accepts the selected surface, or
NO Select another one.

6.3.1.4. Work plane by 3 points

You can define a view by three points of a work plane.

The first point defines the origin of the local coordinate system. The second and the third points define a vector, which determines the direction of the local x axis (its projected image is horizontal). The normal vector of the view is a vector perpendicular to the coordinate system that was defined by the three points.

- Specify the origin of the view.
- Specify a point on the positive x axis of the local coordinate system.
- Specify another point of the view.

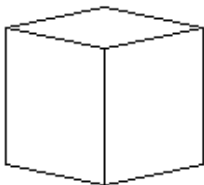
6.3.1.5. Axonometric

Automatically creates an axonometric view.

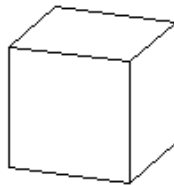
6.3.1.6. Dimetric

Automatically creates a dimetric view.

Axonometric



Dimetric



6.3.1.7. Current perspective

Applies the last set perspective to the selected 3D window.



You can read about perspective in detail in Chapter 6.3.3. *Perspective view*.

6.3.2. 3D view toolbar - Named views



Right view

Displays the right view of the model in the 3D window.



Front view

Displays the front view of the model in the 3D window.



Top view

Displays the top view of the model in the 3D window.



Axonometric

Displays the axonometric view of the model in the 3D window.



Back view

Displays the back view of the model in the 3D window.

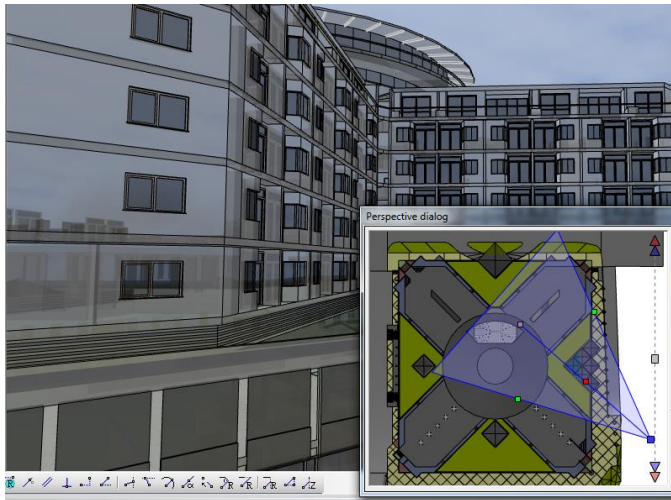


Left view

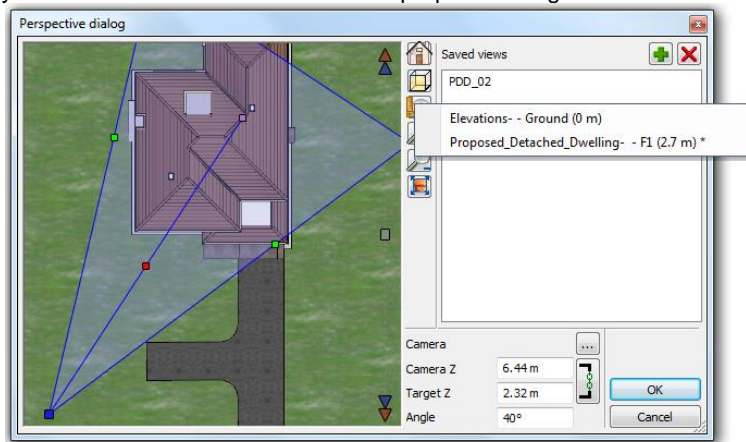
Displays the left view of the model in the 3D window.

6.3.3. Perspective view

You can set the 3D perspective view in the main menu: *View – View Properties – Perspective view* or press the perspective view icon on the Navigation Bar. The view is resizable, and on the left side you can see the top view of the model by default.

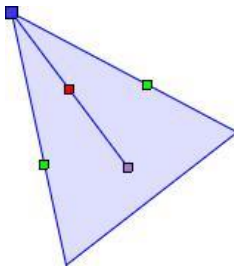


Also, when the project contains more than one 2D drawing, by clicking on the 2D view icon, a pop menu will appear letting you choose the one that contains the proper drawing.



6.3.3.1. View settings - camera handling

You can easily set the desired view by the camera, which you can find in the 3D view in the Perspective dialog window.



Camera tool

The camera tool displays the camera (blue point), the point of view or subject (grey point), the connection of the camera and the point of view (red point) and the angle (green dots) with different colour of markers. You can move the markers easily with the "Drag and drop" method.

The following camera handlings can be implemented using the aforementioned markers:

Viewpoint setting

You can set your viewpoint by moving the camera's marker. The viewpoint always looks at the point of view or subject. The Viewpoint and the Point of view together set the view direction.

Point of view setting

You can set the point of view or subject by moving the correct marker. The viewpoint always points to the subject. The Viewpoint and the Point of view together set the view direction.

Angle setting

You can set the field of view of the camera by moving the corresponding markers.

Camera handling (dolly)

You can move the camera by moving the camera-marker. In this case the viewpoint will move with same extent and direction as the camera. Therefore we call this style of camera handling as dolly, also used to call in the film production, where the camera is moved by a cart.

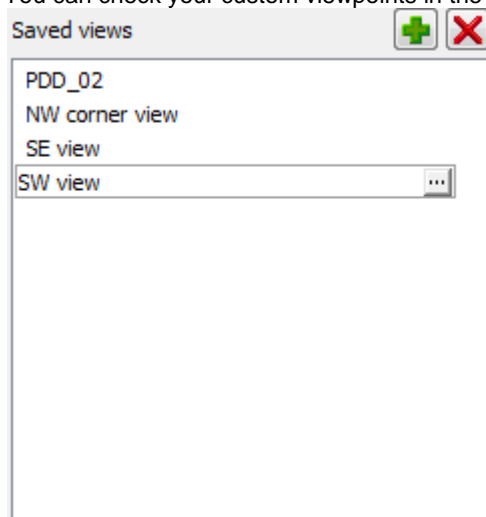
Thus the direction of the camera view is remain, only the spatial position changes.

6.3.3.2. Custom view handling

It is possible to save the individually set views. With this feature you can save your favourite viewpoints and recall them precisely any time.

Saved views list

You can check your custom viewpoints in the Saved views list.



Add view

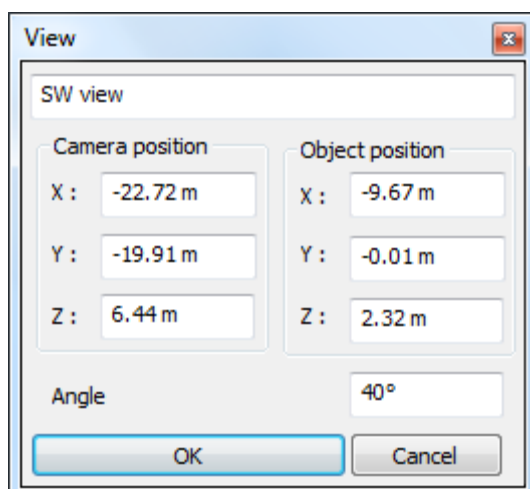
New views can be added to the Saved views List by using the Add view button. A new view will be added to the View List, which can be renamed anytime by clicking on it.

Delete view

You can delete a view from the Saved views List with the Delete View button. Warning! The deletion of the selected view will happen immediately and cannot be undone.

View properties

You can edit the settings of the currently selected view by using the View Properties button. You can change the name and angle and set the details of the Camera and Object Position, which is updated and saved into the selected view automatically by pressing the OK button.



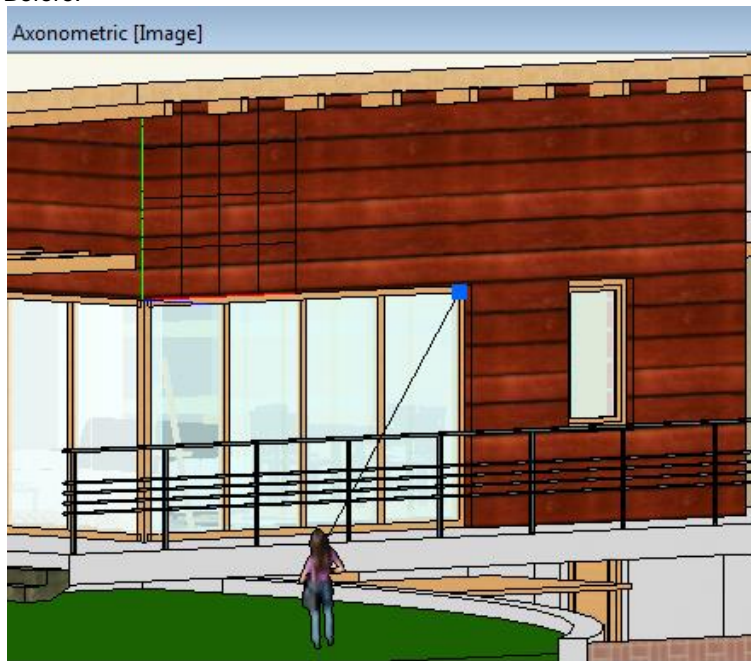
Switch between Views

You can switch between previously saved Views by clicking on the name of the appropriate View. This previously saved View will be activated and will be displayed in the 3D View window when you press the OK button.

6.3.4. Define view by two points

Defines the perspective view by observer and observed points

Before:



After:



6.3.5. Navigation in 3D

You can navigate in the model with the following tools.

- ❖ **Definition of the origin of rotation**
- ❖ Rotation
- ❖ Zooming
- ❖ Shifting

6.3.5.1. Definition of the origin of rotation

The origin of rotation can be defined differently in axonometric and perspective views.

Axonometric

The origin of rotation is specified by the origin of a small co-ordinate system. The origin of rotation can be changed by the relocation of this co-ordinate system.

- Click the Navigation bar - New rotation centre icon.
- Specify the new origin of rotation.

Perspective

In perspective view the origin of rotation is the *observed point*. You can modify this many ways, for example in the *Perspective settings* dialog.

6.3.5.2. Rotation

You can rotate the model around the origin of rotation with:

- ❖ Shift + mouse wheel button pressed
- ❖ Arrows on keyboard
- ❖ Navigation bar

6.3.5.3. Zooming

You can zoom the model with:

- ❖ *Scrolling the mouse scroll*
- ❖ Shift + mouse right button pressed
- ❖ Double click with the scroll button will zoom all
- ❖ Navigation bar

In perspective view, zooming means the modification of the distance between view point and observed point.

6.3.5.4. Shifting

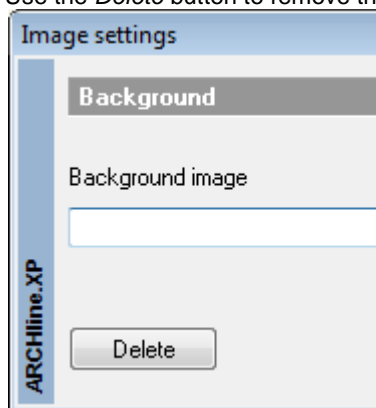
You can shift the model with:

- ❖ *Mouse middle button pressed*
- ❖ Navigation bar

6.3.6. Background image

You can load a background image in the 3D Image window. This will not necessarily affect the rendered image. Background image for rendering can be set differently.

- Click the View menu – View Properties – Background image command.
- Select the background image in the appearing dialog. The image size information appears below the image file path information. The background image always fills the Image window, independently from its size.
- Use the *Delete* button to remove the background image from the window.



6.3.7. Shadows

When you have a hidden-line or coloured or textured model, you can display shadows.

Shadowing - Light direction

Two types of shadowing are distinguished in architectural design:

Sun shadow

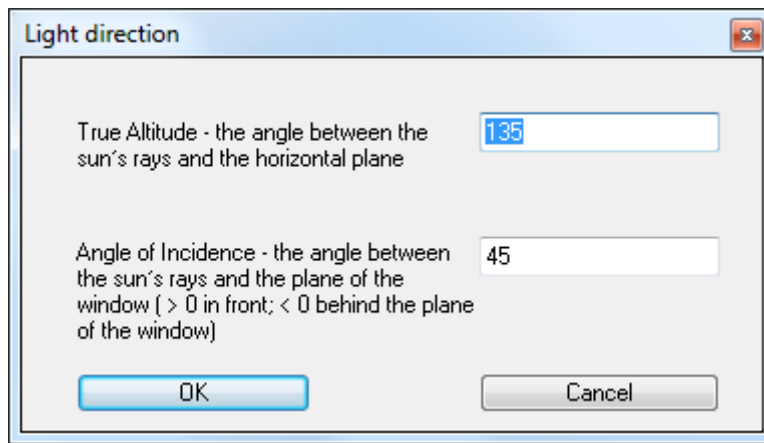
In this case the position of the sun is defined by azimuth and zenith values. The position of the sun is the same as the value set in the Sun settings dialog box.

Click on *Set* to specify values.

Elevation shadow

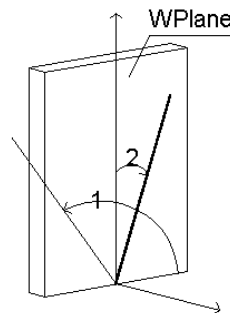
In the case of **elevation shadow**, the sunray comes from a very distant point and reaches the building in an angle that you define. Usually this angle is 45° or 135°, depending on whether the light comes from left or right.

Click on *OK* to specify values.

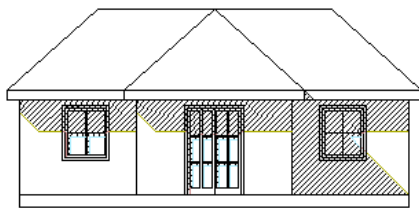


You can define the light source vector with its angle formed with the XY plane (1) and with the angle formed with the current work plane (2).

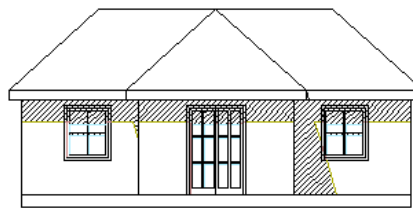
Technical shadow is mainly displayed in the main views.



In these two front views you can observe the difference between the technical shadow and the sun shadow:



Elevation shadow

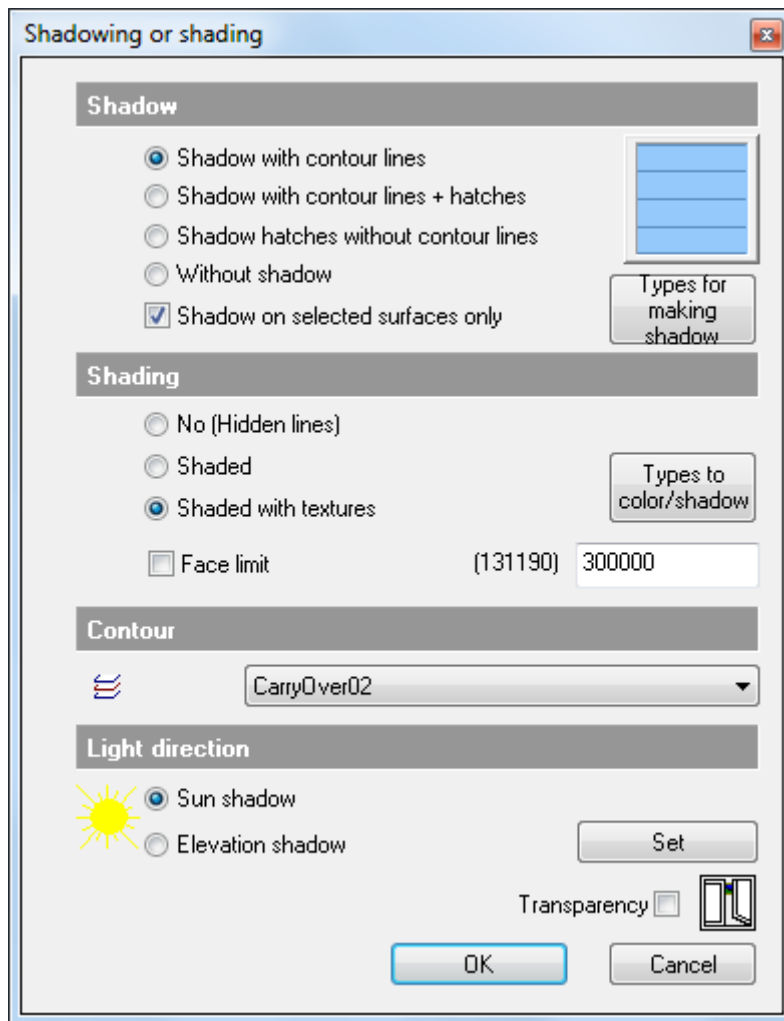


Sun shadow

The models are displayed in hidden-line mode. In both cases contour lines and hatches indicate the shadow, but shading is not added to the models.

Shadow on vector graphics 3D view

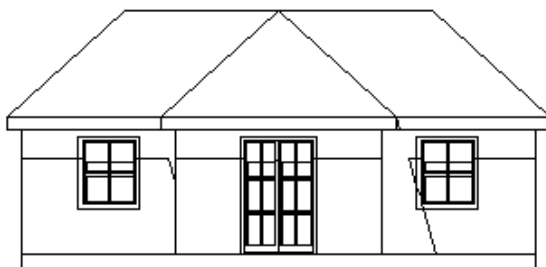
Besides light direction, you can specify how to display the shadow:



The shadow can be displayed *with contour lines* or *with contour lines and hatches*. Click on the icon to set hatch properties.

If you choose *without shadow*, no shadows appear on the model, so you can set a shaded image.

In the previous figure the shadow is made up of contour lines and hatches. Let's compare it with the next figure, where we only displayed the contour of the shadow.



Shadow without hatches

Position of the contour line

Once you decide whether you want the shadow with contour lines or with contour lines and hatching, you can define on which layer to apply the contour lines. This way you can separate the lines from the model. The contour line is always black.

In the hatch general properties dialog box you can specify on which layer to apply hatching.



Shading

In this dialog box you can set the parameters for shading a model. The model can be displayed in hidden-line mode, with material colour or hatched with texture pattern.

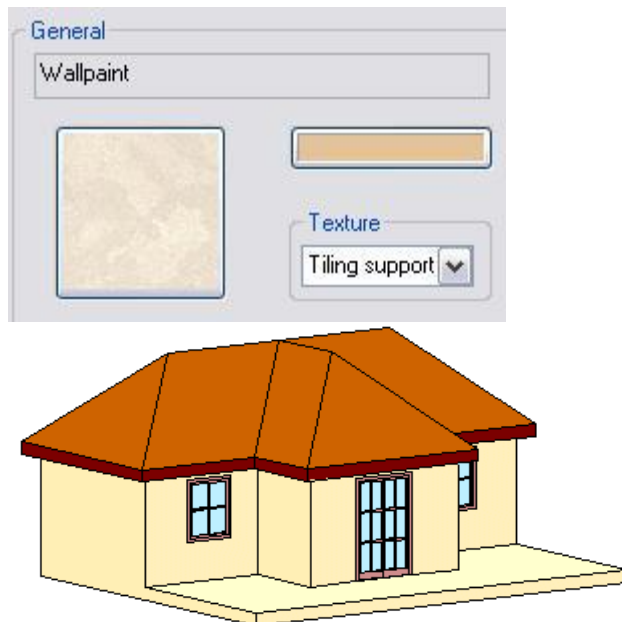


No (Hidden lines)

Displays the model in hidden-line mode.

Material colour

You can display the model with the colours assigned to the materials. If you turn off the shadow (Without shadow) option, you get a shaded image without shadow. The colour is the same as the one assigned to the texture in the Material properties dialog box.

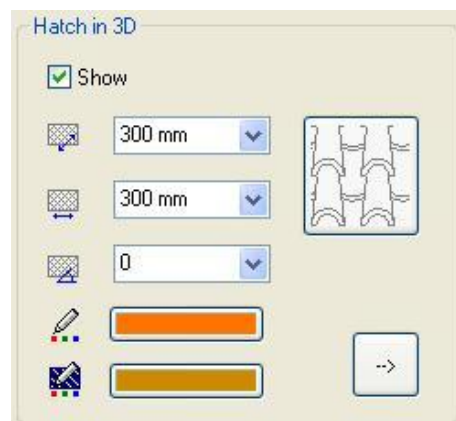


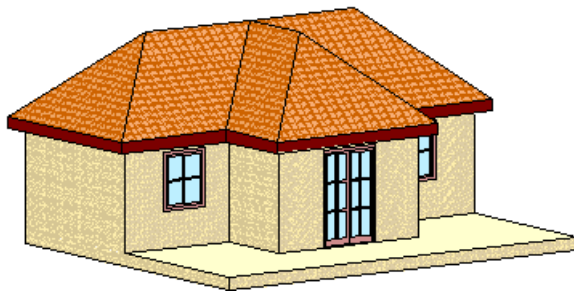
With material colour, without shadow

If you click on the **Types to colour** button, you can give, that on which objects apply the program the colouring. So for example, you can switch off the colouring of objects, which is very time-consuming in the vector graphics 3D window.

With texture pattern and background colour


You can display the model filled up with the hatch assigned to the materials and shaded with the background colour of the hatching. If you turn off the shadow, you get a hatched image without shadow. The colour is the same as the hatch background colour assigned to the texture in the Material properties dialog box.





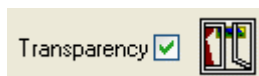
With texture pattern and background colour



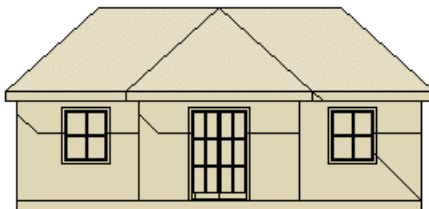
You can also display the shaded model with the **3D view toolbar**  **Hidden lines with hatch** icon, which creates the shaded model or the model hatched with texture pattern depending on the values set.

Transparency

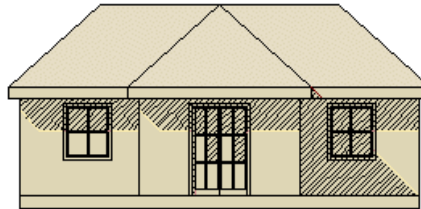
You can set whether the glass surfaces are transparent in the vector graphics image or not.



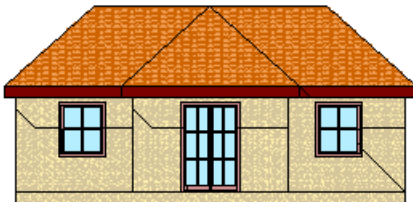
Let's see some examples for technical shadow with different settings:



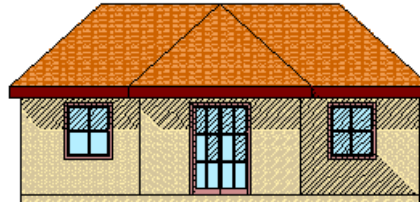
Shadow contour + Material colour



Shadow contour with hatches + Material colour




Shadow contour + Texture pattern



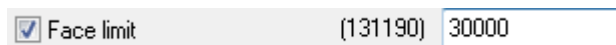
Shadow contour with hatching + Texture



To disable Hidden lines with the hatch command press the **3D view toolbar**  **Hidden lines** icon.

Face limit

When you want to display a 3D model you can define the number of displayed surfaces. If there are too many surfaces, the number of the displayed surfaces can be decreased, so the display of the model can be optimized.



In brackets you can see the number of the model's surfaces. We set the initial limit to 30000.

If the model has more surfaces, the difference is ignored.

The algorithm is the following:

in static cases (3D model, rendering), the program examines the size and the distance of the surfaces. It ignores certain surfaces on the basis of the result of this multiplication. This means that nearer, bigger surfaces remain, the smaller, further surfaces are ignored.

In dynamic cases (OpenGL, DirectX) the program only examines the size of the surface.



You can enable Face limit in the *File -Options - 3D preferences* dialog box.

6.3.8. Heliodon

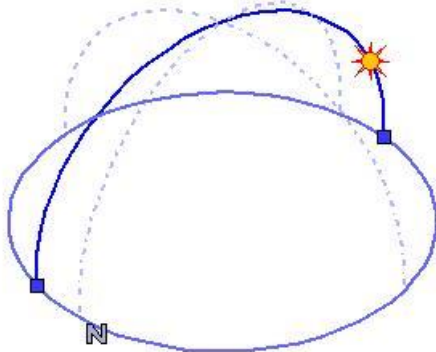
Heliodon is a tool that creates the appropriate geometrical relationship between an architectural scale model and a representation of the sun. By allowing adjustment for solar declination (season), the earth's rotation (time of day), and site location (latitude) a Heliodon can simulate sunlight penetration and shading for any combination of site location and time. The result is a useful representation of solar patterns for clear sky conditions. Heliodon provides an effective tool for the visualization and calculation of solar effects at the window, building, or site scale.

Heliodon tools

You can activate the Heliodon tool on the Sun Setting Toolbar in a 3D window.



The program displays the Heliodon in the centre of the active 3D window. You can switch off the Heliodon with another click on the Sun setting toolbar or with a simple left click on any point of the 3D window except the Heliodon markers.



Heliodon tool

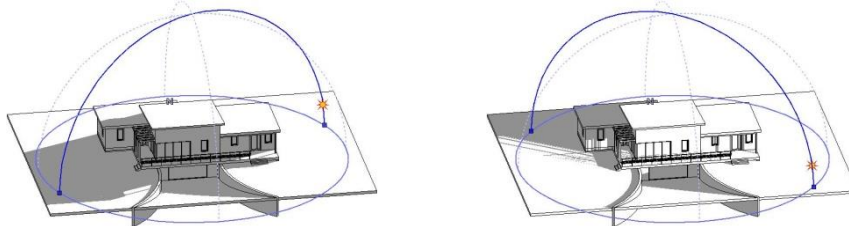
The Heliodon represents the sun position with its azimuth and zenith angle.

Azimuth

An azimuth is an angular measurement in a spherical coordinate system. The vector from an observer (origin) to a point of interest is projected perpendicularly onto a reference plane; the angle between the projected vector and the reference vector on the reference plane is called the azimuth.

See more in <http://en.wikipedia.org/wiki/Azimuth>

You can move the azimuth with the blue dot markers on the Heliodon's flat surface with mouse left click. The model illumination follows the changes and you can see how the building would look at various light conditions.

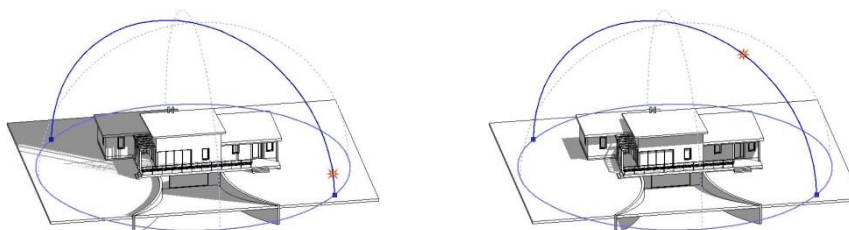


Azimuth movement

Zenith

The zenith is the point in the sky that appears directly above the observer. It helps to describe the location of the Sun. See more in <http://en.wikipedia.org/wiki/Zenith>

You can move the zenith with the small sun marker above the Heliodon's vertical half-circle with mouse left click. The model illumination follows the changes and you can see how the building would look at various light conditions.



Zenith movement

Concentric rings

Two rings represent the North and its perpendicular direction with dotted blue lines. When the designer sets up the right North direction the rings follow the changes. The N (North) sign displays the North direction. The other ring represents the East-West axis.

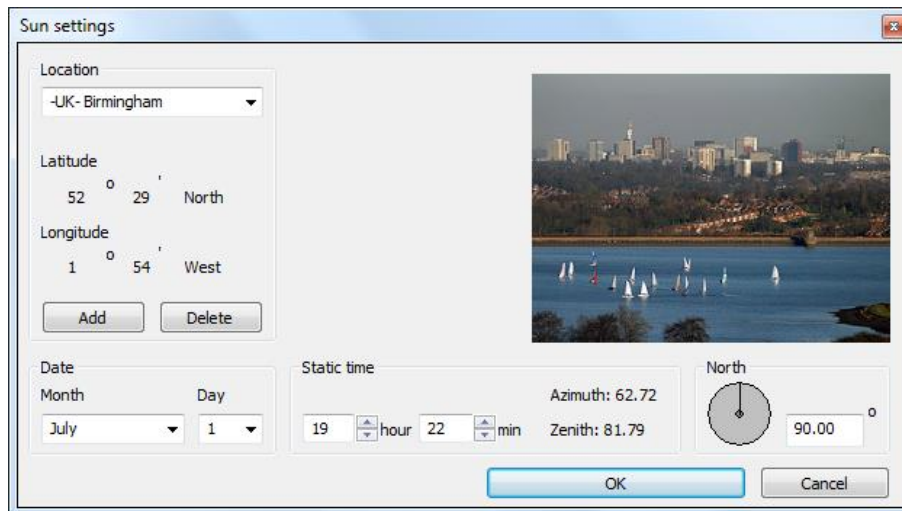
6.3.9. Sun settings

You can open the Sun settings dialog from the *View - View Properties* submenu.

In the dialog box you can set the position of the sun, depending on the geographical position, the date and time.

If you set a value, it appears in the Perspective dialog box. The rendered image is created on the basis of these values. ARCHLine.XP® automatically displays the longitude and latitude of the selected town, as well as the zenith and azimuth values.

The dialog box contains pictures of the towns.



Location

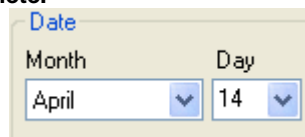
If you select a town from the pull-down menu, the picture and the longitude and latitude values of the town appear.

You can add new locations to the list with **Add** by entering the name, the longitude and latitude values of the town. You can also attach a picture.

To delete a location from the list press **Delete**.

Date

You can set the day and month of the desired sun position.



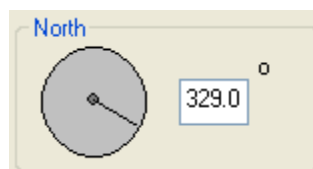
Time

After setting the date, you can set the time of the Sun's position.

If the time you set is during the night, i.e. the sun is under the horizon, the model turns grey to indicate night. At sunrise the model regains full colour.

North

You can define North direction in relation to the horizontal 0 degree. You can set North by entering a new value or by moving the arm. Make sure the North direction set here and the North direction on the floor plan are the same.



If you want to define North graphically, apply the *North direction* command in the View menu / View Properties.

- OK accepts changes and closes the dialog box.



You can start a photorealistic rendering with the **Rendering** icon to see the changes on a rendered image also.



You can also carry out a shadow analysis. The command can be activated from the *Add-On - Animation* submenu. You can read about Shadow analysis in chapter 13.

6.3.10. North direction

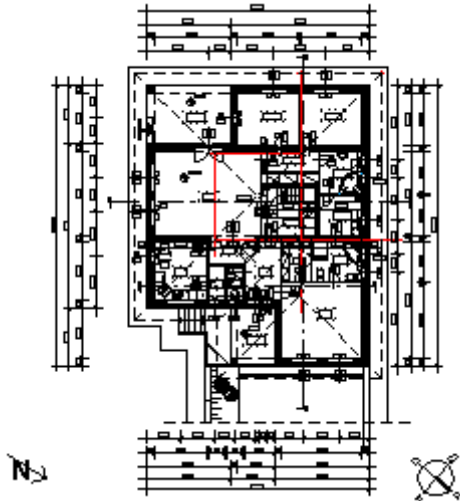
With this command you can define North graphically.

- Make sure the floor plan window is active.
- Click *North direction*.
The program displays a rubber-band line starting from the middle of the screen.
- Define the endpoint of the line.

The direction of this line indicates North.

The symbol in the bottom left corner of the floor plan window indicates North.

If you modify the direction, the symbol follows the changes. This symbol does not show in print.



If you want to specify North with numbers, go to the *Sun position* dialog box.

6.3.10.1. Show on floor plan



Right-click on an architectural object in the 3D window, and in the shortcut menu choose the *Show on floor plan* command. The appropriate floor becomes active; in the centre of the window the program displays the selected object on the floor plan in optimal size. This command is useful in case of large drawings.

6.3.11. Walk and Fly

You can represent the 3D content of your projects in higher quality with the help of the *View - Walk and Fly* commands. This function will help you, when you would like to show the different details of the model in real.

You can do it in that way, as you walk in the building in the reality. You can apply the commands excellently in course of work, because the different settings of perspective views and design are become simple.

You can edit the different 3D objects, as if you stand in the model and work in the virtual space.

You can start the *Walk and Fly* commands with clicking on the *View -*  *Walk* and  *Fly* icon.

It works only in that case if you activate the 3D DirectX window.

6.3.11.1. Terminology

The difference between the Walk and Fly is the moving method in the virtual model.

Walk

In course of walk – like in the reality – the viewpoint height of the spectator doesn't change. When you move in the model with the help of walk, then it moves the viewpoint (the camera) on a fixed horizontal plane.

Fly



In course of fly the viewpoint height of the spectator can change as if it flies the model. This function can be important, when you need higher freedom of movement from Walk. You can reach down and up different levels (for example movement on the step) owing to the freedom open space coordination independently from the size of the model.

Because of the things just mentioned we have to talk about the camera. The camera is that point in the open space from where we look at the part of the model.

The observed point and the camera determine together the direction in which the spectator looks.

The field of view is also important, because you might need wider visual angle in viewing narrow spaces to see the proper part of the model.

6.3.11.2. Handling

You can start the *Walk and Fly* commands by clicking on the *View* -  *Walk* and  *Fly* icon.

When you use the *Walk* or *Fly* commands, the mouse cursor is disappeared and you can move in the space by the help of mouse and the keyboard. You can change the direction of view with the mouse, while you can move in the space with the proper button of keyboard. It is really similar to the movement in the reality, because you can move and look around at the same time. It is easier to understand if you imagine the mouse as the head of the spectator, and the keyboard as the body of the spectator.

You can interrupt the *Walk* or *Fly* command by:

- ❖ Pressing down **ESC**
- ❖ Left click
- ❖ Right click

Using the mouse

In course of using *Walk* and *Fly* functions the mouse determines the view and walk direction. You just have to move the mouse.

| Moving the mouse | Walk | Fly |
|------------------|--------------|------------|
| Forward | Move forward | Move up |
| Back | Move back | Move down |
| Left | Move left | Move left |
| Right | Move right | Move right |

Start a command, move your mouse and study the effect.

Using the keyboard

You can use two sorts of keyboard layout to the keyboard movement.

| 1. Layout | 2. Layout | Effect |
|--------------|--------------|--|
| Cursor up | W | Move forward |
| Cursor down | S | Move backward |
| Cursor left | A | Move left |
| Cursor right | D | Move right |
| Space | Space | Elevate viewpoint |
| C | C | Lower viewpoint |
| Shift | Shift | Run |
| Page Up/Down | Page Up/Down | Jump to the next/previous saved perspective view |



You can interrupt the *Walk* or *Fly* command by:

- ❖ Pressing down **ESC**
- ❖ Left click
- ❖ Right click

Move in open space

It is practical to learn the movement in open space to move efficiently in it. For this you need the mouse and the keyboard at the same time.

Put one of your hands on directions button of the keyboard, and the other one on the mouse.

Start the  *Walk* and  *Fly* command.

After this, hold down the *Move forward* button, and release it when you would like to stop. Move the mouse to look around. Repeat this as many times as you wish.

You will notice that it will move to the direction you are looking at. You can combine the movement keys as you wish according to the simple example mentioned previously, so you have a possibility to complex movement in the open space.

6.4. Hide and Isolate Objects

ARCHLine.XP offers has group of commands that isolate the selected objects (hide everything except the selected ones) or hide the selected ones either in 2D or 3D workspace.

It is very practical tool when you have a large drawing and need to display only one object or a small number of objects.

Menu: View > Isolate

Isolate Object

The Isolate Object command hides all objects except the one you select.

Isolate Selection

The Isolate Selection command hides all objects except the selected ones.

End Object Isolation

The End Object Isolation command displays all objects again.

Isolate with Wireframe

The Isolate with Wireframe command sets the selected objects to be wireframe, enabling you to focus on the not selected ones.

The model can be very impressive in texture mode, if you display certain parts of the model with wireframe.

Hide Selection

The Hide Selection command hides selected objects.

Objects hidden on the floor plan do not show in print.

Isolate classes

The Isolate classes command displays the object classes marked with a tick only. Object classes without tick remain hidden. Click the box on top to select all classes.

Select Similar

The Select Similar command allows you to select objects that are similar to a selected object.

The command will select all of the objects with the same type in the drawing regardless of their properties.

You can apply editing commands in the Property grid that will be valid for the whole selection. The objects remain selected so you can apply more commands to the selected objects.

6.5. Section

Overview - Dynamic section drawing

Section view is one of the most important features of computer aided architectural designing.

The section view is derived from the model of the building and appears as a new drawing in accordance with the model.

The program generates the section view in a new 3D window, perpendicular to the cutting plane.

You can create as many section views of a building as you like. The section view dynamically follows the changes made in the model.

In the section view you can select each object and you have access to the architectural objects. You can change objects in the section view as well as on the floor plan.

Section view can be combined with vector graphics shadowing and with vector graphics hatching but it requires longer generation time. Vector graphic shadows can be calculated from the sun or from an arbitrary angle.

The representation of the section line is defined by a standard that is acknowledged in the field of technical drawing. The section line is a dotted-dashed line with letters (the section's letter symbol) and with arrows at the ends, which show the direction of the section view.

Moving, rotating or mirroring of the section line with the use of section line markers on the floor plan refreshes the section view automatically.

The section line is visible on the view where it was created.

There section view enables the visualization of objects crossing the section plane with or without material hatches and with thin or thick contour lines.

In the ARCHLine.XP® out of the dynamic section drawings the following opportunities are available to create different kind of sections:

Static section

If you did not work out the model in detail, the section provides a good basis for further editing.

With the help of the program's clipboard, you can copy any 3D *views* or *section views* to the floor plan window. The copied drawing loses its connection with the 3D model, therefore it can be freely edited, the view or section can be "dressed up".

For instance, you can specify the order of layers, which you have to indicate on the plan, but it was not represented on the model. With this option the program provides considerable freedom to the designer.

Stepped section in a 3D section window

Section line can be created in a 3D façade view (vector graphics drawing) window, too, even in a stepped form. In that case the newly created section window will include a stepped section.

Cutting a 3D model

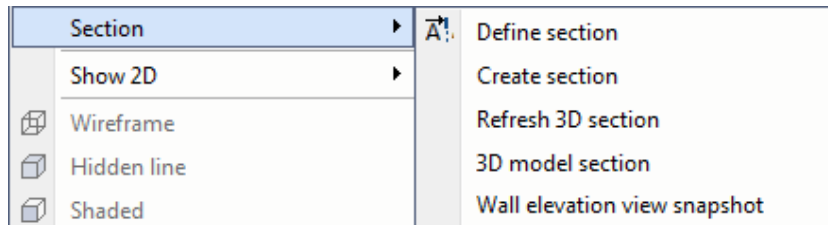
You have the possibility to cut a model with a stepped section line and display the result on a rendered image. This command really cut the 3D model.

Dynamic cutting plane

Applying the dynamic cutting plane in a 3D image window, you can represent the dynamic section in real time. This representation is very useful, not just for aiding the architectural design work, but for a spectacular representation of the building to the customers, too.

6.5.1. Dynamic section

You can generate the section of the model with the commands in the *View menu - Section* submenu.



Follow the steps below to create a dynamic section:

- First can set the properties of the section line, including the lower and upper height limits of the section.
- Then you have to define the path of the section line and set the view direction.
- The program then generates the section view of the model in accordance with the section line in a new section window.

In the section window the program refreshes the section view when changes are made to the model. This can be automatic or optional.

Any changes made to the model in the section window, e.g. deletion of a wall, will appear on the floor plan.

The section window follows the section line: Moving, rotating or mirroring the section line on the plan view by any markers, the section view will be updated immediately


The quality of the section view depends on how detailed the model is, i.e. if there are multi-layered walls, slabs, whether you specified how layers are joined.

The following rules are applied when you create a section:

- ❖ When creating a 3D section view, the name of the window will be generated automatically (Section1, Section 2 etc.). In the *Project navigator* dialog you can rename the section window (the original name of the file that represents the section window will not change).
- ❖ One 3D section window belongs to each section line. This way the connection of one section line to more 3D section window, which makes the section unidentifiable after some time, can be avoided.
- ❖ If a 3D section window that belongs to a section line is in invisible state (you can check it in the *Project navigator* dialog) then the Create section command will pop up a warning message and no new 3D section window will be created.
- ❖ If a visible 3D section window belongs to an existing section line then the section window will be refreshed by the *Create* command.
- ❖ The identification of sections that have been already created in older projects (created by versions prior to ARCHLine.XP® 2007 Release2) is not working.

6.5.1.1. Defining a section

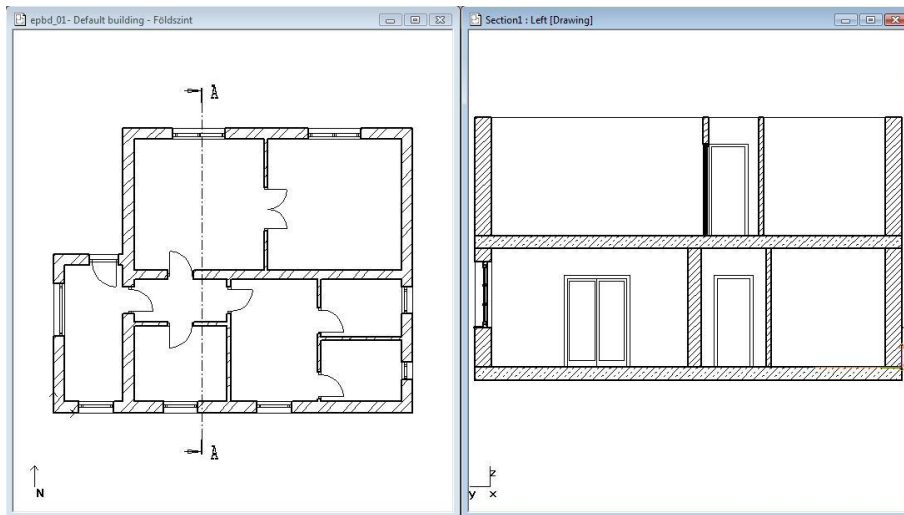
Activate the floor plan. To create a section, follow the steps below:

- Click View menu - Section – Define section or Edit toolbar -  Define section icon.
- The Section properties dialog appears. Specify the properties of the section.
- Set the start and the end point of the section line on the floor plan.
- Click on the side of section line where the section model is viewed from. The program places the arrows on that side of the section line.
- In the appearing message window confirm the creation of the section view.

A dynamic section view is created then in a new section window.



See chapter 6.5.1.2. *Section properties settings*, 6.5.1.3. *Defining the section line*, 6.5.1.4. *Creating sections for the details*.

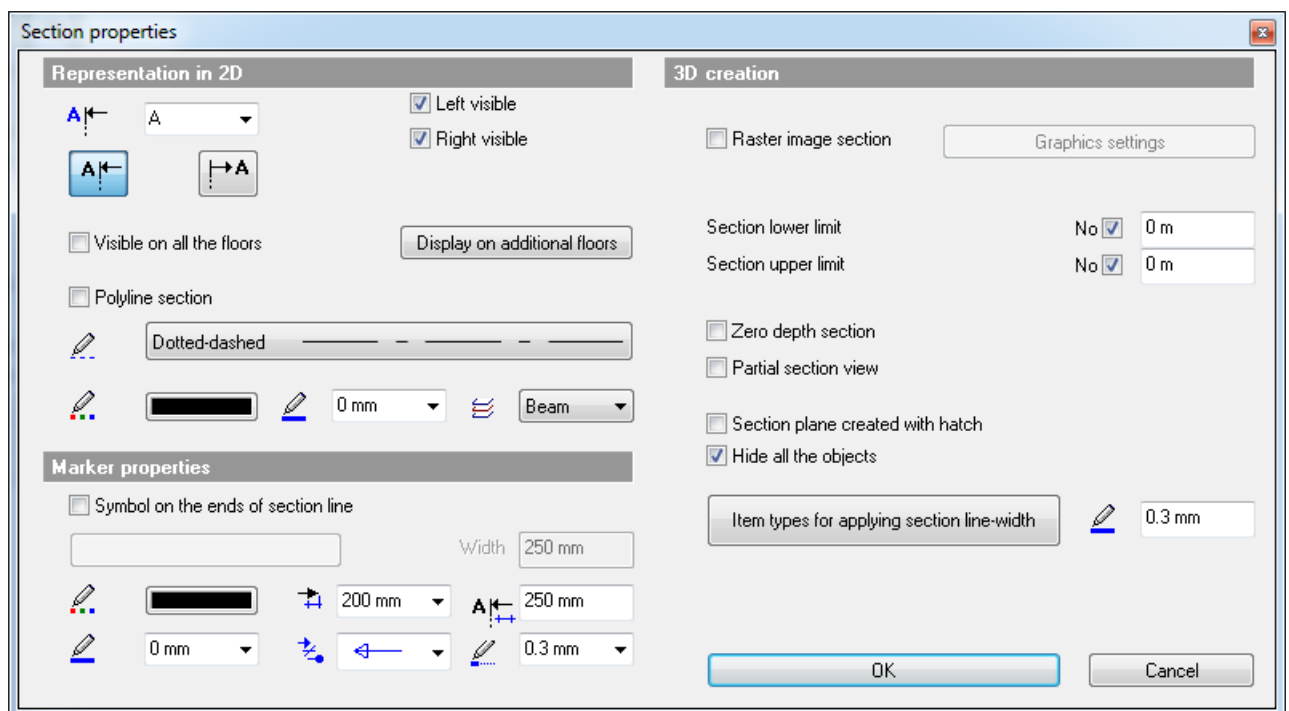


Besides the appropriate setting of view properties in the 3D window (right view, front view etc.), the section view is also capable of creating façade view. In that case place the section line outside of the building and set the proper view direction.

6.5.1.2. Section properties settings

The indication of the section line is defined by a standard that is acknowledged in the field of technical drawing. The section line is a dotted-dashed line, with letters (the section's letter symbol), and with arrows at the ends, which show the direction of the section view.

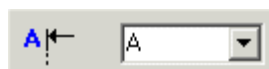
You can define the section properties in the dialog:



Line properties

Set line properties:

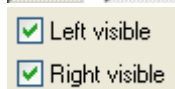
❖ the section's letter symbol:



❖ position of letter symbol:



❖ visibility of letter symbol:



- ❖ the lower/upper limit of section: you can disable this option, or you can set a value
- ❖ colour of section line
- ❖ type of section line
- ❖ width of section line



- ❖ width of marker line:

Marker properties

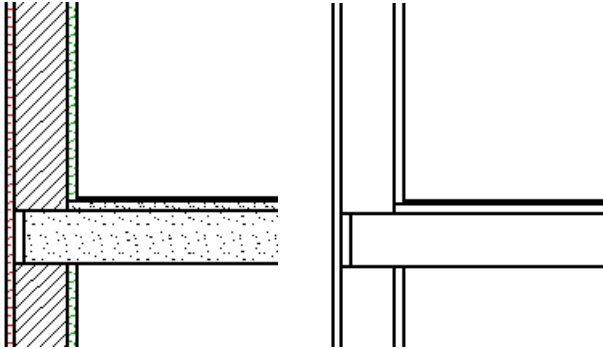
Set marker properties:

- ❖ **colour**
- ❖ line width
- ❖ length of marker line
- ❖ size of marker
- ❖ type of marker

Hatching section plane

When you generate a section view, the program does not apply hatch automatically to the cutting planes, because in the case of big models it would take too long. If you want to apply hatching to the cross-sectional cutting plane, activate **Section plane created with hatch** option.

You can also set the line width of the contour line applied to cross-sectional cutting planes.

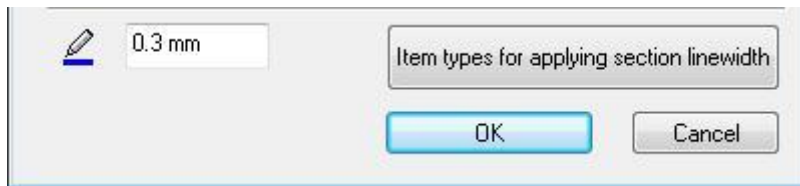


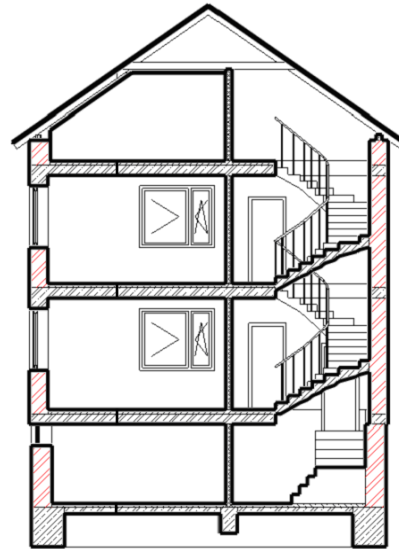
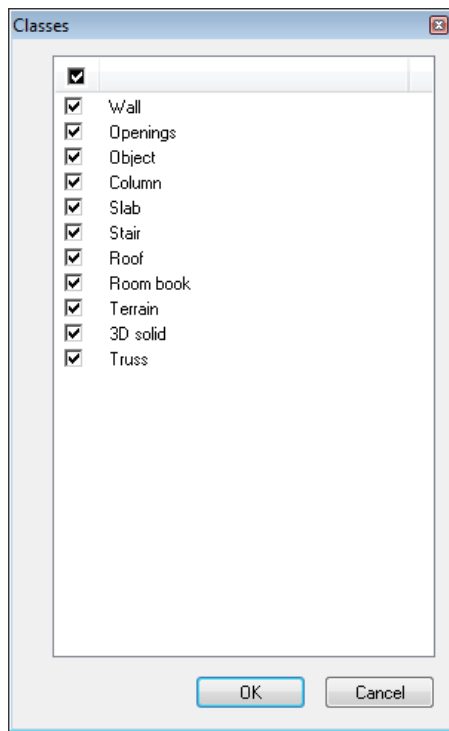
Section properties – Object types for applying section line width

Using the section tool there is the possibility to set different line thickness based on the object type that was intersected by the section plane.

This possibility gives you the ability to visualize main structural objects and other objects with different conditions.

The setting can be found in the Section properties dialog window.

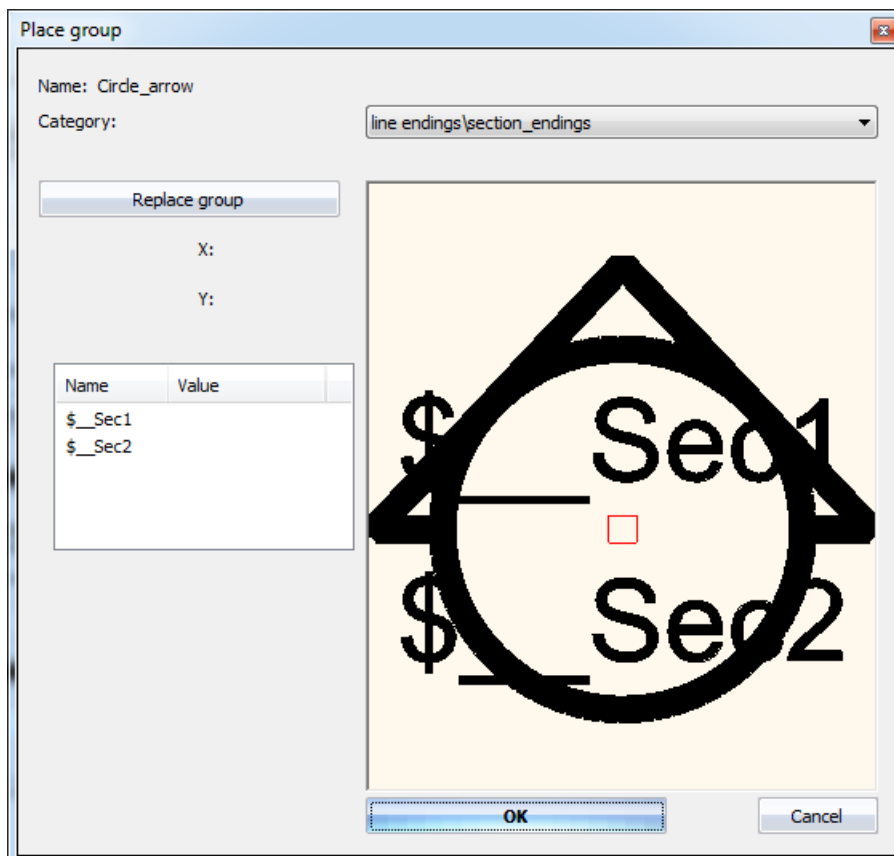
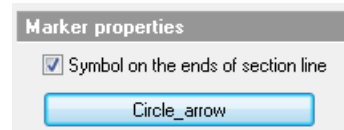


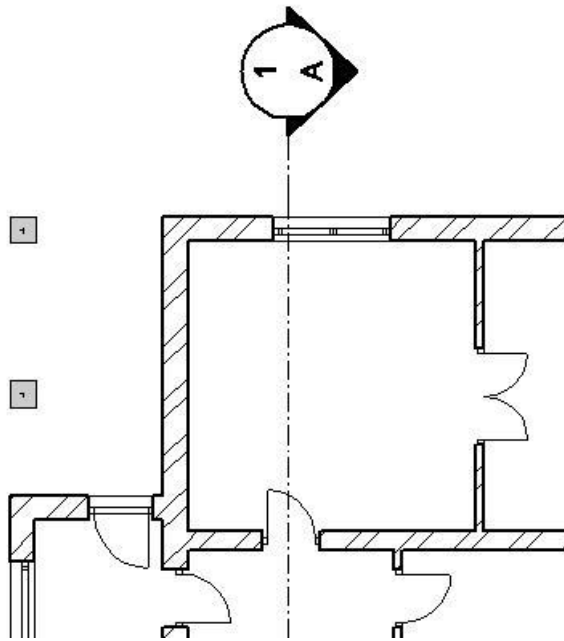


Section symbols

On the ends of section line you can apply different symbols instead of arrows.

- In the Section properties dialog select the *Symbol on the ends of section line* option.
- Click the belonging button and select the appropriate symbol from the Section endings library.
- Enter the value of the variables. For example A '1'.





6.5.1.3. Defining the section line

After closing the *Section properties* dialog:

The path of the section line which will be used for creating the section of the model can be defined as line or polyline.

Line section

- Specify the two end points of the section line.

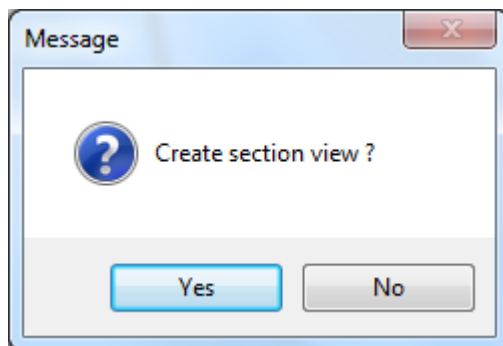
Polyline section

- Define section line with a chain of lines and arcs. You can break the section line.
- **Enter** close the section line.
- To define the direction of the section view, click on the side of the section line from which you observe the model. The program places the markers on this side of the sectioning line.

After the definition of the section line, the program offers the creation of it.

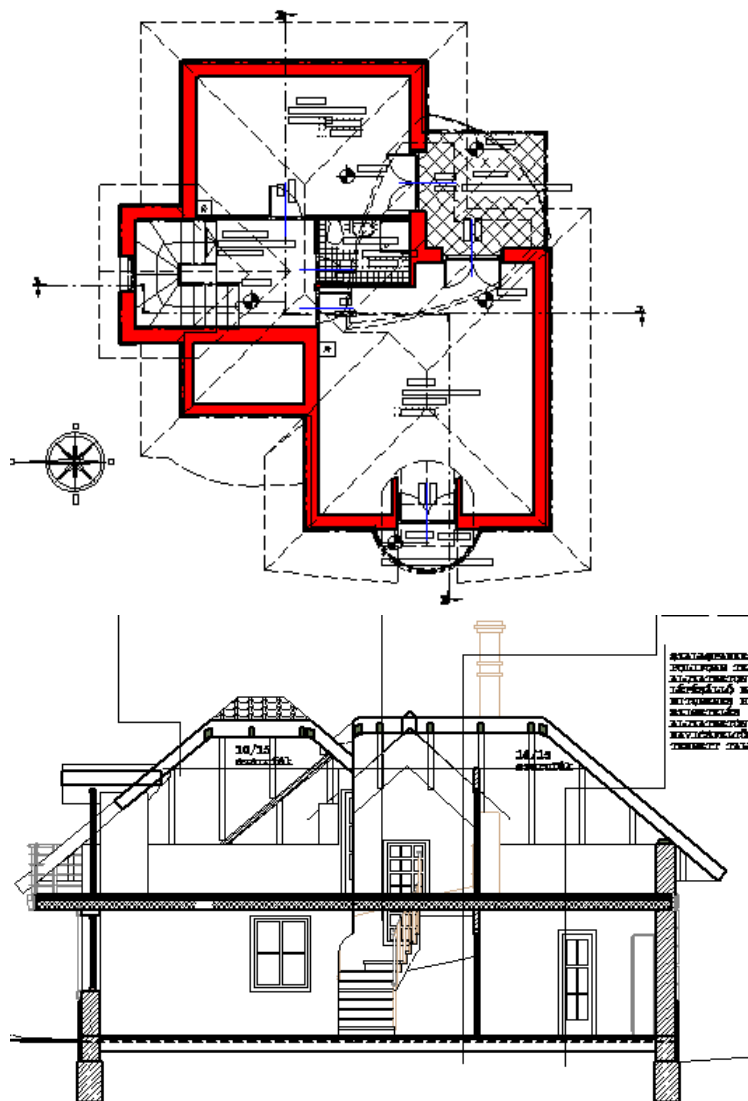
6.5.1.4. Creating sections

After the definition of the section line, the program offers the creation of it.



- ❖ Clicking on **Yes** will create the section.
- ❖ Clicking on **No** will leave the possibility to create the section later by the *View menu - Section – Create section* command. The program creates the section view of the model according to the selected section line

The section appears in a new window (section window), which you can save as part of the project. The program rotates the model according to the direction of the section view.



The program applies hatch to the cross-sectional cutting planes depending on the status of the *Hatch section plane* option in the *Section properties* dialog box.


You can also create the section with the **Section shortcut menu – Create** command.

6.5.1.5. Refreshing the section view

Refresh 3D

This command is a switch to turn on/off the refreshing of the section.

If you **disable** the refreshing of section in 3D, it becomes faster to display the 3D model. This is the default setting. When

using this setting, you can use *View toolbar* –  *Hidden lines* or the *Section – Refresh* command to update the model.

If you add new objects to the plan, and the *View menu - Refresh 3D* option and the *Section – Refresh 3D* option are enabled, the program automatically creates a section view of these objects, too. When the *Refresh 3D* option is switched off, the newly generated object will appear without hatch.



If a 3D section view window belongs to a section line already, the *Section - Create* command will refresh that section view.

6.5.1.6. Modifying section line

Existing section line properties can be modified.

Modify properties

- Double click on the section line.
The *Section properties* dialog appears.

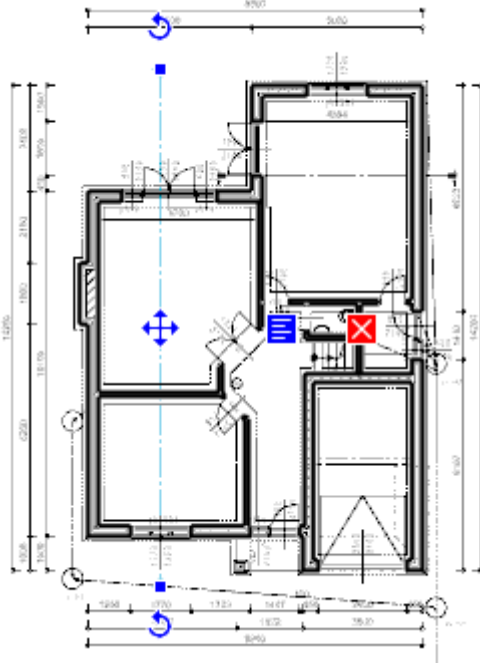
- Make the desired modifications.
- Refresh the section view.

Changing the position

The section window follows the section line: Moving, rotating or mirroring the section line on the plan view by any markers, the section view will be updated immediately

- Click the section line on the floor plan:

Markers appear on the section line. With the help of these markers the section line can be moved, rotated or mirrored. Mirroring means the changing of the viewing direction.



6.5.2. Static section - Copy section view content into a 2D window

During the design work the 3D model, the 3D dynamic section and different views are generated. Even if the model is prepared in details, the 3D sections and views are not capable of using them as approval drawings (because of missing texts, dimensioning etc.).

For this reason there is an opportunity to "unlink" the section view from the 3D model and finishing the section drawing on approval drawing level.

We recommend the followings:

As soon as you finished your work with the model, copy each section views into separate 2D floor plan window (for example 2D Sections) on different floors. For example Section A-A floor, Section B-B floor etc. You can easily activate the requested section view by switching between floors.



It is not recommended to create as many 2D drawing windows as the number of section views!

We recommend you to detail the section views in these 2D windows.

Copying the content of section view into a 2D window

- Create a new window with the *Windows menu - New window 2D* command: for example 2D Sections.
- Make the appropriate 3D section view active.
- Use the Edit menu - Copy to clipboard (Ctrl+C) command.
- Select all objects in the window. Enter - close the selection.
- Specify a reference point on the drawing.
- Make the newly created floor plan window (2D Sections) active.
- Use the Edit menu - Paste from clipboard (Ctrl+V) command.
- Place the drawing in the window by mouse click or keyboard input. Enter.
- In the *Edit floor levels* dialog rename floor 0 to Section A-A, for example. Add new floors and then rename those accordingly.
- Repeat the previous steps and copy each section view on the appropriate floor.

- After this, detail the sections. You can add text and dimensions and additional lines, groups or hatches to finish up your drawing.

There are major differences between 2D section 3D section view windows:

- ❖ The 3D section window follows the changes in the model automatically; it is connected to the floor plan.
- ❖ The connection between the 2D section window and the 3D model is lost; changes on the floor plan are not followed. It includes only 2D drawing objects (line, arch, hatch...); therefore you can edit it freely.
- ❖



The same method is recommended when you work on *facades*. Pay attention to the setting of the correct view in the 3D (drawing) window, and then start the copying to the 2D floor plan window.


Recommendation:


The number of 2D floor plan windows is not limited but it is recommended to work with a maximum of 3 or 4 2D drawing windows, ensuring a clear structure of your project.

- ❖ 1 floor plan window for the *real floor plan*; there are floor plans on different floors
- ❖ 1 floor plan window for the *2D sections*; there are different sections on different floors
- ❖ 1 floor plan window for the *2D facades*; there are different facades on different floors
- ❖ 1 floor plan window for the *site plan*; floors are not used in that case.

6.5.3. Stepped section in a 3D section window

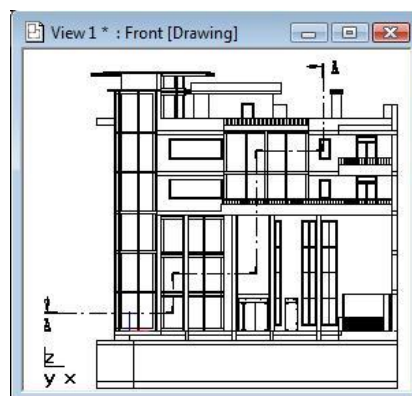
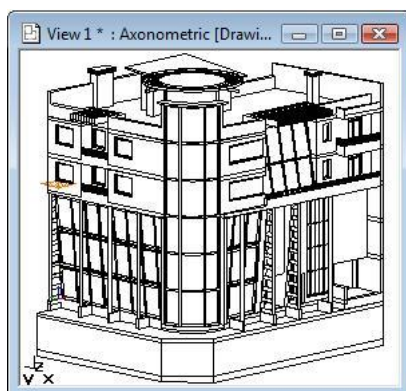
With the *Section – Create section* command you can create not only floor plan sections, but also you can generate a stepped sectional view of a 3D model. You can do it as follows:

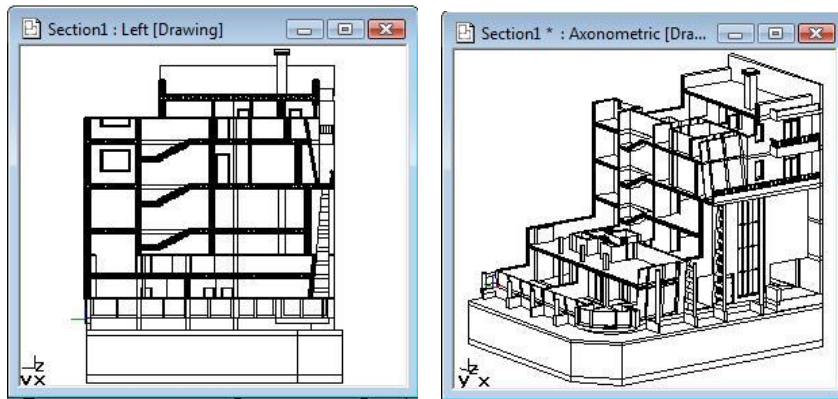
- Create a section view of the model, e.g. front view in a 3D view (drawing) window.
- Click  Define section.
- Draw a section line in the 3D view window and define the direction of the section view.
- Allow the program to create the section or create it later by selecting the section line.

Then a new section window is generated similarly to the sections defined on the floor plan. Create the stepped section by rotating the model properly, and then refresh the window by clicking *View toolbar –  Hidden lines* icon. The section view is created in a new window then, but the model is not cut. 3D image view and rendering still displays the whole model.

Advantage:

The program also preserves the stepped section of 3D model in the section window after you generate the model again.





6.5.4. Cutting a 3D model

You also have the possibility to cut the model in the 3D view window with a stepped section line, and then you can show the result in a 3D OpenGL (image) window on a rendered image.

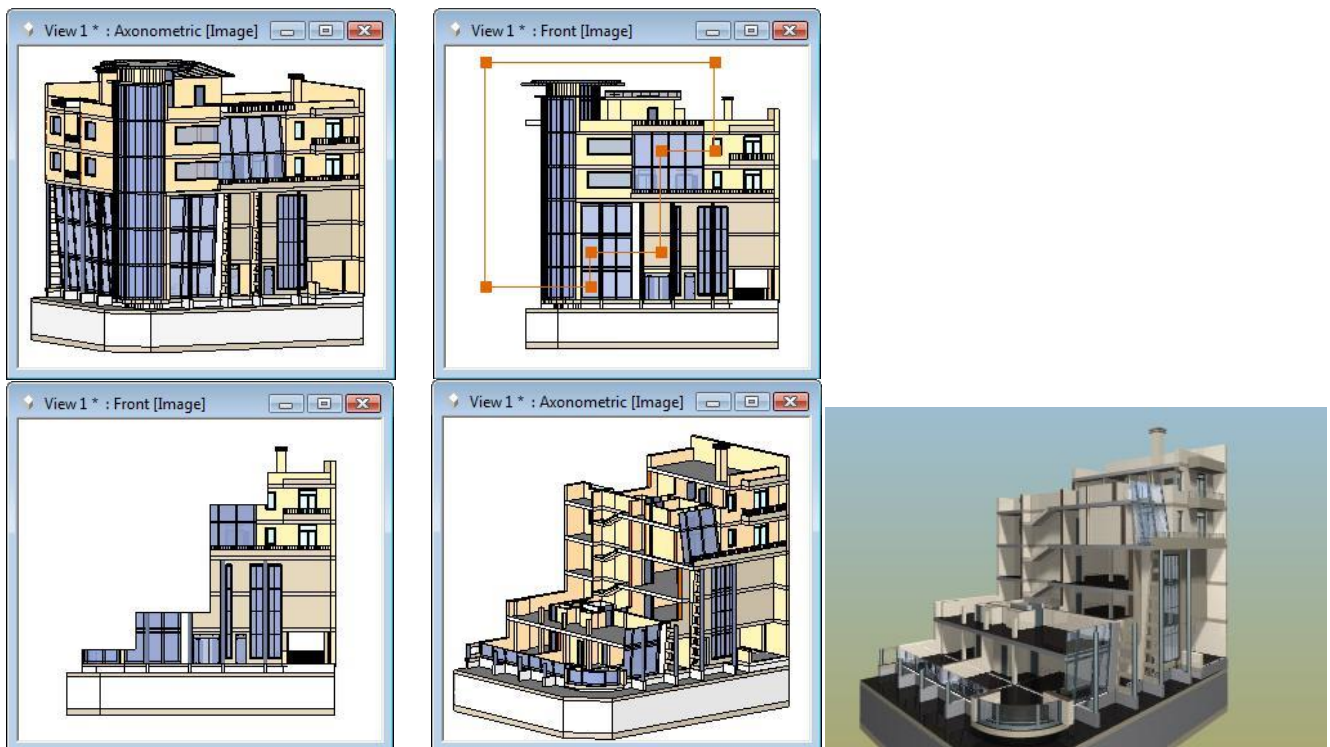
For this you have to use the following commands:

- Create a 3D view of the model in a 3D view (Image) window, for example.
- Select View menu - Section - 3D model section command.
- Select the **Polygon option** from the Profile definition tools appearing on the left side.
- Draw the stepped section line with the polygon. Close the profile.
- Click on the part of the solid, which you will keep after cutting.
- Rotate the model in the window and the stepped section will appear.

The program cuts the model in the 3D view window. 3D image and rendering displays only this part of the model. The cut model remains in the 3D window until you give instructions for generating the whole 3D view of the model again.

Advantage:

As you cut the real 3Dmodel, you can also create a photorealistic picture of the stepped 3D section of the model.

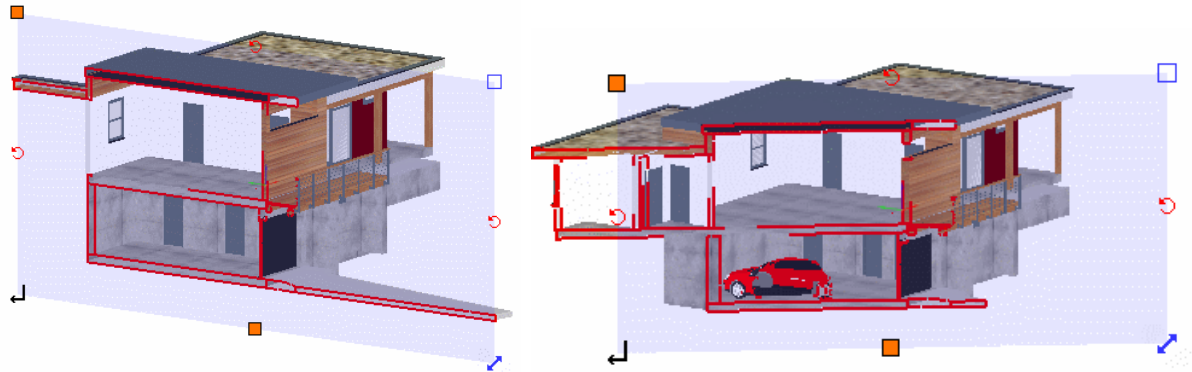


6.5.5. Dynamic section plane

Dynamic section plane command allows you to view any cross-section of the 3D model. It slices the model with an invisible (optionally angled) plane, so you can only see the content of one side of it.

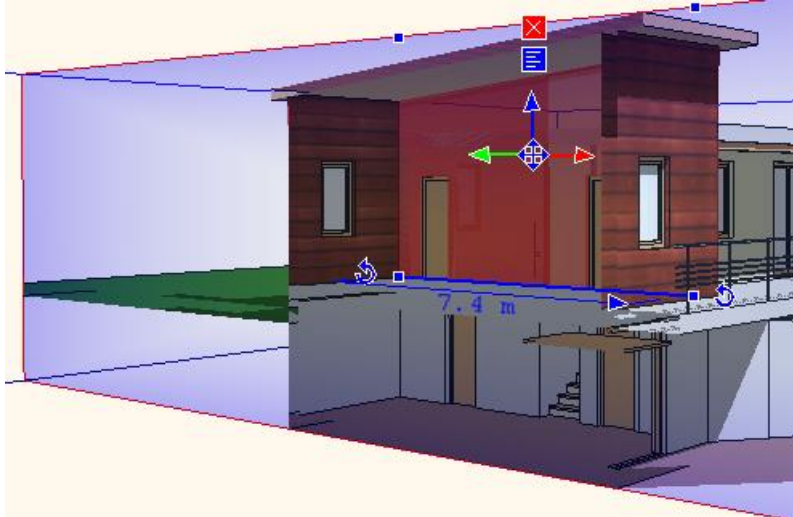
To use the command you have to work in a 3D window (image). You can use this function both in axonometric and perspective views.

The advantage of this function is that you can create a dynamic section defined by a section plane in real time. Therefore it is not just a working tool for the architects but a spectacular representation of the building.




There is the possibility to “click through” the section plane. This will let you edit and change objects even in a dynamic section presentation mode.

This might be useful when you work on axonometric and you want to edit interior parts of your building.

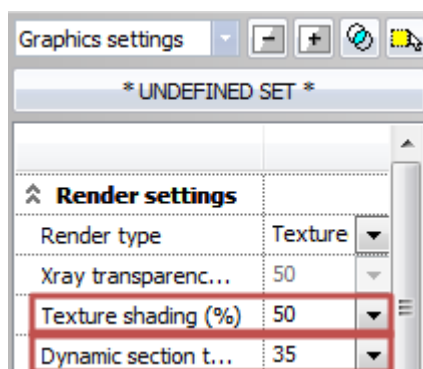


Defining a section

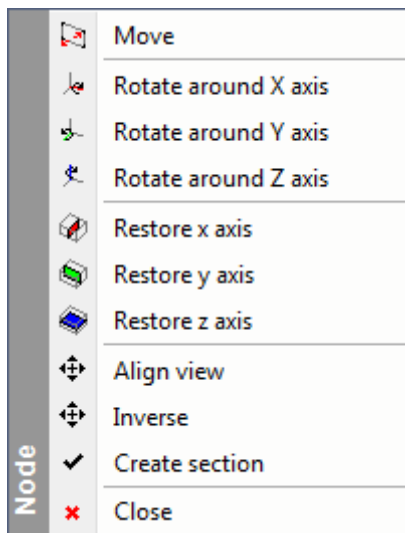
Create your 3D model in a 3D Image window and activate this window. Click  *Define section* on the Edit toolbar.

You will get a section like it is shown on the pictures above.

There are two options in the 3D Graphics settings to change the texture shading and the transparency of the dynamic 3D section plane.



Markers appear in the corners of the dynamic section plane. Click on these markers to see the dynamic section marker menu:

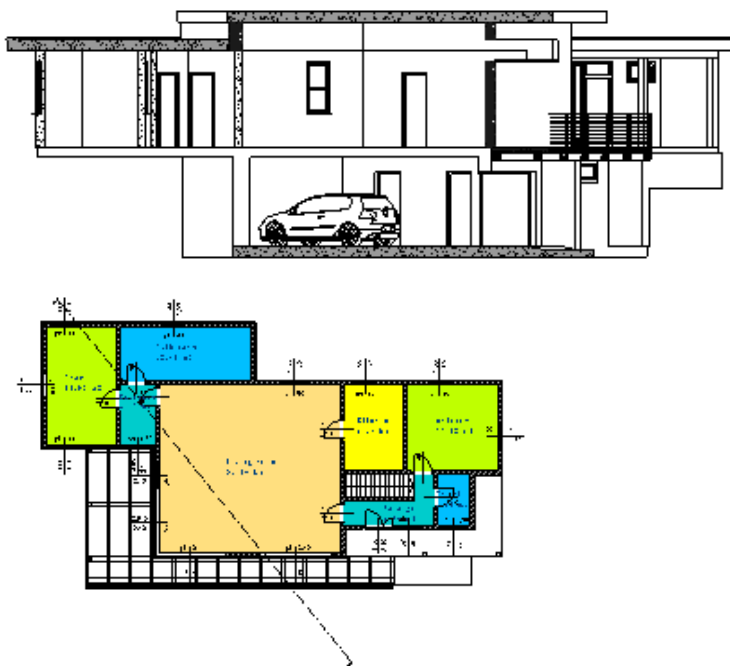


- ❖ **Move:** With this command you can shift the section plane to a direction defined by a normal vector perpendicular to the section plane.
- ❖ **Rotate:** With these commands the section plane can be rotated around horizontal and vertical axes.
- ❖ **Restore:** With these commands you can restore the default position of the section plane.
- ❖ **Align view:** With this command you can set the view to be parallel to the section plane.
- ❖ **Inverse:** This command inverts the section.
- ❖ **Create section:** With the help of this command you can create a dynamic architectural section.
- ❖ **Close:** This command closes the dynamic section tool. The section plane disappears and you can see the whole actual model again.

Limitations

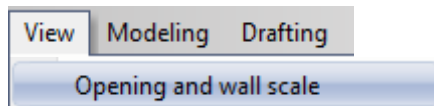
Be aware of the following limitations when you work with dynamic 3D section:

- ❖ **Size of the generated section:** the size of the generated section is independent from the section plane you work with. You will see the whole section in every case.
- ❖ **The angle of section:** in every case a vertical architectural section will be created, independently from the tilt angle of the section plane.
- ❖ **Section line created on the floor plan:** along with the section a section line will be created on the floor plan. The length of this section line is equal with the width of the dynamic section plane. The position of the section line is defined as the horizontal centre line of the section plane projected on the floor plan.



6.6. Opening and wall scale factor

The View menu contains the following command to display the symbol of doors and windows on the floor plan with different scale factors:

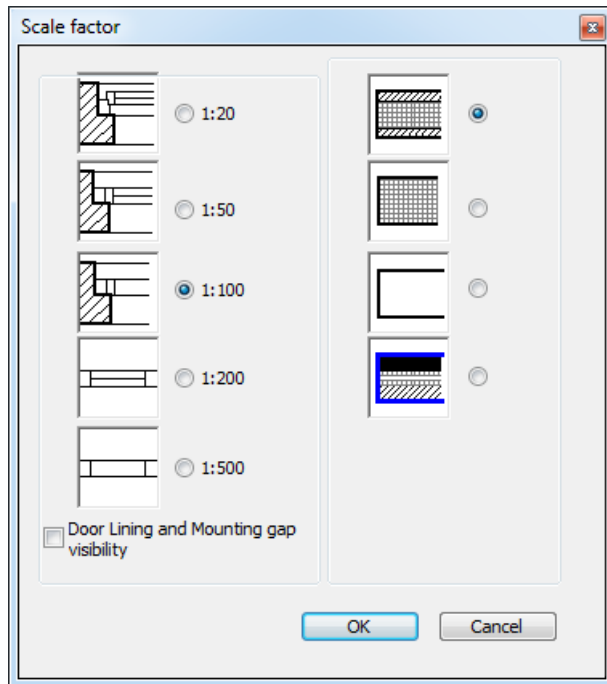


You can specify how walls are visualized independent from the scale factor of the whole drawing.

The abovementioned independence means that e.g. you print your drawing in 1:100 scale, while you set 1:50 for the scale of doors and windows, so these appear on the plan in more detail.

In the dialog box you can set:

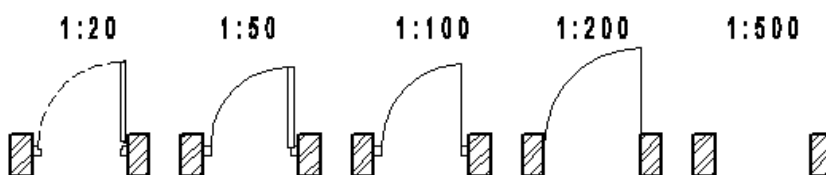
- the scale factor of doors and windows,
- How walls are hatched and visualized on the floor plan.
- Visibility of Door Lining and Mounting Gap parameters in 3D view.



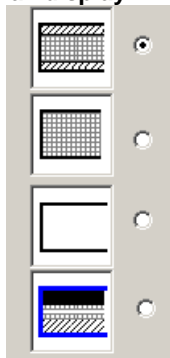
I) Scale factor of doors and windows:

Doors and windows have a standard form of display in all scales. Whichever scale you apply to doors and windows, it does not affect their physical size, only the form of display.

ARCHLine.XP® offers 5 scale factors to display doors and windows (1:20, 1:50, 1:100, 1:200, and 1:500).



II) Wall display

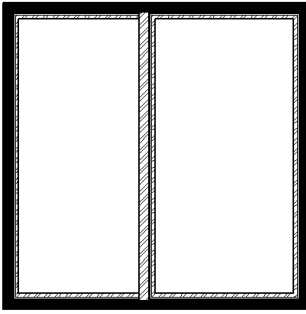


Walls are displayed with all their layers.

Walls are displayed with the hatch applied to the *displayed layer*.

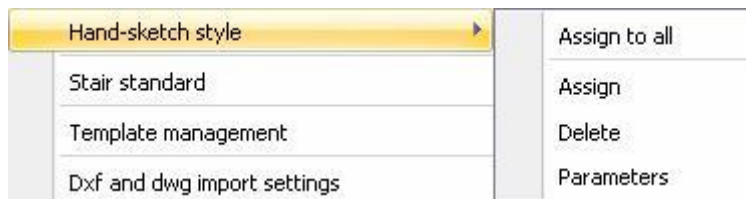
Walls are displayed without layers and hatching.

Independent of the hatching applied to the wall, the outside layer of the building's outside walls are hatched black, as it is displayed in the figure.



6.7. Hand-sketching

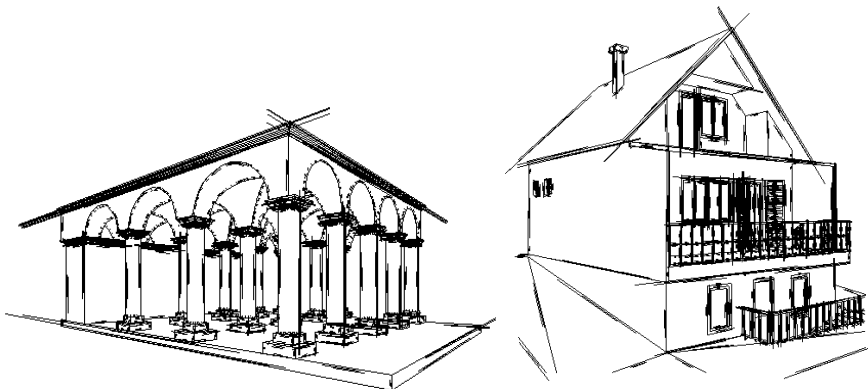
Activate the **File – Preferences – Hand sketch style** command to display the drawing hand-sketched. The quality of the freehand drawing depends on the parameters you set.



The commands are not valid to 3D image windows.

6.7.1. Assign to all

The command assigns freehand-style to the whole active drawing.



To restore the previous style of the drawing, click on **Assign to all** again.

6.7.2. Assign

The command assigns freehand-style to a group of drawings. For instance, you can select the perspective drawing (which is a group) from other drawings on the plot layout, and you can assign freehand-style to it. Naturally, the floor plan is displayed in normal mode.

- Select a group to which you want to assign this style.
- Select other groups, or
Enter to complete the command.

6.7.3. Delete

The command deletes freehand-style from the selected areas of the active drawing.

- Select a group to delete freehand-style from.
- Select other such groups, or
Enter to complete the command.

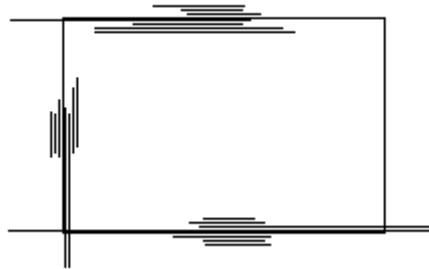
6.7.4. Parameters

The display of freehand drawings depends on the parameters set in the dialog box.

You can modify the following values:

- ❖ the **number of iterations**, which defines line width, and
- ❖ the **divider**, which defines the length of lines.

Try different values and choose the one you find best.



Default

Sets the values back to default.

Set as default

The values you set become default settings.

- **Ok** The program applies the values you set to the existing and future freehand drawings.

6.8. Magnifier tool

Magnifier tool can be used in any design situation, when a fine mouse movement is needed to define a specific point. Using the Magnifier, you don't have to change the actual view, because when you switch Magnifier on, you are able to zoom inside the magnifier borders.

During the use of Magnifier tool you can start and run any other design tool.

Using the Magnifier

You can find the Magnifier command in the View menu. Click on it to switch on/off.

When you switch the Magnifier on, you can move your mouse over the active drawing. You can see the borders of Magnifier.



Use the wheel on your mouse to zoom in inside the borders of the Magnifier. This way you can enlarge the area inside the borders. You can see the actual Magnification value at the left top corner of the Magnifier's rectangle.

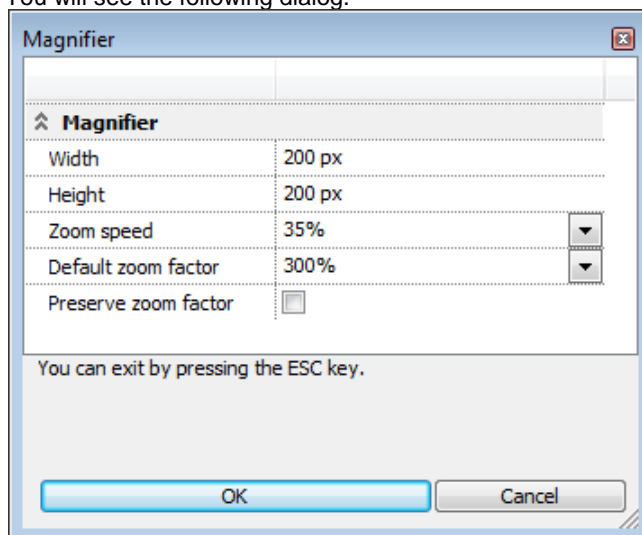


To exit Magnifier, please push the Magnifier icon again on the Status bar of ARCHLine.XP, or push the ESC key on your keyboard.

Magnifier settings

You can change the settings for the Magnifier tool.

You will see the following dialog.



Width

You can set the width of the border of the Magnifier rectangle in pixels.

Height

You can set the height of the border of the Magnifier rectangle in pixels.

Zoom speed

You can change the magnification step, which will be used when you scroll the mouse wheel.

Default zoom factor

By setting the Default zoom factor you can define the starting value of Magnifier, which you will see when you activate the Magnifier tool.

Preserve zoom factor

By setting the Preserve zoom factor, the software will remember the last used zoom factor, when you exit the Magnifier. Next time when you start Magnifier the software will start with the preserved value, instead of the default zoom factor.

7. Selection

General

To apply most editing commands, it is necessary to select drawing objects. The set of the selected drawing objects can be expanded or restricted.

The selected objects appear in highlighted colour.

ARCHLine.XP® offers two methods for most editing commands:

- ❖ According to the first method, you must select an object first and then specify the command to be executed on it.
- ❖ When using the other method, you must specify the command first and then select the object the command is executed on.

Choose the method that fits your needs the best.

You can also select an object in different ways:

- ❖ Clicking on the object with the mouse, or selecting by window (selection rectangle).
- ❖ By using the Selection menu.

7.1. Selection with the mouse

As described in Chapter on *ARCHLine.XP® Interface - 2.10. Mouse*, objects can be selected by clicking with the left mouse button on an object, or a selection rectangle can be defined with the mouse.

In the previous chapter we also described that you can apply an editing command in two different ways. Let's see the first method:

I. First choose the object then an editing command.

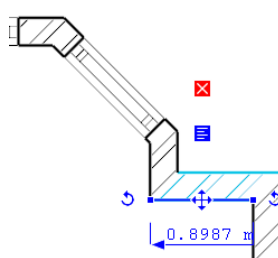
When the mouse pointer is an arrow shape, the objects can be selected as follows.

II. Activate an editing command then select the objects you want the command to be executed on.

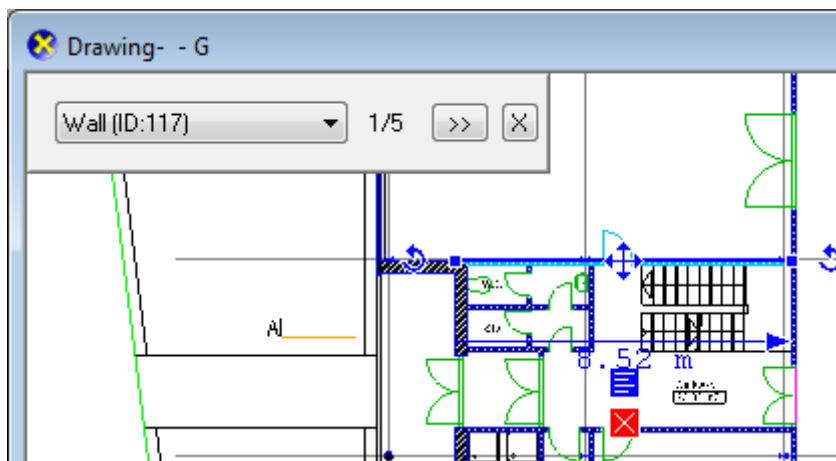
With this method you can select objects in a similar way to the previous method, with the following difference: The selection must be completed with the Enter key.

7.1.1. Selecting one object

- When the cursor is in arrow shape (press the ESC button to get it) you can select an object with the mouse click on it.
- The selected object is *highlighted* and changes the colour to the selection colour.

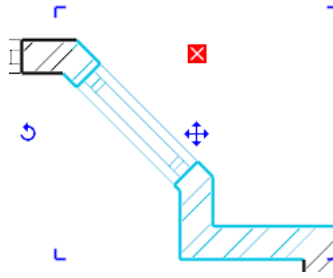


Note: If there are multiple objects at a certain click point, the quick selection menu pops up helping to choose the proper object.




7.1.2. Selecting more objects

- While pressing the **SHIFT** button more objects can be added to the selection.
- Clicking on an object, it is added to the selection.
- ❖ The selected objects change their colour to the selection colour.
- ❖ The objects selected at once only have a *limited set of markers*.



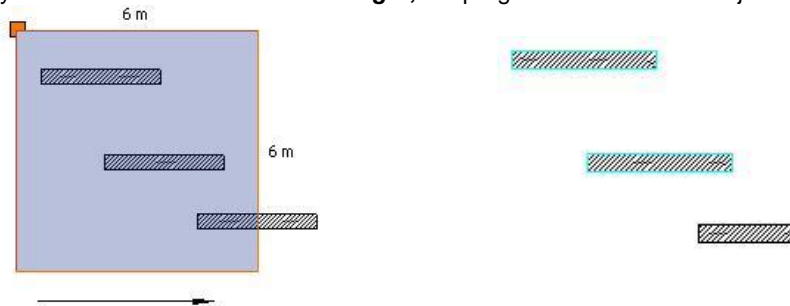
7.1.3. Rectangle selection

When the cursor is in **Arrow** shape , (that means the program is not in active command), there is the possibility to define a selection rectangle. If you click on an empty area of the drawing with the left button of the mouse, you can move the cursor and click again. The program selects the objects that are inside the rectangle. However it is not all the same which direction the cursor is moved.

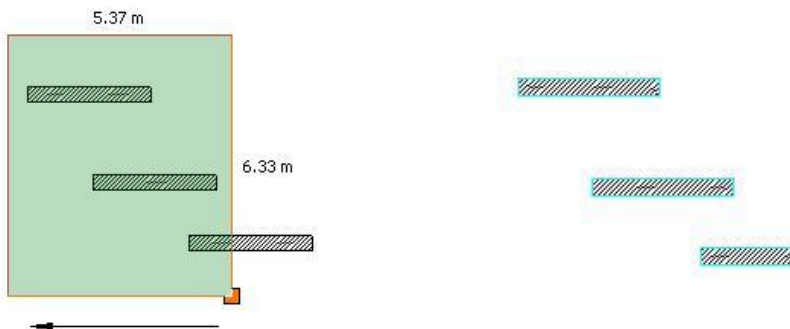
Define the selection rectangle with its two opposite corner points:

- Click with the left mouse button to define the first corner point of the selection window.
- Move the cursor and click to define the other corner point.
-

If you move the cursor **from left to right**, the program selects all the objects that are inside the rectangle.



Moving **from right to left** the program selects all the objects that are inside the rectangle and those also that are cut by the rectangle.



You can apply editing commands to the objects selected.



The *Selection window* highlights the selection area with transparent colour. The colour depends on that you select the area from right to left (green) or from left to right (blue).

7.1.4. Quick Class selection

- Open the Toolbox.
- Press CTRL and click with the mouse left button on an icon. The command selects all objects on the drawing from the given object class. Example: The objects that are selected can be modified together using the Property manager.



For a detailed description of the option see the instruction 2.5 *Toolbox*.

7.1.5. Quick selection dialog

Quick selection dialog can be helpful in case of complex drawings when more objects found by a left mouse click selection operation. It can happen that you have to select the desired object from a range of 5, 10 or even more objects.

Quick selection dialog makes the overview of more objects easy by creating a clear, user-friendly selection list.

How to use

When clicking a point with left mouse button on the drawing where more objects found, press TAB key repeatedly for switching between objects. At the same time the Quick selection dialog appears by which you can monitor the state of selection continuously.



The Quick selection dialog doesn't appear when you can't switch to another object (for example there is no other object nearby).

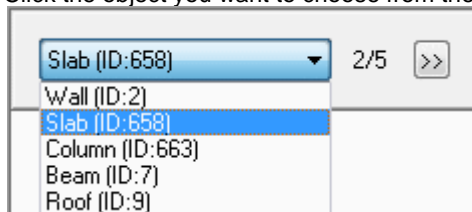
Quick selection dialog shuts down by cancelling the selection.

Quick selection list

The list appearing in the Quick selection dialog helps to choose the desired object from the list of more objects. Click the quick selection list button for this.



Click the object you want to choose from the appearing list and then it will be selected on the drawing.




After that you can modify the properties of the selected object in the appearing Property manager on the left or different operations like rotation or move can be executed.

Forward button

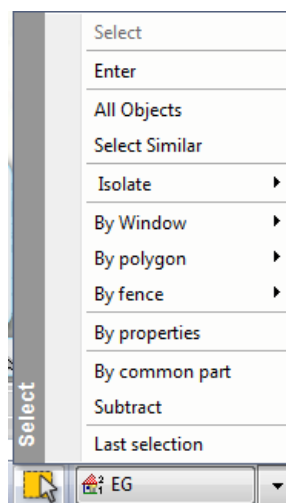
With the help of Forward button you can switch to the next object in the selection list. Its operation is the same as pressing the TAB key repeatedly. Click Forward button to choose the next object in the list.



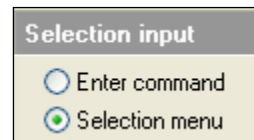
7.2. Selection menu

To select, you can use the  button in the Status bar that activates the Selection menu.

With the pop menu you can select objects in the drawing by using different options. The Selection menu can be used for pre-selection of objects and also for selection within an editing command. In the latter case selection must be completed with Enter.



The *Selection menu* also appears when the program is waiting for selection, and you press the right mouse button. In this case it is a precondition that in the selection field in the *File -Options -Right-click Customization* dialog box instead of the Enter command you assign **Selection menu** to right-click.



7.2.1. Enter

The selection is completed with the Enter key or the Mouse right button click.

7.2.2. All Objects

This command selects all objects.

7.2.3. Select Similar

The **Select Similar** command lets you choose all objects on the current floor with the type of the selected object, e.g. all walls.

7.2.4. Isolate

A group of commands that isolate the selected objects (hide everything except the selected ones) or hide the selected ones either in 2D or 3D workspace.

7.2.5. Selection by window

Options of selection by window:

One floor - in

The program selects all the objects on the current floor that are entirely within the selection window.


One floor - out

The program selects all the objects on the current floor that are entirely outside the selection window.

All floors - in

The program selects all the objects on all floors that are entirely within the selection window.



With this instruction it is easy to select the entire building. It is useful if you want the building to be placed to a definite location on the key plan or the terrain, or to be rotated as moved. For this transformation you can use the *Move*  instruction and "Multitrans" option.

All floors - out

The program selects all the objects on all floors that are entirely outside the selection window.

- Specify a corner point of the window.
- Specify the opposite corner point.

7.2.6. Selection by polygon

Options of selection by polygon:

One floor - in

The program selects the objects on the current floor that the selection polygon entirely encloses.

One floor - out

The program selects the objects on the current floor that are entirely outside the selection polygon.

All floors - in

The program selects the objects on all floors that the selection polygon entirely encloses.

All floors - out

The program selects the objects on all floors that are entirely outside the selection polygon.

- Specify the first corner point of the polygon.

- Specify the next corner points of the polygon. The polygon may also contain arcs.
- **Enter** Ends the selection of the corner points.

7.2.7. By fence

Options of selection by fence:

One floor

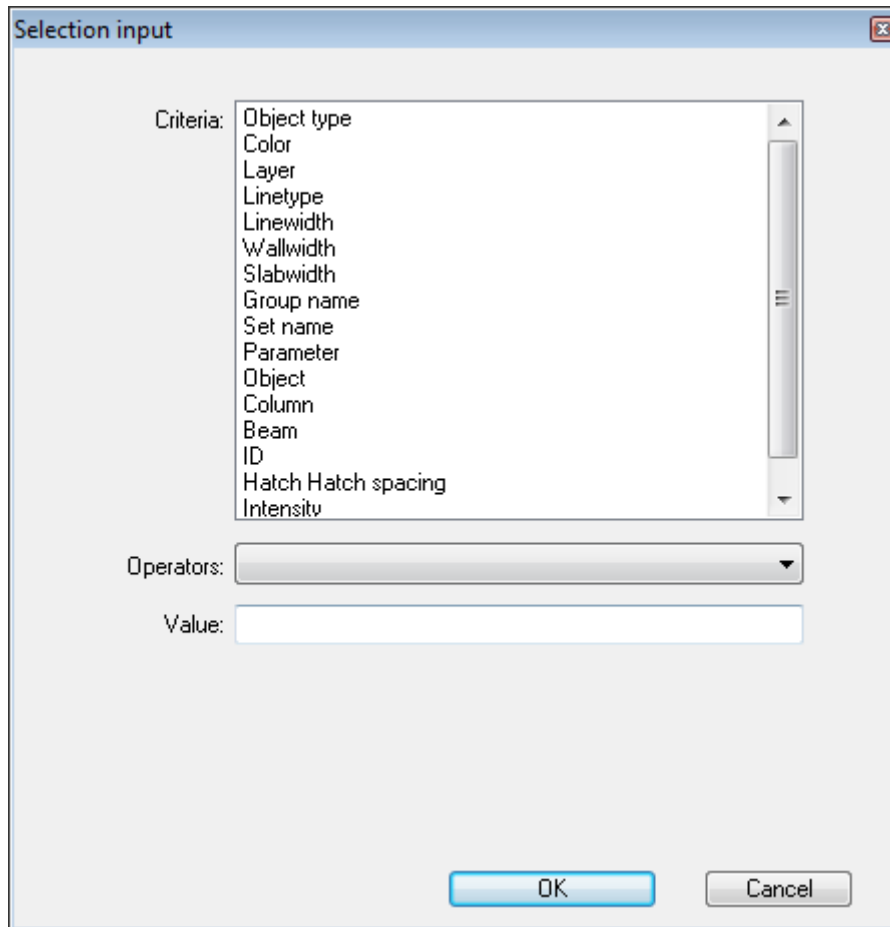
The program selects all the objects on the current floor that intersect the specified fence.

All floors

The program selects all the objects on all floors that intersect the specified fence.

- Define the fence as a series of lines, arcs with which you select the objects.

7.2.8. Selection by properties



- Specify the criterion of selection.
- Specify the operator that depends on the defined criterion.
- Specify the value of the operator (if any).



In the case of a complex logical criterion, after *specifying all criteria* and selecting the appropriate logical operation, the dialog box must be closed with **OK**. You can continue specifying the criterion by recalling the *Selection by properties* dialog box.

- Specify the logical connection by selecting the appropriate option:

Add / Or relation:

Expands the previous selection with objects meeting the new criterion.

7.2.8.1. Object type

The program selects all objects that belong to a certain object type in the drawing.

Operators associated with object types:

| | | |
|--------------------|---------------------|-----------------------------|
| All objects | Polyline | OLE document |
| Room | Spline | Truss |
| Wall | Circle | Freeform Surface |
| Column | Circular arc | Light |
| Beam | Ellipse | Electrical Accessory |
| Slab | Elliptic arc | External louvre |
| Roof | Dimension | |
| Stair | Text | |
| Terrain | Hatch | |
| Objects | Group | |
| Point | Raster image | |
| Line | Room book | |

- Select the desired object type.

With this option you can select e.g. all walls on a given floor.

7.2.8.2. Selection by object type with the Ctrl key

Another, quicker way of selection by object type is the following:

By choosing a main icon in the Side menu and using the CTRL key, the program selects all the objects in the drawing that are represented by the icon.

- Press Ctrl and click one of the main icons in the Side menu, for example: **Wall**. The program selects all walls in the current drawing.

7.2.8.3. Colour

You can carry out the selection with the defined colour.

Operators associated with colour:

- ❖ **Add**
Selects the objects of a specified colour.
- ❖ **Except the following values**
Selects the objects that have different colour than the defined one.
- Select the colours from the colour palette, or
Enter the colour indexes in the *Value* field separating them by spaces. You can specify more colours at a time.

Value: 

7.2.8.4. Layer

You can carry out the selection with the defined layers.

Operators associated with layers:

- ❖ **Select**
Selects all objects placed on a specified layer.
- ❖ **Except the following values**
Selects all objects that are not on the specified layer.
- Select the desired layer from the pull-down menu, or enter its number or name in the *Value* field.
You can also define more layers at a time, separating them by spaces.

Operators: 

Value:

7.2.8.5. Line type

You can carry out selection with the defined line type.

- ❖ **Select**
Selects all objects of a defined line type.
- ❖ **Except the following values**

Selects the objects that have a different line type than the defined one.

- Click the line type button. From the list displayed select the desired line type, or enter the index of the line type in the *Value* field. You can also define more line types at a time, separating them by spaces.

7.2.8.6. Line width

You can carry out selection with the defined line width.

- ❖ **Equal**
Selects the objects of a specified line width.
- ❖ **Not equal**
Selects the objects that have a different line width than the specified one.
- ❖ **Region**
Selects all objects the line width of which is within the specified region.
- ❖ **Out of region**
Selects all objects the line width of which is outside the specified region.

- When applying the *Equal* and *Not equal* commands, choose the appropriate line width from the pull-down list of the *Value* field, or enter its value. You may define only one value.

- When applying the *Region* and *Out of region* commands, enter the lower and upper limit of the region in the appearing fields.

7.2.8.7. Wall width

Selects walls of a specified width according to different criteria.

- See the selection properties as 7.2.5.5. Selection by line width.

7.2.8.8. Slab width

Selects slabs of a specified width:

- The selection unit is slab width. Otherwise see the selection properties as 7.2.5.5. Selection by line width.

7.2.8.9. Selection by group name

As a result of the selection, you get all the groups that you defined by a given name.

- Define the desired name.

7.2.8.10. Selection by style name

As a result of the selection, you get all the objects the selected set name is assigned to.

- Select the desired set name.

7.2.8.11. Selection by parameter

As a result of the selection, you get all the groups that you defined by a given name.

- Define the desired name.

7.2.8.12. Selection by object

As a result of the selection, you get all the objects, that you defined by a given name.

- Select the desired name.

7.2.8.13. Selection by column

As a result of the selection, you get all the columns, that you defined by a given name.

- Select the desired name.

7.2.8.14. Selection by beam

As a result of the selection, you get all the beams, that you defined by a given name.

- Select the desired name.

7.2.8.15. Selection by ID

As a result of the selection, you get the object that you defined by a given unique ID.

- Define the desired ID.

7.2.8.16. Selection by Hatch Spacing

Selects hatches of a specified width:

- See the selection properties as 7.2.5.5. Selection by line width.

7.2.8.17. Selection by Intensity

Selects light sources of a specified Lumen value:

- The selection unit is Lumen (lm). Otherwise see the selection properties as 7.2.5.5. Selection by line width.

7.2.9. Common part of selections / And relation:

Selects only those objects that meet both the previous and the new criteria.

7.2.10. Subtract

Selects only those objects that meet the previous criteria but not the new ones.

- Specify a new criterion and an operator that will be the new condition for selection.
- **OK** Close the dialog box.
- **Enter** End the instruction.

Doing so, you can specify the selection even on the basis of a complex system of conditions in the same dialog box. You can also specify the system of conditions in different dialog boxes one after another.

Let's see the criteria and the associated operators.

7.2.11. Last selection

The program activates the last selection, thus the previously selected objects can be further edited.

8. Editing

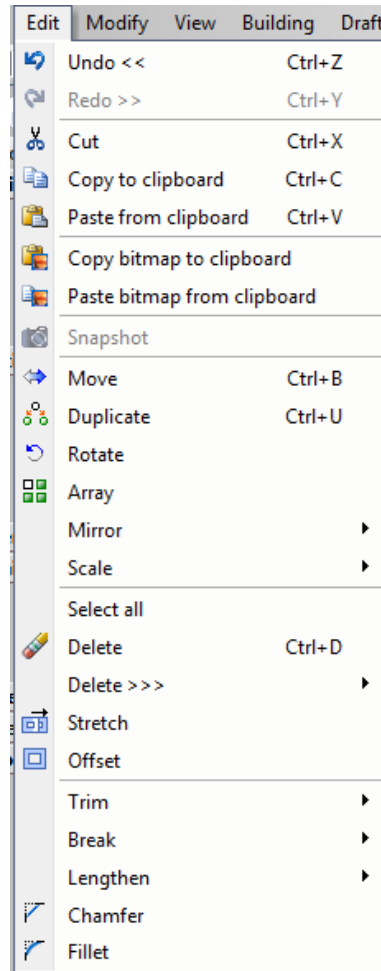
This chapter describes the editing commands, including: move, copy, rotate, mirror, scale, delete, stretch and offset.

With the editing commands you can edit the selected objects.

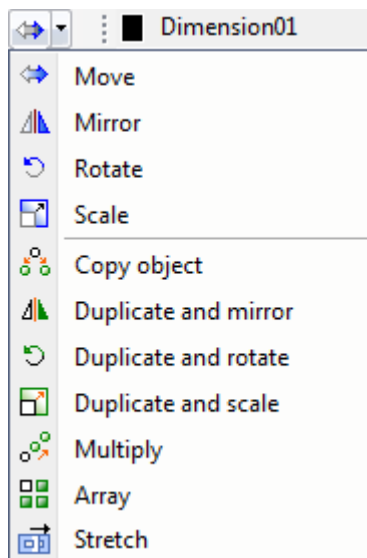
Except Undo and Redo, each command activates a geometrical transformation.

These commands can be accessed:

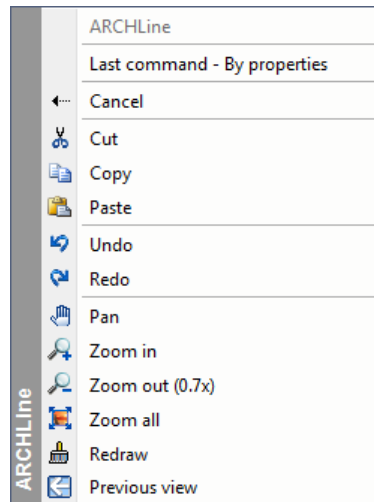
❖ **From the Edit menu and**



❖ **From the Edit toolbar or the Move toolbar menu on the Status bar.**








- ❖ You can also access some editing commands from the **General Shortcut menu**. The General Shortcut menu appears if you open the *General menu* option in the *File -Options - Right click customization* dialog box and then right-click on the empty drawing area.




8.1. General editing commands

Let's see the instructions in the **Edit menu**. The icons you can access from the toolbar are also displayed in front of the instructions.

| | | |
|---|----------------------|--------|
|  | Undo << | Ctrl+Z |
|  | Redo >> | Ctrl+Y |
|  | Cut | Ctrl+X |
|  | Copy to clipboard | Ctrl+C |
|  | Paste from clipboard | Ctrl+V |


8.1.1. Undo - Ctrl Z

The program stores the last 15 editing steps,  thus it is possible to restore the previous status. Each time you click "Undo", the command reverses the last operation.



This instruction cannot be used to restore the commands in the **View menu**.

8.1.2. Redo - Ctrl Y

To redo a command reversed by **Undo**,  you can use the **Redo** command.



It is not possible to use this instruction to recover the result of commands in the **View menu**.


8.1.3. Program clipboard

- ❖ The program clipboard is a temporary internal memory. Part or all of a drawing can be placed to and removed from the memory. When turning off the program, the clipboard content will be lost.
- ❖ The drawing placed to the clipboard overwrites the drawing previously placed there.
- ❖ This clipboard is not equivalent to the Windows clipboard.
- ❖ This clipboard is used for inserting graphic information within ARCHLine.XP® so after selecting the objects you always have to specify the reference point.
- ❖



The program clipboard provides an effective way to copy any 3D *view*, *section* to a floor plan window. The drawing thus copied has no connection with the 3D model in the floor plan window. Consequently, editing becomes optional, the view and the section can be edited as required. With this option the program provides freedom for the designer.

8.1.3.1. Cut - Ctrl X

Move the selected objects to the clipboard.  Erases the objects selected in the floor plan window. Retains the objects selected in the 3D window, so it has the same effect as the *Copy* command.

- Select the objects to be moved.
Enter Ends the selection.
- Specify the reference point of the selected objects.

8.1.3.2. Copy - Ctrl C

Copies the selected objects to the clipboard. The drawing copied to the program clipboard overwrites the drawing previously placed there.

- Select the object you want to copy.
Enter Ends the selection.
- Specify the reference points of the selected objects.

8.1.3.3. Paste – Ctrl V

Inserts the clipboard content by the reference point into the specified point.
You can activate the command only if you have already placed objects on the clipboard.

The object or objects can also be rotated as placed. To do so, choose the appropriate option:

Options:

| | |
|-----------------------------|---|
| Rotation angle... | Specify the rotation angle in the form of a number |
| Interactive rotation | Specify the angle with its two sides |
| Rotate and Transform | Specify scaling and a rotation angle before placement |



The **Ctrl + C** and the **Ctrl + V** keyboard shortcuts are very useful when drawing in ARCHLine.XP®. With the previously mentioned keyboard shortcuts it is possible to move a 3D view to the floor plan window. The view (elevation, section, etc.) thus moved is no longer linked to the 3D model and becomes a 2D drawing, so it **can be edited freely**.

8.1.4. Copy bitmap to clipboard

When activating this command the program copies the drawing in the current window to the Windows clipboard in a picture file format. This way it is easy to insert the drawing as a picture e.g. into a Word document without exporting it in Metafile (.emf) format.



In Windows use the *Edit - Paste (Ctrl + V)* command to paste.

In ARCHLine.XP® uses the Edit menu **Paste bitmap from Clipboard** command to paste the content of the Windows clipboard.

8.1.5. Paste bitmap from clipboard

Paste bitmap from Clipboard command pastes the content of the Windows clipboard to the drawing as a picture.

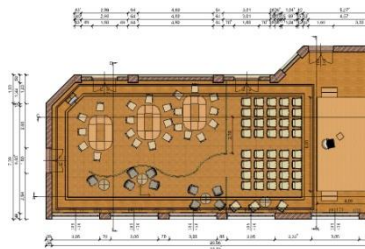
8.1.6. Snapshot

Snapshot is a raster image that is taken in a 3D window.

Snapshot enables you to create attractive coloured documentation of elevation views and floor plans.

The Snapshot function helps you to move and calibrate a raster image into the 2D floor plan exactly in the right place and size.

It is a special raster image that keeps the 3D model vertex points so you can precisely measure distances and angles on that 3D view raster image.

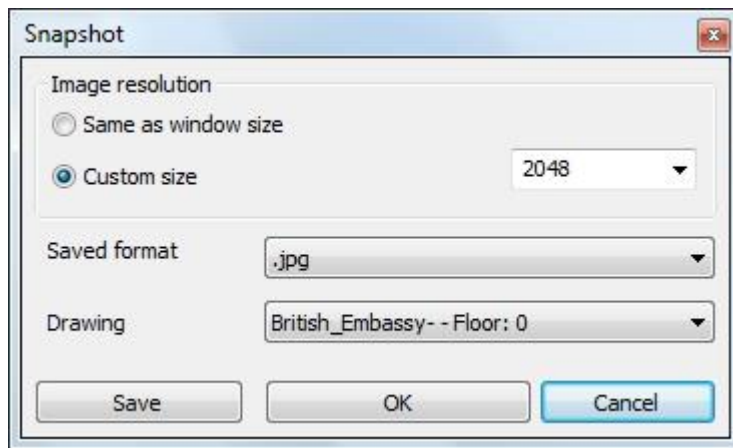


Floor plan with Snapshot



Wall view

You can start the command from Edit menu when a 3D image window is active. It displays the following dialog.



Resolution

The raster image resolution defines the document quality. You can choose as:

❖ Same as window size

The software captures a screen shot of your 3D active window to an image with the same resolution.

❖ Custom size

Choosing the custom size option you can select a predefined resolution from the drop-down list at the right, as the resolution for the image's largest size. Choose a larger value to set the final result more detailed. Using larger values will make the project file size growing larger also. Please choose the size of the snapshot carefully, as you want your project not to grow too large, because handling larger projects could make workflow slower on some machines. Otherwise if you choose a small resolution, the final image may be pixelated which can make it less useful. Please choose from the drop-down list.

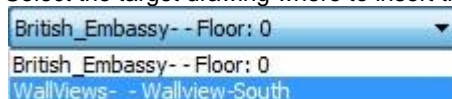
Saving format

You can choose the snapshot image's file format from the drop-down list. This file format will be used during the process of the snapshot. Different file formats store images with different file size and quality conditions. Please select the desired file format.



Target drawing

Select the target drawing where to insert the snapshot image.



Save

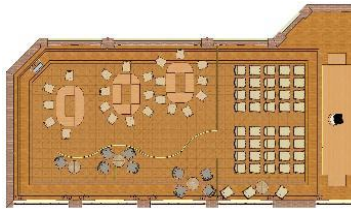
Use the Save button to save the snapshot image into an image file on your hard drive instead of a target drawing. Please specify the path and name of the file in the appearing Save as... dialog window.

8.1.6.1. How to make a snapshot

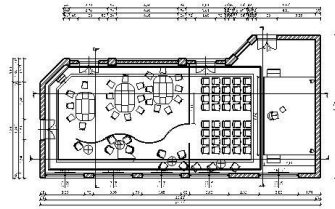
To create a snapshot of the 3D content you need to choose the 3D window that you want to use as the theme of the snapshot. (For example: a top view of the 3D model).

As a second step you need to start *Edit menu – Snapshot tool*. In the appearing dialog window set the resolution for the snapshot image, set its format and please set the target drawing from the drop-down menu as well. When finished please press the OK button.

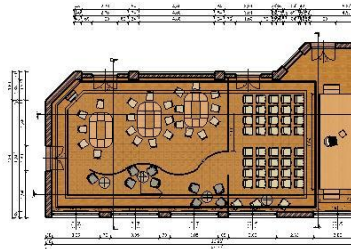
The software will automatically create the snapshot image of the previously set 3D content, and it will be placed soon into the selected target drawing. The result of snapshot will be scaled.



Top view of the 3D model
(theme of the snapshot)



Original 2D drawing (the
drawing, which is set as the
target)



Result - 2D drawing and
Snapshot combined

Wall elevation view snapshot tool

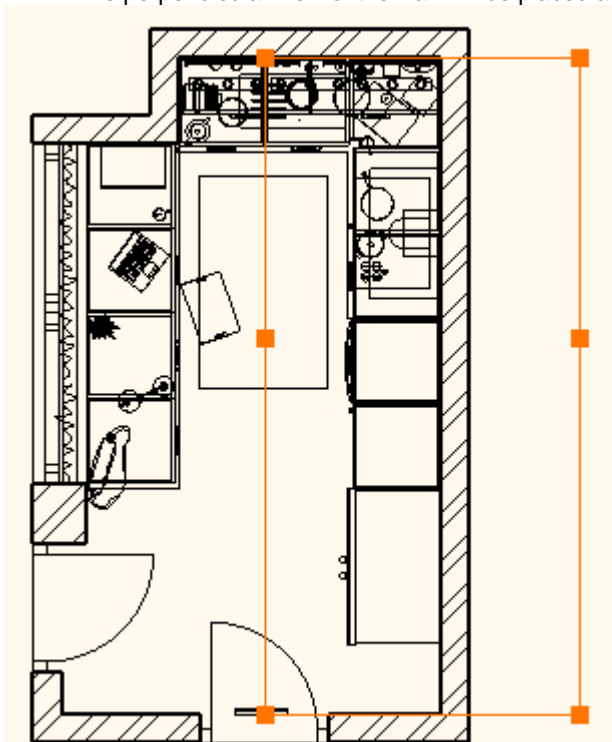
This command makes a frontal view of the selected wall together with a part of the 3D model.

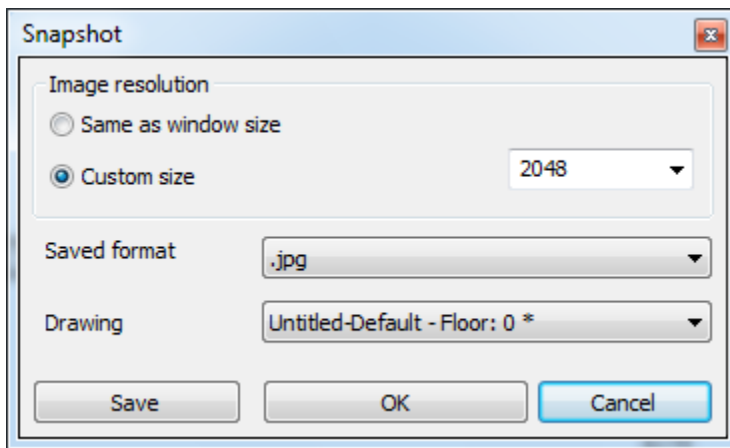
You can select the wall and the visible wall side.

The program makes visible the part of the 3D model that is inside the polygon limited by the wall endpoints and the visible part click point.

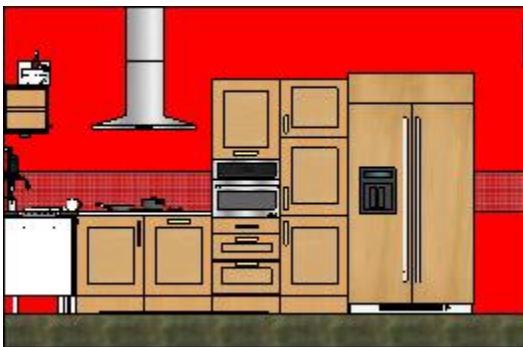
You can edit these polygon nodes and when you press the ENTER button the 3D partial model is created.

The perpendicular view of the wall will be placed as an image onto the selected floor plan.





Here is an example of the result:



How to use the tool

- ❖ Start the View menu / Section / Wall elevation view snapshot tool. Also you can use the Wall elevation view tool in the Documentation part of the left side Toolbox.
 - ❖ Choose the side where you would like to see the elevation from.
 - ❖ Edit the automatically recognized contour as you wish, if necessary.
 - ❖ Press Enter
- Set the properties and click on OK.

8.1.6.2. Snapshot and object snap

Snapshot is able to copy and paste any 3D view into another 2D drawing in correct scaling, and it is also able to keep the reference points of the original 3D view. This will happen automatically when using the Snapshot tool.

This way you can use snapshots as individual drawings too. The software will recognize the reference points of the snapshot, so for example you are able to place dimension on it.



Snapshot with dimensions

8.1.6.3. Contour of a snapshot

Contours of a snapshot equal to the contours of the original 3D view.

This feature is great when you want to place some specific drawing or 2D group behind the snapshot.



2D group in front of a snapshot



2D group behind a snapshot

8.1.6.4. Refresh

Snapshots can be refreshed once they are placed on the target drawing as they are keeping their connection to the original model view. Just use the context menu of a Snapshot, select Refresh and wait for the result.

8.1.6.5. Refresh all

Use the Refresh All option to refresh all the Snapshots on the current drawing. This option can be found in the context menu of the Snapshot. Simply click on it and wait for the result.

When you have multiple large or detailed snapshots, it can take a while until the software will finish the refreshing of all the snapshots.

This tool is extremely useful when you have multiple snapshots of the same model and after changes you would like to update all the snapshot drawings.

8.1.6.6. Modify view parameter

Modify view parameter will open the Graphics settings dialog where you can set changes for the representation of the snapshot view (for example change visual style from Textured to Hidden lines representation).

8.1.6.7. Modify resolution

Each snapshot has a resolution measured in pixels. As the snapshot is a raster image, larger resolution means a much detailed representation but also a larger size in the project. If you have a raster image which you feel is a little bit rough at the representation, you can change the resolution to a higher value, but please keep in mind that your project file will be larger also and a larger snapshot takes longer to refresh.


8.1.7. Move Ctrl + B

With Move you can move the selected objects, or with a complex transformation you can move, rotate and scale them in one step.

With this transformation you can also copy objects.

Transformation commands:

- ❖ Move
- ❖ Duplicate
- ❖ Multiply
- ❖ Multiply by matrix


With the **Edit - Move**  command you can carry out the following transformations:

Select the desired objects. Enter ends the selection.

Specify the reference point of the selected objects.

Specify the new place of the reference point.

8.1.8. Copy object Ctrl + U

With the **Edit -**  **Copy object** command you can carry out the following transformations:

- ❖ You can copy the selected objects, or
- ❖ Click **REPEAT** if you want to copy an object multiple times.

REPEAT:

Choose REPEAT in the More options menu.

Specify the number of copies.

Select the desired objects. Enter ends the selection.

Specify the base point of displacement.

Specify the endpoint of displacement.

The program places the desired number of objects at the distance between the base point and the endpoint of displacement.



For a detailed description of this command see Chapter 8.1.7. on *Move*.

8.1.9. Rotate

With the  **Rotate** icon in the **Move toolbar menu** you can rotate the selected objects.


- Select the objects you want to rotate.
- Specify the rotation angle.
- Specify the rotation centre.
- **Enter** Completes the command.

Options:


| | |
|-----------------------------|---|
| Rotation angle... | Specify the rotation angle in the form of a number. |
| Interactive rotation | Specify the angle with its two sides. |

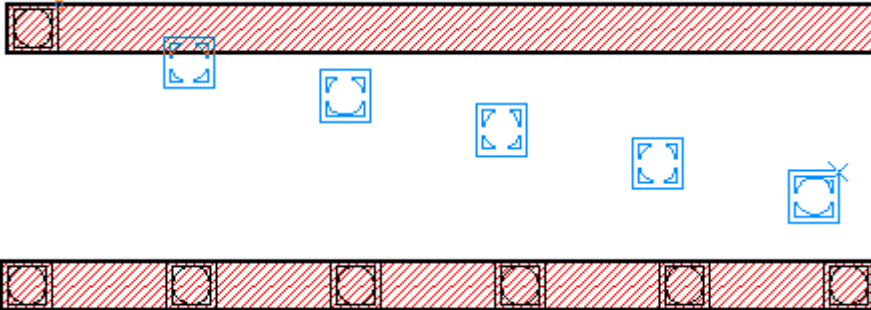
8.1.10. Copy by matrix

8.1.10.1. Multiply

With the *Multiply* -  icon in the *Move toolbar menu* you can place elements of a certain number at an equal distance from each other along the specified line.

Suppose you want to place columns on a wall. You know the number of the columns and that there is an equal distance between them. However, you do not know exactly this distance.

- Draw the wall and place the first column on it.
- Choose the **Multiply** -  command.
- Select the element you want to multiply. Complete the selection with Enter.
- Specify the number of copies.
- Specify the base point of the distance you want to divide. (Specify the point of the first element that will touch - in the case of the last element - the endpoint of the distance you want to divide.)
- Specify the other endpoint of the distance you want to divide. Before specifying the endpoint you can choose **REPEAT** in the More options menu if you want to change the number of copies.

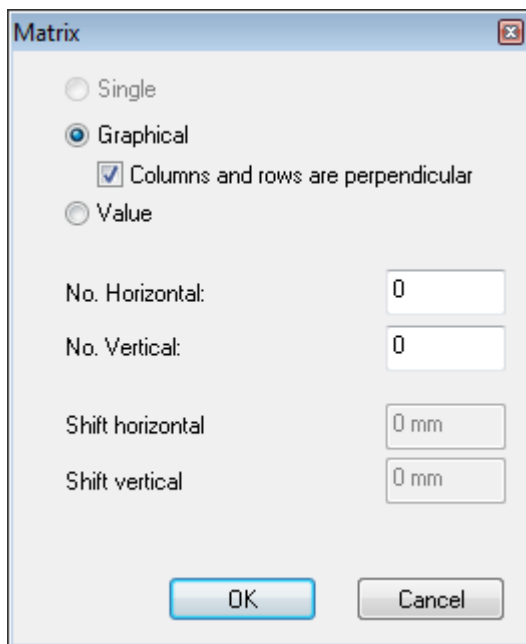


8.1.10.2. Array

It copies a given object according to the given number of row and column.



- Start the Array tool.
- Select the element, that you would like to multiply. Close the selection with Enter.
- Set the starting point of the move.
- Determine the array in the appearing dialog window. OK.



I) **Graphical**

It places a specific number of elements equidistant from each other on the selected grid.

- Determine the place of the last element in the first row. So you can fix the divided distance, and also give the direction of the row.
- Determine the place of the last element in the last row. So you can fix the divided distance. If the *Column and row are perpendicular* option is switch off, the given point determines the direction of columns too.

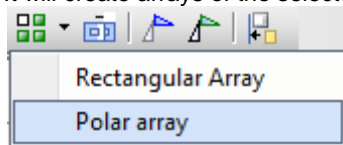
II) **Value**

It places a specific number of elements in the given distance (Shift horizontal and vertical) from each other on the selected grid.

- Determine the direction of the matrix first row.
It places specific number objects in the given distance from each other in this direction by the line. The columns of the matrix are perpendicular to the rows.

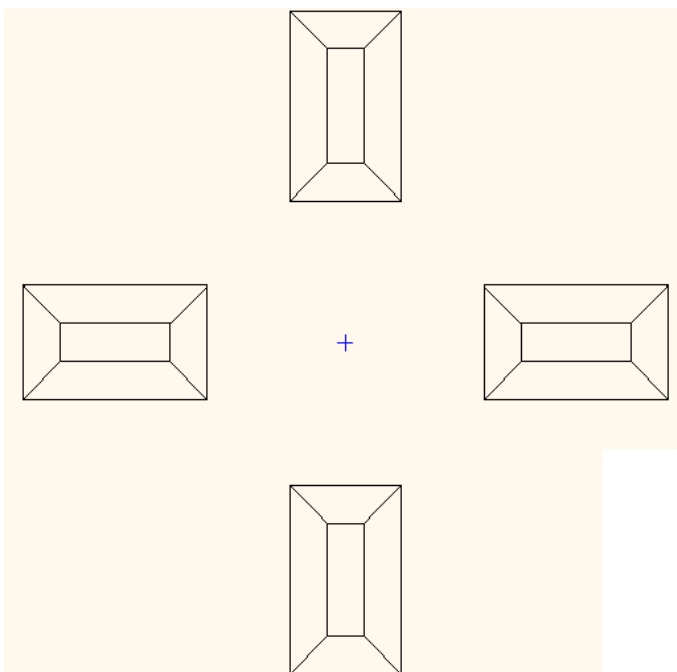
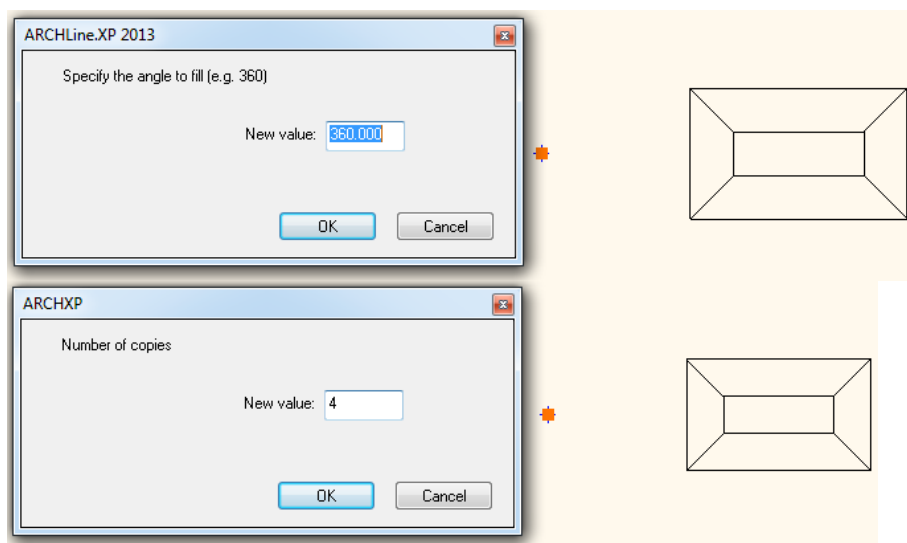
8.1.10.3. Polar array

It will create arrays of the selected objects by giving angle to fill and repeat factor.



- Start the Polar Array tool.
- Select the objects that you would like to multiply. Close the selection with Enter.
- Specify the center point of the array.
- Enter the angle to fill with equally spaced objects.
- Enter the number of objects in array.

In this example the command places 4 objects equally spaced around 360 degrees.



8.1.11. Mirror

Places or copies objects by applying mirror transformation.


Two types of mirror transformation:

- ❖ Axial reflection
- ❖ Point reflection

Commands you can apply here:



Mirror - Move


With the **Edit -  Mirror - Move** command you can reflect the selected objects about a centre point or an axis.

- Select the objects you want to move.
- **Enter** Ends the selection.
- Specify the first point of the mirror axis. Ending the command with Enter, the program reflects the selected object about a centre point.
- Specify the second point of the mirror axis. The program reflects the selected object about an axis.

Option:

| | |
|---------------------------|--|
| On selected object | The highlighted line is the mirror axis, and the highlighted point is the mirror centre. |
|---------------------------|--|

Mirror - Duplicate

With the **Edit -  Mirror - Duplicate** command you can mirror the selected objects to a centre or an axis and copy them.



For a detailed description of the command see *Chapter 8.1.11.1 on Mirror - Move*.


8.1.12. Scale

Enlarges or multiplies the objects.

Commands that you can apply here:



Scale - Move


With the **Edit -  Scale - Move** command you can enlarge/reduce the selected objects.

- Select the objects you want to enlarge.
- **Enter** accepts the selected objects.
- Specify the scale centre.
- With the mouse specify a point that defines the scale factor. The distance between the specified point and the scale centre defines the scale factor. This factor is indicated by the mouse pointer info tooltip. Choose **Scaling** in the More options menu if you want to specify the scale factor. A scale factor less than 1 reduces the objects. A scale factor greater than 1 enlarges the objects.

Options:

| | |
|-------------------|---------------------------|
| Scaling... | Specify the scale factor |
| X | Scale only in x direction |
| Y | Scale only in y direction |

Scale - Duplicate

With the **Edit -  Scale - Duplicate** command you can enlarge/reduce the selected objects. You can also multiply the copies.

Option:

| | |
|---------------|--|
| REPEAT | When making multiple copies, specify the number of copies. |
|---------------|--|



For a detailed description of the command see Chapter.8.1.12.1 on *Scale - Move*.

8.1.13. Align

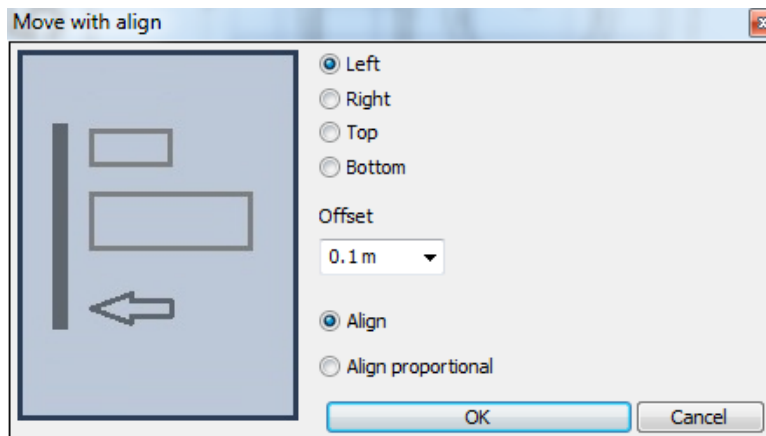
The Align command aligns and/or distributes the selected objects on floor plan. The alignment applied only along the horizontal and vertical axes.

Menu: Edit > Align

The Move with Align dialog box displays.

Select a line as horizontal and vertical axes.

Select the objects to be aligned or aligned proportional (distributed)



Left

Align to the horizontal axes by the left side of the selected objects with offset value.

Right

Align to the horizontal axes by the right side of the selected objects with offset value.

Top

Align to the vertical axes by the upper side of the selected objects with offset value.

Bottom

Align to the vertical axes by the lower side of the selected objects with offset value.

Offset

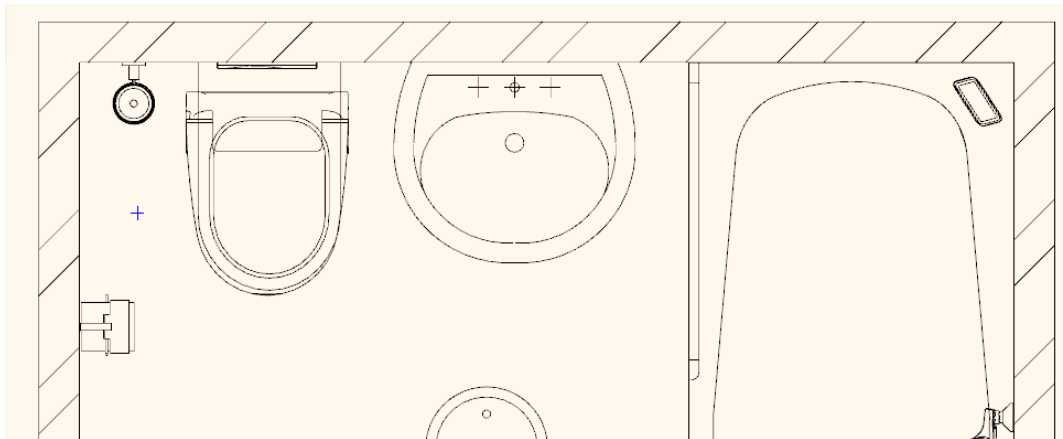
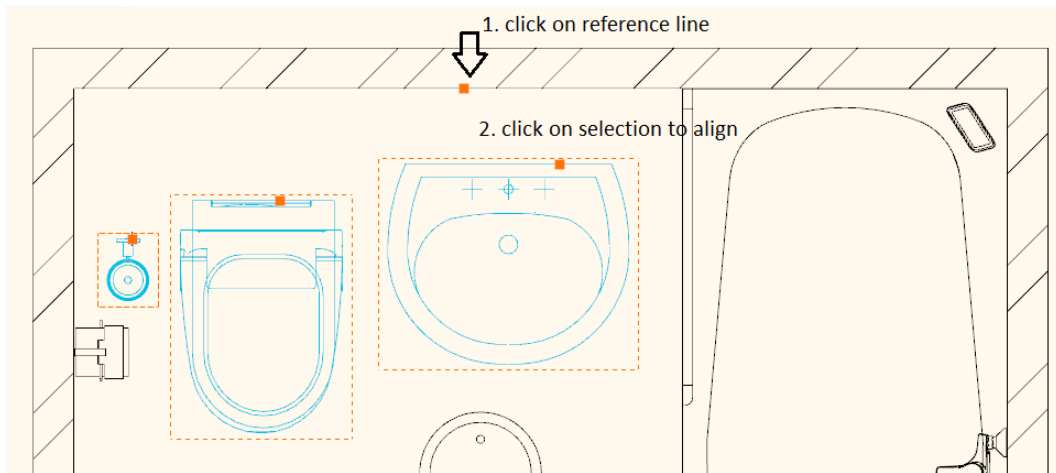
Distance between the horizontal or vertical axes and the selected objects.

Align proportional

Aligns the selected objects keeping their location relative to each other.

Align proportional

Aligns proportionally the selected objects on the distance between the two far position objects.




8.1.14. Select all

We can select all items in the same time with this command.

8.1.15. Delete single (Ctrl + D)

Deletes the selected objects in the current drawing one by one.


-  Start the tool.
- Click the object you want to delete.
- Select further objects to be deleted, or
Enter Ends the command.

! All objects associated with the selected object are also deleted. (For example, if you assigned dimension to an object, when deleting the object, the dimension lines are also deleted.)

If you delete an object in the 3D window, the **Select a surface** option appears in the More options menu. With this keyword you can delete the patterns placed on the surface of the solid (2D group)



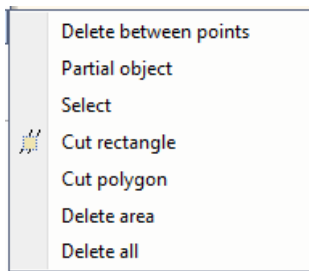
You can activate the command in the following ways:

- ❖ By clicking the *Delete* -  icon in the *Edit toolbar*, or
- ❖ In the *Shortcut menu* of each object as well. In this case right-click the object.
- ❖ If the mouse pointer is an arrow shape: hold the **Ctrl** key and click an object, then **the entire object is deleted (only with specific settings in File menu – Options – General / Marker settings – Special shortcut)**.
- ❖ If you click an object in the drawing and press the **Del** key, the program deletes the **entire object**.

8.1.16. Delete

With the commands in the **Edit - Delete** menu object you can delete the objects or the specified part of the objects in the current drawing.

The menu object contains the following commands:



The *Delete*, *Select*, *Delete area*, *Delete all* instructions can be applied to all object types.

The other delete instructions can only be applied to geometric objects, but not to architectural ones. Thus, for example, with the *Delete between points* command it is not possible to delete the part between the two intersections of the wall.


8.1.16.1. Delete between points

The program enables you to delete the section of an object between the intersections (or endpoints) nearest to the selected point. If the object does not have or has only one intersection with other objects, this command corresponds to the delete operation.

- Select the object to be deleted between its nearest intersections. The program immediately deletes that part of the object.
- Repeat the previous step if you want to delete further parts of the object, or
Enter Ends the command.



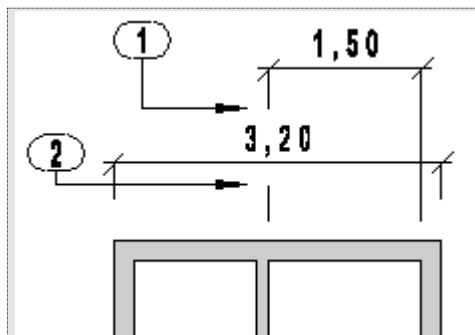
You can activate the command in the following ways:

- ❖ By clicking the **Delete between intersections** -  icon in the *Edit toolbar*.
- ❖ When the mouse pointer is an arrow shape: hold the **Ctrl** and **Shift** keys and click an object, and then the program deletes the section of the object that is between the intersections.

8.1.16.2. Partial delete

Deletes the section of the object between the selected points.

- Select the base point of the line you want to delete: *Point 1*
- Select the endpoint of the line you want to delete: *Point 2*
- Select further lines to be deleted, or
Enter Ends the command.



The Partial *Delete* can be applied to dimension projection lines as well.

8.1.16.3. Delete selected

The command deletes the selected objects in the current drawing.

- Select the objects to be deleted.
Enter Ends the selection and deletes the objects.
- Repeat the previous step if you want to delete further objects, or
Enter Ends the command.



To select a group of objects you can apply the commands in the **Status bar - Selection** menu.



You can also activate the command with the **Delete selected** -  icon in the **Edit toolbar**.

8.1.16.4. Cut rectangle

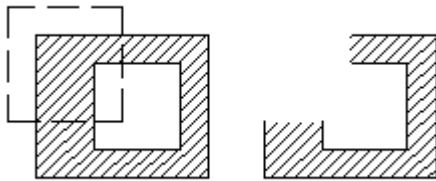
With this command you can delete objects in the following ways:

- ❖ You can delete the objects or their sections that are inside a specified rectangle or area.
- ❖ Before deleting you can pre-select the objects on which the deletion will be carried out.

If an object is not entirely enclosed by the rectangle or area, only its section inside the rectangle or area is deleted. The contour of the selection area is shown by broken line.

Deletes all objects or all sections of an object inside a specified rectangle:

- Specify the first point of the selection window.
- Specify the other point of the selection window.
- Repeat the command, or
Enter Ends the command.



Deletes all objects or all sections of an object inside a specified area:

- Choose **POLYGON** in the More options menu.
- Define the polygon within which you delete all objects or all sections of an object.
- **Enter** Completes the definition of the polygon, and the program executes the deletion.

Deletes all objects or object sections inside a specified area, but you can select the objects on which deletion will be carried out:

- Choose **PRESELECT** in the More options menu.
- Select the objects the deletion will be applied to.
- Specify the polyline that is necessary for the deletion.
- **Enter** Completes the definition of the polyline, and the program executes the deletion.



If you specified an open polyline, the program automatically connects the first and the last point of the polyline to create a closed polyline (polygon).

8.1.16.5. Cut polygon

Deletes all objects or all sections of an object inside a specified area.

If an object is not entirely enclosed by the area, only its section inside the area is deleted. The contour of the selection area is shown by broken line.

- Define the polygon within which you delete all objects or all sections of an object.
- **Enter** Completes the definition of the polygon, and the program executes the deletion.

Options:

| | |
|----------------------------|--|
| Circle | The selection area is a circle |
| Parallel shifted... | Before defining the polygon specify the offset value. It means that the area will be an area enclosed by the contour of the reference point enlarged or reduced by offsetting. |
| Width... | The selection area is a polyline with a specified width. |
| Arc | The next object of the polyline is an arc. |
| Select an object | The next object of the polyline is an existing object. |
| Spline | The next object of the polyline is a spline. |

8.1.16.6. Area

The command deletes the objects that are entirely inside the selection area. The contour of the selection area is shown by broken line. After closing the selection area you can select the objects to be deleted one by one.

- Specify the polyline necessary for deletion.
- **Enter** Completes the definition of the polyline.
- Select the objects the deletion will be applied to.

- **Enter** Ends the selection,
- **Enter** The program executes the deletion.

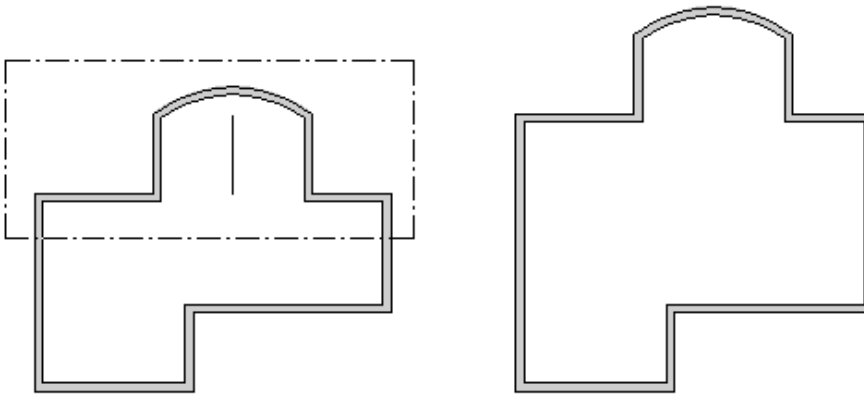
8.1.16.7. All

The command deletes all objects in the current drawing.

8.1.17. Stretch

The **Edit - Stretch** command stretches the sections of an object that are completely inside a selection area.

- ❖ If the object is a single line or a segment of a polyline, the program moves its endpoints only, and connects them again with a straight line.
- ❖ The 'curves' (circle, arc, ellipse, elliptic arc, splines) intersected by the area are cut at the intersection. The instruction connects the intersections with a straight line at the same time retaining the geometrical relations.
- ❖ All hatchings and dimensions assigned to the object follow the changes of the stretched object.
- ❖ In addition to the geometric objects the command is also valid for the wall and the slab. After stretching the wall connections are restored.



You can specify the area in the following ways:

- ❖ **By selection rectangle** or
- ❖ With the **Polygon** option.

Window

- Specify the corner point of the window.
- Specify the other corner point of the window.
- Specify the start point of the offset vector.
- Specify the endpoint of the offset vector.

Area

- Choose **Polygon** in the More options menu.
 - Specify a chain of lines and arcs. Enter.
 - Specify the start point of the offset vector.
 - Specify the endpoint of the offset vector.
- Enter** Ends the command.



For a detailed description of the options of **Polygon** see the instruction 8.1.12.5 Delete – Cut polygon.

8.1.18. Offset

With the **Edit menu - Offset** command you can create a contour around the selected object at a specified distance. The contour of lines, polylines, arcs and splines retains its original type during the offset transformation, while circles are transformed into arcs, and the contour of ellipses and elliptic arcs into splines.

Select the object to offset or select an option:

| |
|----------------------|
| Select one by one |
| Select an open chain |

Select one by one

You must select the components of the closed chain one by one.

Select an open chain

You can specify the open chain by clicking near one of its endpoints.

You can specify a segment of the chain by selecting any part of it (except its endpoint). Then you can choose the chain starting from the selected object to the endpoint that is farther from the centre of the selected object.

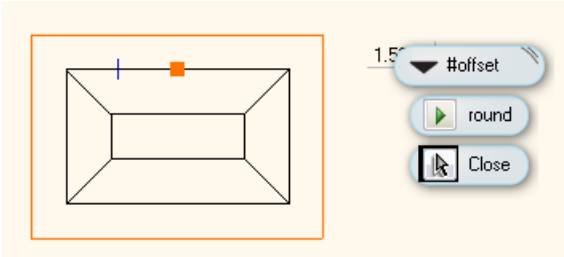
Offset type

- Select the desired offset type by clicking the option:

Parallel



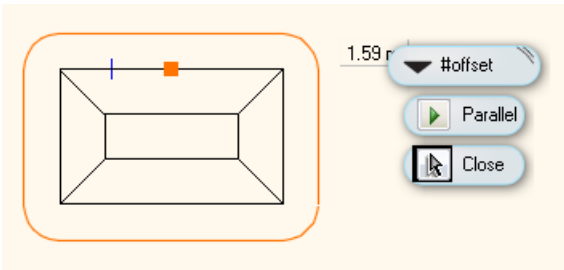
Offsets the chain of one or more objects at a specified distance from the selected objects.



Rounded



Offsets the chain of one or more objects at a specified distance from the selected objects. Should the new profile become geometrically distorted, the program rounds the corners off.



Select mode

- Specify the select mode:

Offset distance

Offset distance: distance of the new contour from the selected objects.

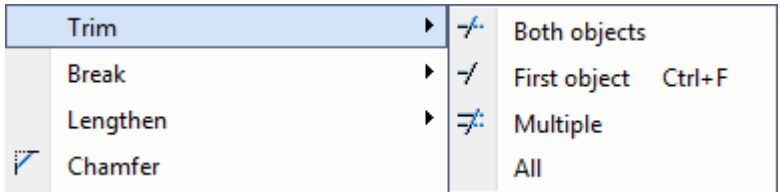
After the selection, the program asks you to specify the offset distance:

- Drag the mouse pointer to the direction where you want to create the offset. Enter the offset value.

8.1.19. Trim

With the options in the **Edit menu - Trim** command, you can trim objects by trimming or extending them, so that their endpoints closest to the selected points coincide.

Select a subcommand:



8.1.19.1. Both objects

The command trims the two objects by trimming or extending them. Adjustment involves the intersection closest to your selection.

- Select the first object you wish to trim.
 - Select the second object you want to trim.
- Enter** Completes the command.





You may also activate the command with the **Edit toolbar** -  **Trim both objects** icon. The command can be used for walls and corresponds to the L connection.

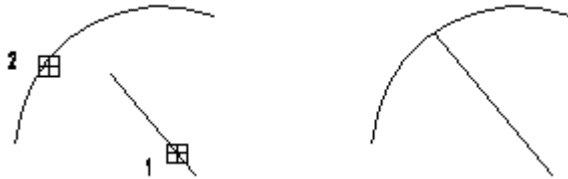
8.1.19.2. First object - CTRL + F

The command trims (or extends) the unnecessary section (missing section) of the first selected object compared with its intersection with the second object.

Adjustment concerns the intersection nearest the selected section.

The second selected object only helps selection and is not modified with this command, just as the other endpoint of the first object is left intact.

- Select the object you want to trim.
 - Choose the object you want the first object to intersect with.
- Enter** Completes the command.



You may also activate the command with the **Edit toolbar** -  **Trim first object** icon. The command can be used for walls; it corresponds to the T connection.

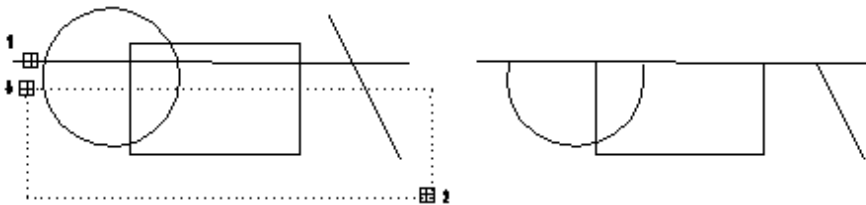
8.1.19.3. Multiple

The command trims all subsequently selected objects to the first defined object.

It trims or extends that section of the objects you define after the first selected object, which is closer to the intersection.

The first selected object and the other endpoints of the specified objects are not modified with this command.

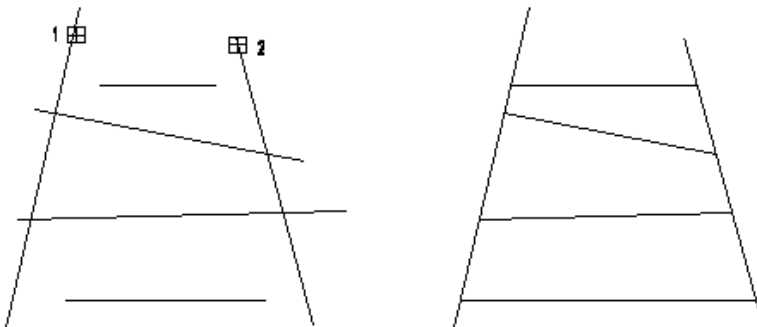
- Define the object to which you wish to adjust the objects selected subsequently.
- Specify the objects you want to adjust.
- Press **Enter** to complete the command.



8.1.19.4. All

The command trims to the segments all objects falling between the two given bordering segments. This means that the objects are trimmed or extended to their intersection with the adjacent segments.

- Select the first line to which you wish to adjust the objects.
 - Select the second reference line.
- Press **Enter** to complete the command.

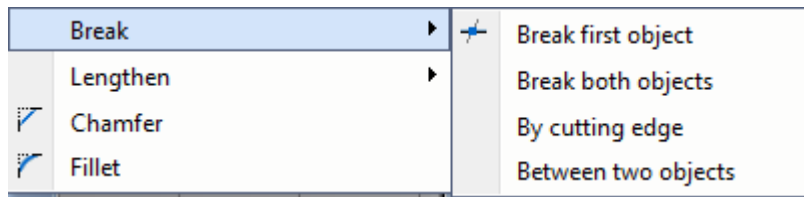


8.1.20. Break

Breaks the objects at a point defined with another object. Using this command, you can split an object in two separate parts.

The program transforms circles into arcs, and ellipses into elliptical arcs.

Choose a subcommand:



8.1.20.1. Break first object

Breaks the first selected object in two new objects at the point where it intersects the second (reference) object closest to selection. The command does not break the second object.

- Choose the object you want to break.
- Choose the object that intersects the first object.
- Press **Enter** to complete the command.

8.1.20.2. Break both objects

Breaks both selected objects in two new objects at their intersection closest to selection.

- Choose the object you want to break.
- Choose the second object you want to break.
- Press **Enter** to complete the command.

8.1.20.3. By cutting edge

You can break the selected objects with the help of an imaginary reference line. The cutting points will be at their intersections with the reference object.

- Define the start point of the cutting edge.
- Define the endpoint of the cutting edge.
- Select the object to be break at its nearest intersection.
Press **Enter** to end selection.
Press **Enter** to complete the command.

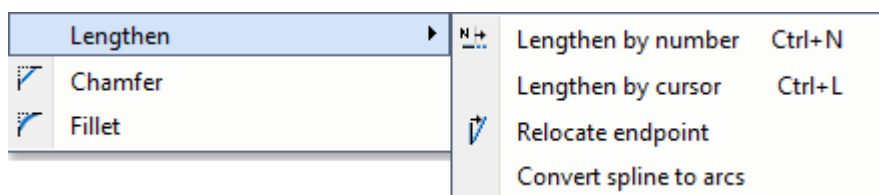
8.1.20.4. Between two objects

By using this command, you can break the object at its two intersections closest to a surrounding selection.

- Select the object you want to break between two intersections.
Press **Enter** to complete the command.

8.1.21. Lengthen

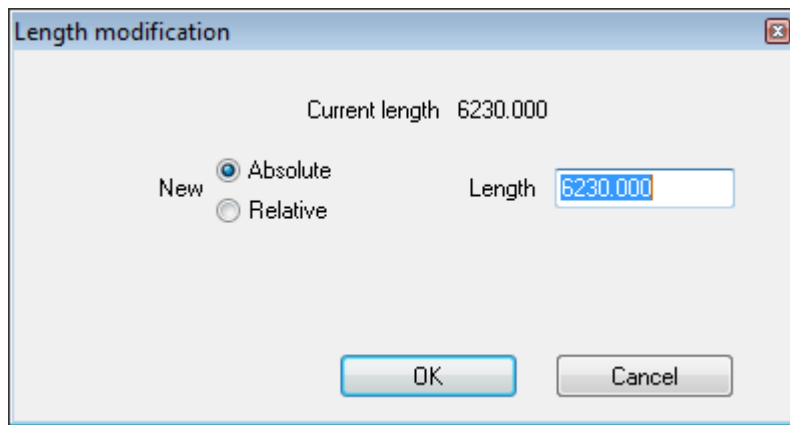
You can modify the length, radius, endpoint and resolution of the objects with this command. Select a subcommand:



8.1.21.1. Length by number - CTRL+N

With this command you can alter the length of a selected object (segment, arc, elliptical arc) by moving its endpoint closest to selection and specifying the new value in the form of a number.

- Select a line, arc or elliptical arc.
The **Length modification** dialog box appears displaying the current value of length.



Choose an option and define the new value.

Absolute Specifies the length of the object.

Relative Specifies by what value the length of the object should be increased/decreased.

OK Completes the command.

8.1.21.2. Lengthen by cursor - CTRL+L

You can alter the length of the selected line, arc or elliptical arc by moving one of its endpoints to the desired place without changing its direction. With circles you can graphically modify the radius, whereas with ellipses the minor and the major axes.

- Select the endpoint of the line segment, arc or elliptical arc along which you move the object. (The endpoint closest to selection will be moved.)
- Define the new place of the endpoint graphically. Using the expand line departing from the endpoint, you can move the specified endpoint to its new place, or

Option:

| | |
|-------------|----------------------------|
| Beam | Extends the selected beam. |
|-------------|----------------------------|

Press **Enter** to complete the command.



Once you select the object, you may also modify its length or radius with the hotspots. See the *Tools -2.10.1 Clicking with the left mouse button* Chapter.

8.1.21.3. Relocate endpoint

You can modify the selected line segment, arc or elliptical arc by moving one of its endpoints to the desired place.

- Select a line segment, arc or elliptical arc.
- Move the endpoint closest to selection. Specify its new position. Using the expand line departing from the other endpoint of the object; you can move the selected endpoint.

Enter Ends the command.

8.1.21.4. Convert spline to arcs

With this command you can alter the resolution of arched objects. The value defined for resolution specifies how many linear segments a polyline representing circles or ellipses should consist of.

- Specify the value of resolution.
- Select the objects the resolution of which you want to modify.

Enter Ends the command.

8.1.22. Chamfer

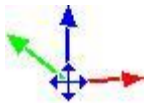
Connects two objects with an angled line.

8.1.23. Fillet

Connects two objects with an arc.

8.2. Main axis markers for 3D move

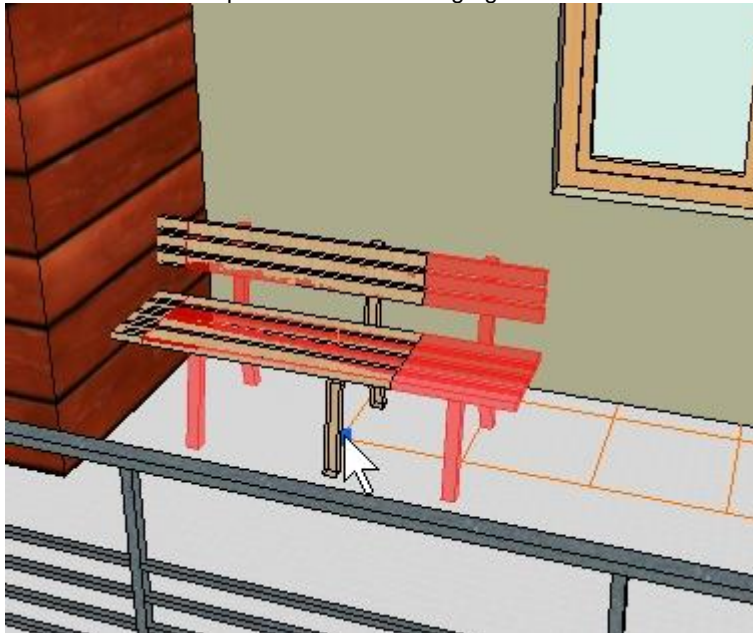
With the effective usage of 3D technology ARCHLine.XP® makes the operations in the model space easy by interactive 3D cursors.



When selecting a 3D object, the program shows the main axis for moving operations. With the help of these markers you can move the selected object in the space easily along the main axes. Each axis has different colour representation. The horizontal X axis is represented by green, the horizontal Y axis is represented by red, and the vertical Z axis is represented by blue colour.

How to use

Clicking one of the main axes starts the movement along the axis. You can set the new position by moving the mouse cursor to the desired point and then clicking again.



You can see possible overlaps while moving the mouse

8.3. Modification

You can modify both the properties and the geometry of the created objects.

Modifying properties

Some opportunities to modify the properties are available from the Modify menu. But the modification of any object is available with the **Properties** command from the *Shortcut menu* or in the *Property manager*.

Modifying geometry

The geometry modifying commands are available as follows:

- ❖ Click on the appropriate icon in the Toolbox or the Main menu , or
- ❖ Right click on the object from the Shortcut menu.

8.4. Specifying properties

Before you create any object, you can set the properties of the object in the **Properties** dialog box. You can activate the dialog box in several ways:

- ❖ With the **Building menu - Properties** commands, or
- ❖ With the **Drafting menu - Properties** commands, or
- ❖ With the **Dimension menu - Properties** commands, or
- ❖ Right-click on the icon of the object in the **Toolbox tool**.

Here you can specify the global properties that will be associated with all corresponding object types created subsequently.

8.5. Modifying properties

You can modify the properties of objects already created in the following ways:

- ❖ *One by one*, by selecting the desired property in the *Shortcut menu - Properties* dialog box.
- ❖ By copying the properties of a reference object with the *Modify menu - Copy properties* command.
- ❖ Using the **Property manager**, see the *Chapter 2.14*.
- ❖ With the *Modify menu – Create similar* command it is possible to create new objects, using the properties of an object already created.
- ❖ In the *Substitute material* dialog the selected texture can be changed to the desired one in all the objects in the plan.
- ❖ You can modify the material of the objects using the Design center.

8.5.1. Modifying the properties of certain objects

You can modify the properties of certain objects if you:

- ❖ The Property Manager visualizes the properties of the selected objects and modify its values
- ❖ Right-click the object, then select *Shortcut menu - Properties*.
- ❖ Select the object and click on the Properties marker.

When the *Properties* dialog box displayed you can specify properties that will be assigned only to the selected object.




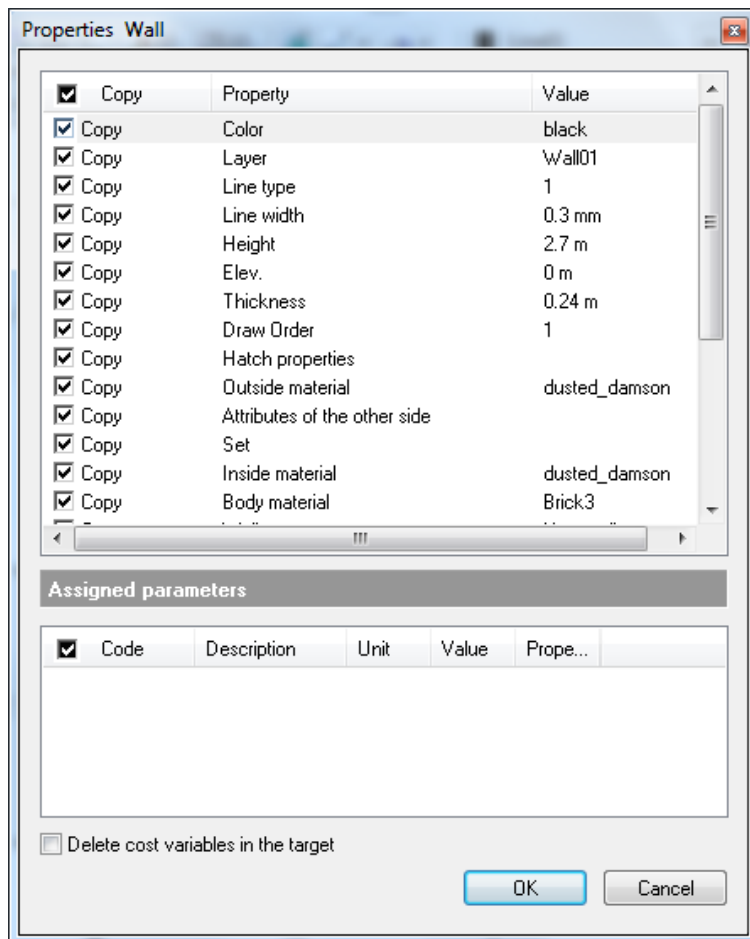
You can find the detailed the specification and modification of the properties of each object type in the corresponding chapters.

8.5.2. Copy properties

With the **Copy properties** command you may also modify the properties of an object group if you copy all or certain properties of a selected object to a group of objects.

You can activate the command:

- ❖ In the **Modify menu**,
 - ❖ Right-click the object, then selecting the *Copy properties* option in the *Shortcut menu* displayed, or
 - ❖ With the *Copy properties* icon -  in the *Edit toolbar*.
- Activate the command, and
 - Choose an object the properties of which you wish to copy, or select the option corresponding to the desired object type in the command line if selection is ambiguous, that is when objects overlap.
 - Select the desired properties in the **Properties** dialog box. E.g. in the case of wall the following dialog box appears:
 - By clicking the checkbox in front of a property you can turn that property on and off. If you click the box in the heading you can turn all properties on and off.
The program assigns only those properties to the selected objects that have been selected.
 - You can decide whether you copy the parameters (which may contain important data for quantity calculation) assigned to the object.



- Select the objects you wish to modify.
Enter Completes the command.

In case of objects you can copy properties between floors as well.

For this please select the **Go to: Lower floor** or **Go to: Upper floor** keyword from the More options menu.

Options:

| | |
|---------------------------|---|
| Go to: Lower floor | The software activates the following lower floor if there is any. |
| Go to: Upper floor | The software activates the following upper floor if there is any. |



In case of object if the “Name” option is switched on, the objects to be modified will inherit the object type as well.

8.5.3. Layer control mode

In the ARCHLine.XP® program the **Modify menu - Layer control mode** option **is turned off** as default.

When setting the general properties of object types you must specify to which layer you want to assign the objects of the object type in question.

You can place objects with different properties (different colour, line type, line width, even different type, etc.) on the same layer, which due to other aspects, you want to handle together.



For a detailed description of the options of **Layer control mode** see the instruction 3.4.5. *Layer control mode*.

8.5.4. Create similar

- ❖ You can create a new object with the properties of an existing object by using the **Modify menu - Create similar** command.

You can activate the command:

- ❖ In the **Modify menu** or,
- ❖ By right-clicking the object and selecting the *Create Similar...* option in the *Shortcut menu* displayed.
- Activate the **Modify menu - Create similar** command.

- Select an object to open its property list.

The program reads the properties of the selected object and enters the create object command. The object drawn subsequently will have the properties of the selected object.

If for example you select a wall to read its properties, the program offers the **Create wall** command.

8.5.5. Layer

With the use of layers you can group or separate the objects of the current project according to various aspects.



For a detailed description of the options of **Layer** see the instruction 3.4 *Managing layers*.

Layer Manager

This dialog manages layers and layer properties. You can change the current layer, create new ones, delete or turn on and off layers and lock/unlock them, change the printable status. In layer control mode you can assign properties such as colour and line type, line weight.



For a detailed description of the *Layer manager* command see Chapter 2.16.2. *Layer toolbar*.

Move Objects to New Layer

This tool will move objects from one layer to another, by selecting the destination layer from a dialog.



For a detailed description of the *Move Objects to New Layer* command see Chapter 3.4.6. *Move Objects to New Layer*.

Layer walk

This tool displays objects on layers that you select in the Layer Walk dialog. This tool is very helpful to check which object lies on which layer.



For a detailed description of the *Layerwalk* command see Chapter 3.4.7. *Layer walk tool*.

Change to current Layer

This command moves objects to the current layer.

Activate the Layer of selection

This command changes the current layer by selecting an object as reference. It will use the object's layer as current layer.

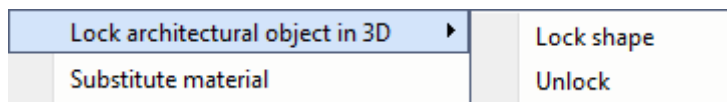
8.5.6. Lock architectural object in 3D

With this command you can lock 3D models to architectural objects (the architectural objects in the Building tool from wall to object) independent of their 2D symbol. This way you can easily create detailed drawings, such as decorated walls, without displaying their details on the 2D drawing. Once you lock an architectural object, you may make any modification in the 2D drawing; its 3D view will not be altered.



We suggest that you only decorate walls and use the **Lock in 3D** mode when you have completed the construction of the building structure. In this case you will not have to make frequent modifications.

The commands are the following:



Lock shape

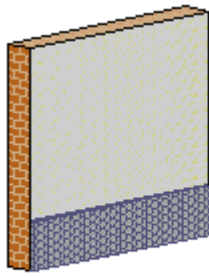
Example:

You can create a wall with its foundation without displaying the foundation in the 2D view. You can see how this command works in the following example:

- Draw a wall with its foundation. To create a foundation draw a wall with the following parameters for example:
wall thickness: 0.05 m,
height: 0.6 m,
wall material: stone-2

- Select the **Lock architectural object in 3D - Lock shape** command. Choose an architectural object (the wall in the model), to which you want to attach additional objects and whose 3D model you wish to lock.
- Select the additional objects for locking their 3D model.
(Select foundation.)

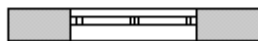
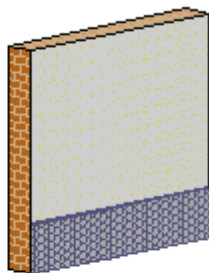
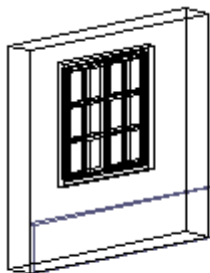
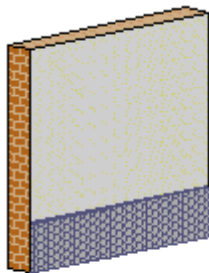
Enter Completes selection.



Once you locked an architectural object's 3D model, the **3D fixed** option is activated in the properties dialog box of the object.

The 3D view of the wall with foundation is now locked. From this time on you can delete the 2D view of the wall, its 3D view will not change.

For example, if you place a window on the wall, the window will only be displayed on the 2D symbol of the wall. In the 3D view the window will only be indicated by the wireframe model, as the 3D model of the wall has been locked.



If you wish to display the new shape of the wall (with the window), you have to use the *Lock architectural object in 3D - Unlock* commands under *3D menu - Architectural object ->3D solid*.

Unlock

With this command you can unlock the selected objects, and work with them as ordinary architectural objects.

- Select an architectural object the 3D view of which you want to unlock.



The **3D fixed** option is deactivated in the **Properties** dialog box.

In this case select the wall to unlock its solid 3D view. The program now displays the wall with the inserted window.



We suggest you that before unlocking use the *3D menu – Arch. object -> 3D solid* command, thus the 3D model of the foundation will be saved.

Repeat the *Lock shape* command for the wall and the foundation to save the new layout of the wall. (If you regenerate the wall without using this command, you will lose the foundation.)

8.5.7. Substitute material

With the *Modify - Substitute material* command you change the selected texture of each object of the drawing to the one you specify. This concerns all architectural objects of a drawing and involves all floors.

When you activate the command the **Material** dialog box appears.

- Select the material category you wish to replace. Click **Select**.
- In the dialog box then displayed select the new material. Click **Select**.

Substitute materials using the Design center

By using the Design center you can modify the material of selected objects in an instant without activating the *Properties* dialog box and browsing in the *Select by object* dialog box.

Using the Design center you can modify the material of objects on the floor plan and in the 3D view in different ways.

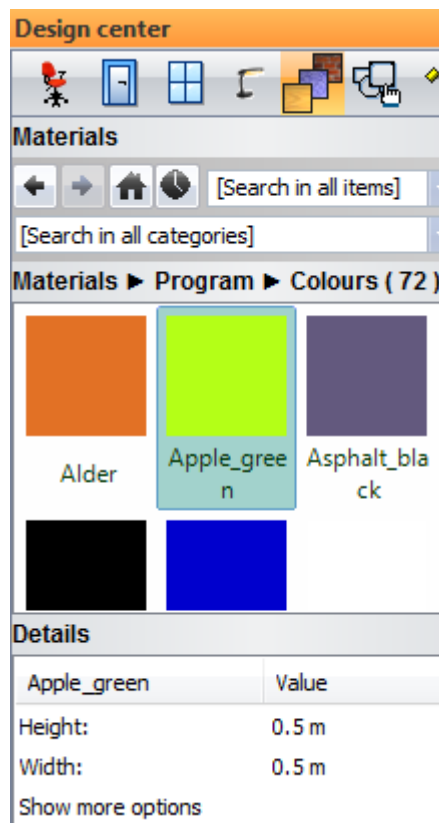
Modifying materials on the floor plan



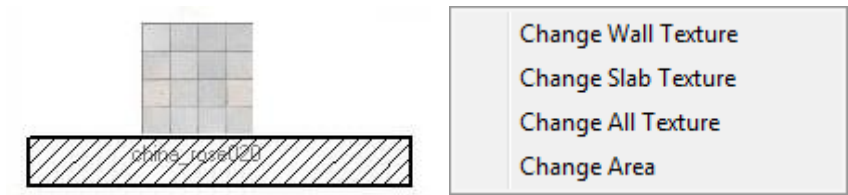
You can use this command for all architectural objects except doors and windows.

You find the materials applied in the program arranged in classes and categories in the *Materials* directory of the Design center.

- Open the desired category, e.g. *Program Materials class - Colours*. The program displays all materials within that category.



- Click the name/picture of the texture with the left mouse button.
- While holding the mouse button, drag the texture on the object you wish to modify.
- Once the texture is on the object, release the mouse button.



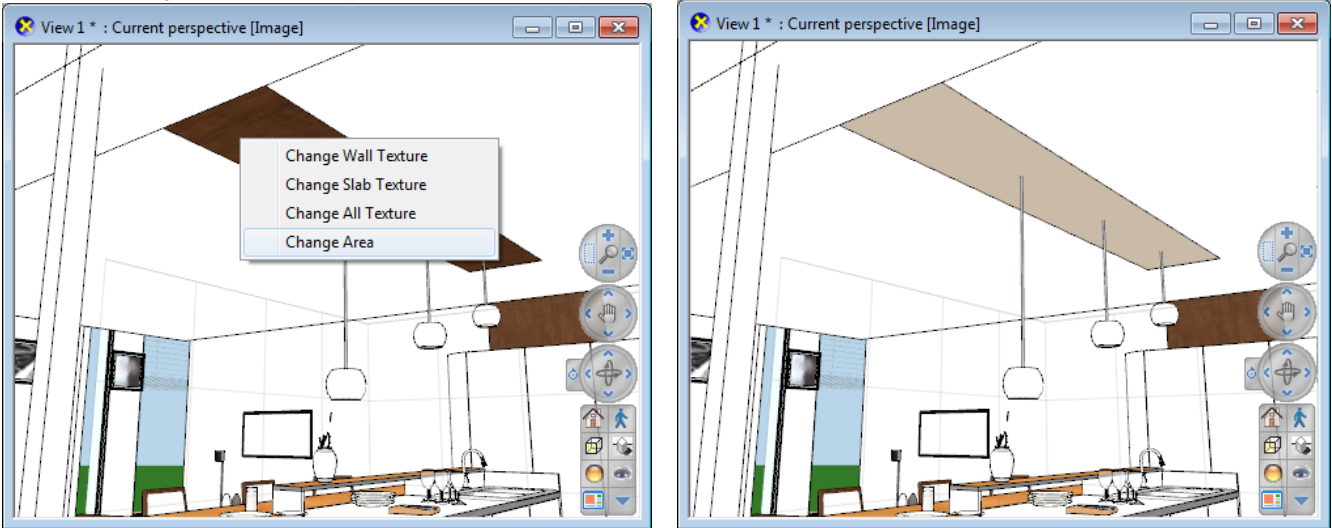
- In the menu then displayed choose the option you wish.

Modifying materials in 3D

The command changes the texture selected with a plane of the model to the material you choose in the Design center.

- Select the desired material in the appropriate material category, and then click its name/picture with the left mouse button.
- While holding the mouse button grab the texture over the plane to which you assigned the texture you wish to modify.
- Click the requested plane. The program then selects the plane.

The program automatically opens a menu and you can choose an option.



8.5.8. Explode by selection

You can explode compound objects (such as text, dimension, hatch, groups and architectural objects) into their components.

| Explode what object | into what objects |
|-----------------------|-------------------------------------|
| Text | Line, elliptical arc, spline, hatch |
| Dimension | Line, text |
| Hatch | Line |
| Group | Objects it contains |
| Architectural objects | Graphical components or subgroups |

You can explode objects in the following way:

- Select the compound objects you wish to explode.
- Choose the Modify menu - Explode by selection command.
- Select the next object, or
- **Enter** Completes the command.

Option:

| | |
|------|--|
| Text | Explodes the selected multiline texts into multiple single-line texts. |
|------|--|

8.5.9. Explode

- In the displayed dialog box click on a class to explode all objects in the selected class.
- Click **OK**.
- The program explodes the selected objects.

8.6. Command of the Edit Toolbar



The Toolbar contains several commands, which have been presented in the previous chapters (Edit menu and other referenced sections).

8.6.1. New

The command opens a New floor plan window, it will be a part of the current project.

8.6.2. Open

You can open the selected project or drawing, if you click on the Open button.



For a detailed description of the *Import* command see Chapter 4.5. *Import / Export*.

8.6.3. Save

You can save your current projects with their names in the selected directory.



For a detailed description of the *Save* command see Chapter 4.2.6. *Saving project*.

8.6.4. Print

The program prints out the drawing in the current window using this command.



For a detailed description of the *Print* command see Chapter 14. *Printing*.

8.6.5. Cut

This command moves the selected objects to the clipboard.



For a detailed description of the *Cut* command see Chapter 8.1.3.1. *Cut*.

8.6.6. Copy

Copies the selected objects to the clipboard.



For a detailed description of the *Copy* command see Chapter 8.1.3.2. *Copy*.

8.6.7. Paste

Inserts the clipboard content by the reference point into the specified point.



For a detailed description of the *Paste* command see Chapter 8.1.3.3. *Paste*.

8.6.8. Undo

The command reverses the last operation.



For a detailed description of the *Undo* command see Chapter 8.1.1. *Undo*.

8.6.9. Redo

To redo a command reversed by undo, you can use the redo command.



For a detailed description of the *Redo* command see Chapter 8.1.2. *Redo*.

8.6.10. Copy properties

With this command you can modify the properties of an object group.



For a detailed description of the *Copy properties* command see Chapter 8.5.2. *Copy properties*.

8.6.11. Create similar

You can create a new object with the properties of an existing object by using this command.



For a detailed description of the *Create similar* command see Chapter 8.5.4. *Create similar*.

8.6.12. Delete

Deletes the selected objects in the current drawing one by one.



For a detailed description of the *Delete* command see Chapter 8.1.15. *Delete*.

8.6.13. Delete between intersections

Deletes that part of the selected object, which is between the two intersection points (or endpoints) nearest to the selected point.



For a detailed description of the *Delete between intersections* command see Chapter 8.1.16.1. *Delete between points*.

8.6.14. Trim first object

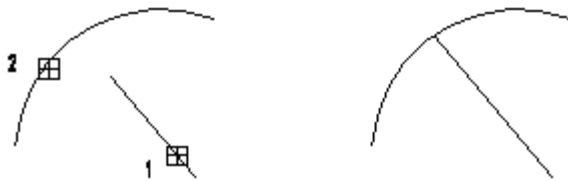
The command trims (or extends) the unnecessary section (missing section) of the first selected object compared with its intersection with the second object.

Adjustment concerns the intersection nearest the selected section.

The second selected object only helps selection and is not modified with this command, just as the other endpoint of the first object is left intact.

- Select the object you want to trim.
- Choose the object you want the first object to intersect with.

Enter Completes the command.



You may also activate the command with the **Edit toolbar** -  **Trim first object** icon. The command can be used for walls; it corresponds to the T connection.

8.6.15. Trim both objects

The command trims the two objects by trimming or extending them. Adjustment involves the intersection closest to your selection.

- Select the first object you wish to trim.
- Select the second object you want to trim.

Enter Completes the command.



You may also activate the command with the **Edit toolbar** -  **Trim both objects** icon. The command can be used for walls and corresponds to the L connection.

8.6.16. Define section

You can define the section line. The program is going to use this line when creating the section.



For a detailed description of the *Define section* command see Chapter 6.5. *Section*.

8.7. Commands of the 2D edit toolbar

The Toolbar contains several commands, which have been presented in the previous chapters (Edit menu, Edit toolbar and other referenced sections).



8.7.1. Offset

With the **Offset** command you can create a contour around the selected object at a specified distance.



For a detailed description of the *Offset* command see Chapter 8.1.18. *Offset*.

8.7.2. Trim both

Adjusts two selected objects to each other.



For a detailed description of the *Trim both* command see Chapter 8.1.19.1. *Trim both objects*.

8.7.3. Trim first

Deletes (or adjust) the unnecessary (or missing) part of the first selected object to connect it to the second selected object.



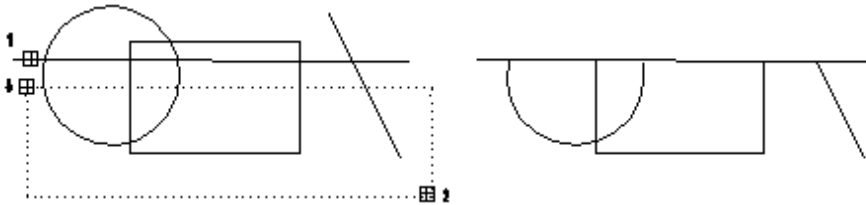
For a detailed description of the *Trim first* command see Chapter 8.1.19.2. *Trim first object*.

8.7.4. Trim multiple

The command trims all subsequently selected objects to the first defined object.

It trims or extends that section of the objects you define after the first selected object, which is closer to the intersection. The first selected object and the other endpoints of the specified objects are not modified with this command.

- Define the object to which you wish to adjust the objects selected subsequently.
- Specify the objects you want to adjust.
- Press **Enter** to complete the command.



8.7.5. Delete area

Deletes the section of the object within the selected area.



For a detailed description of the *Delete area* command see Chapter 8.1.16.6. *Delete area*.

8.7.6. Delete between intersections

Deletes that part of the selected object, which is between the two intersection points (or endpoints) nearest to the selected point.



For a detailed description of the *Delete between intersections* command see Chapter 8.6.13. *Delete between intersections*.

8.7.7. Break

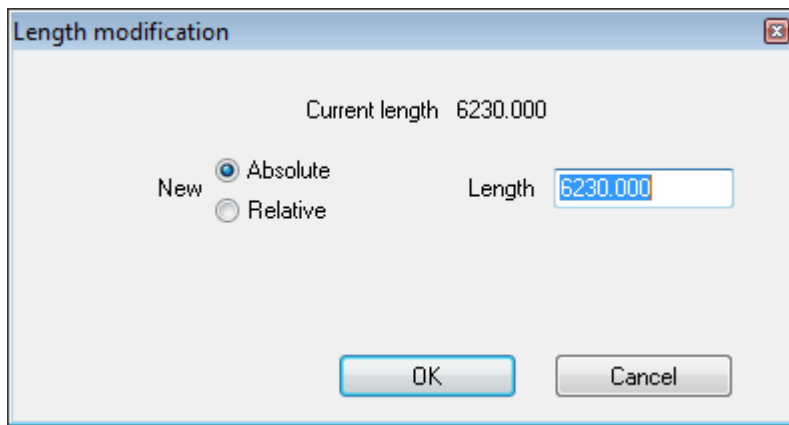
Breaks the objects at a point defined with another object. Using this command, you can split an object in two separate parts.

The program transforms circles into arcs, and ellipses into elliptical arcs.

8.7.8. Lengthen by number

With this command you can alter the length of a selected object (segment, arc, elliptical arc) by moving its endpoint closest to selection and specifying the new value in the form of a number.

- Select a line, arc or elliptical arc.
The **Length modification** dialog box appears displaying the current value of length.



Choose an option and define the new value.

Absolute Specifies the length of the object.

Relative Specifies by what value the length of the object should be increased/decreased.

OK Completes the command.

8.7.9. Chamfer

Connects two objects with an angled line.

8.7.10. Fillet


Connects two objects with an arc.

8.8. Commands of the Move toolbar



The toolbar contains several commands which have been presented in the previous chapters (Edit menu, Edit toolbar, 2D edit toolbar and other referenced sections).

8.8.1. Move

With the **Move**  command you can carry out the following transformations:

Select the desired objects. Enter ends the selection.
Specify the reference point of the selected objects.
Specify the new place of the reference point.


8.8.2. Mirror

Places or copies objects by applying mirror transformation.



For a detailed description of the *Mirror* command see Chapter 8.1.11. *Mirror*.

8.8.3. Rotate

With the  **Rotate** icon you can rotate the selected objects.



For a detailed description of the *Rotate* command see Chapter 8.1.9. *Rotate*.

8.8.4. Scale

Enlarges or multiplies the objects.




For a detailed description of the *Scale* command see Chapter 8.1.12. *Scale*.

8.8.5. Copy object

Copies the selected objects to the clipboard. The drawing copied to the program clipboard overwrites the drawing previously placed there.


8.8.6. Duplicate and mirror

With the  **Mirror - Duplicate** command you can mirror the selected objects to a centre or an axis and copy them.



For a detailed description of the command see Chapter 8.1.11. *Duplicate and mirror*.

8.8.7. Duplicate and rotate

With the  **Duplicate and rotate** - icon in the **Move toolbar menu** you can rotate and copy the selected objects. You can also make multiple copies.


Option:

| | |
|---------------|--|
| REPEAT | When making multiple copies, specify the number of copies. |
|---------------|--|



For a detailed description of the command see Chapter 8.1.9 *Rotate*.

8.8.8. Duplicate and scale

With the  **Scale - Duplicate** command you can enlarge/reduce the selected objects. You can also multiply the copies.


Option:

| | |
|---------------|--|
| REPEAT | When making multiple copies, specify the number of copies. |
|---------------|--|




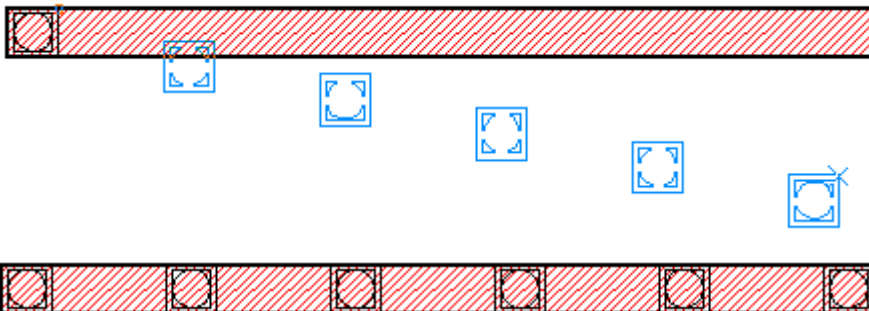
For a detailed description of the command see Chapter 8.1.12. *Scale*.

8.8.9. Multiply

With the *Multiply* -  icon in the *Move toolbar menu* you can place objects of a certain number at an equal distance from each other along the specified line.

Suppose you want to place columns on a wall. You know the number of the columns and that there is an equal distance between them. However, you do not know exactly this distance.

- Draw the wall and place the first column on it.
- Choose the **Multiply** -  command.
- Select the object you want to multiply. Complete the selection with Enter.
- Specify the number of copies.
- Specify the base point of the distance you want to divide. (Specify the point of the first object that will touch - in the case of the last object - the endpoint of the distance you want to divide.)
- Specify the other endpoint of the distance you want to divide. Before specifying the endpoint you can choose **REPEAT** in the More options menu if you want to change the number of copies.



8.8.10. Array

Rectangular Array

It copies a given object according to the given number of row and column.

Polar Array

It will create arrays of the selected objects by giving angle to fill and repeat factor.



For a detailed description of the command see Chapter 8.1.10.2. *Array*.

8.8.11. Stretch

The **Stretch** command stretches the sections of an object that are completely inside a selection area.



For a detailed description of the command see the Chapter 8.1.17. *Stretch*.

8.8.12. Move with shift and rotate

Move the selected objects with the defined vector and rotate.

8.8.13. Duplicate with shift and rotate

Copies the selected objects with the defined vector and rotate.

8.8.14. Align

The Align command aligns and/or distributes the selected objects on floor plan. The alignment applied only along the horizontal and vertical axes.



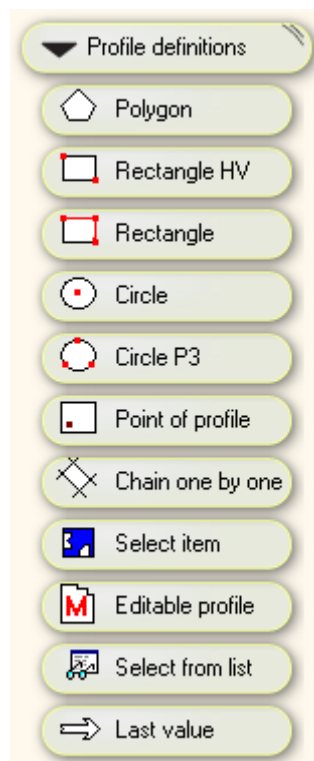
For a detailed description of the command see the Chapter 8.1.13. *Align*.

8.9. Specifying profile

When applying more commands to create or modify objects it is necessary to edit profile.

For example, profiles are used when specifying the contour to be cut into the wall or slab, when defining the slab, roof with a contour or when creating a terrain.

- ❖ When a command is waiting for the specifying a profile, the **Profile definitions** tool appears the commands of which can be used for specifying the profile. To close the *Profile definitions* tool, use the first icon, the Enter icon.



8.9.1. Polygon

Creates a polygon that can be used as a profile.

- Specify the polygon as a chain of lines and arcs.
Enter Closes the polygon.

Options:

| | |
|-------------------------|---|
| Arc | The next object of the polyline is an arc. |
| Select an object | The next object of the polyline is an existing object. |
| Smooth | The next object of the polyline is tangential to the previous object. |

8.9.2. Rectangle HV

Creates a rectangle that can be used as a profile. The sides of the rectangle are horizontal and vertical.

- Specify the first corner of the rectangle.

Specify the opposite corner of the rectangle.

8.9.3. Rectangle

Creates a rectangle that can be used as a profile.

- Specify the first corner of the rectangle.
- Specify another point of the rectangle's base line, or
- Specify the corner opposite to the first corner of the rectangle.

Options:

| | |
|---------------------------------|---|
| Width... | Creates the rectangle with a specified width. |
| Define rectangle X/y size... | Creates the rectangle with a specified width and height |



See the description of the *Polyline drawing commands* -  *General rectangle in Chapter 11.3.2.4.*

8.9.4. Circle

Creates a circle that can be used as a profile.

- Specify the centre point of the circle, or use the **Devise 3 points**, **Axis** keywords.

8.9.5. Circle 3P

This command creates a circle from 3 points.

- Enter the first and second point of the circumference of the circle.
- These two points define the arc and can determine the third one.

8.9.6. Point of profile

This command makes a profile from the closed polyline created in the active window. Just click inside the polyline and the program will search for the closed chain.

- Specify an internal point of the profile.

8.9.7. Chain one by one

This command creates a profile from a closed polyline by selecting its segments one by one.

- Select the sides of the profile one by one.
Enter Ends the selection.

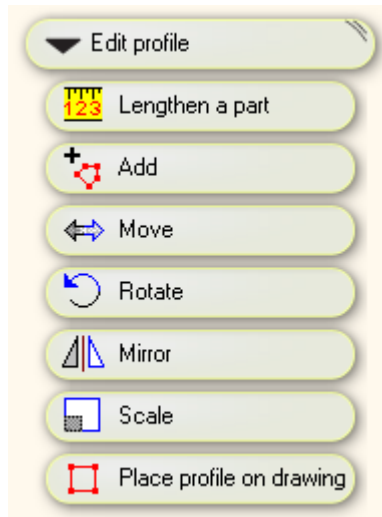
8.9.8. Select item

It applies the contour of the closed object or the hatching in the drawing

8.9.9. Editable profile

When modifying architectural objects, you may need to edit the geometry of a formerly created profile.

- ❖ When you use a profile editing command, in the Toolbar the *Edit profile* tool pops up whose commands can be applied for editing the profile. Use the first, Enter icon to close the *Edit profile* tool.



Lengthen a part

The program recognizes the direction of the selected section of the contour line. By entering the value of modification (relative length) you increase or decrease the length of the selected section by that value.

Add

Inserts a new node between the nodes closest to where you click in the contour.


- Select the section of the profile where you wish to insert the new node.
- Define the place of the new node in the drawing.
- You can repeat the command, or
Enter Completes the insert node command.

Move

Moves the selected profile.

- Select the profile you wish to move.
- Define the new place of the profile.
- You can repeat the command by selecting a new profile, or
Enter Completes the move command.

Rotate

With the  **Rotate** icon you can rotate the selected objects.



For a detailed description of the *Rotate* command see Chapter 8.1.9. *Rotate*.

Mirror

Places or copies objects by applying mirror transformation.



For a detailed description of the *Mirror* command see Chapter 8.1.11. *Mirror*.

Scale

Enlarges or multiplies the objects.



For a detailed description of the *Scale* command see Chapter 8.1.12. *Scale*.

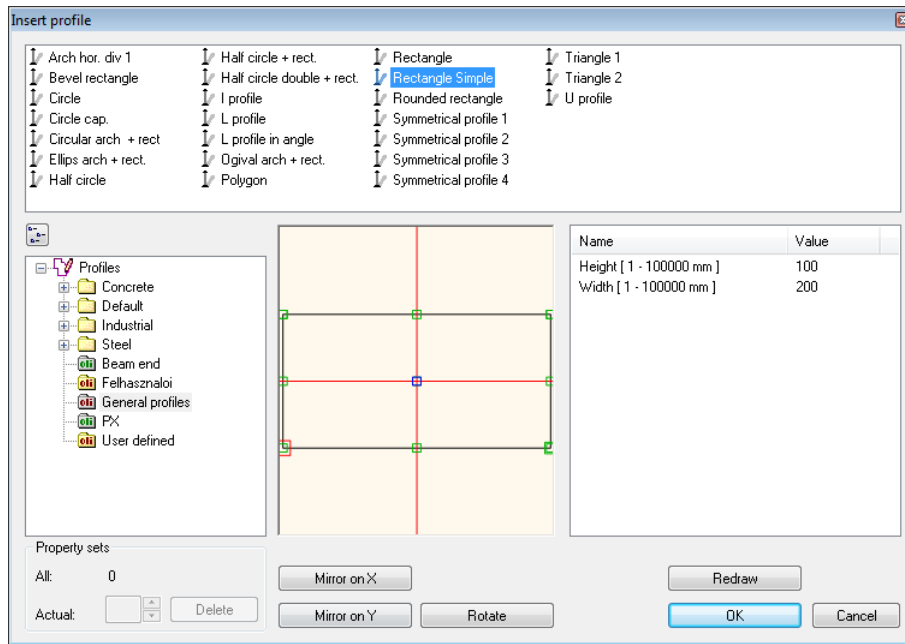
Insert profile in drawing

The requested or modified profile can be placed on the drawing with this command.

8.9.10. Select from list

Profiles are grouped into different categories of the profile directory.

With this command you can choose a predefined profile from the appropriate category of the profile directory.



- Choose the desired profile category and type from the list; the shape of the selected profile and the list of its geometrical characteristics appear. You can modify the values; after modification press **Redraw** to update the drawing area of the dialog box.
- To place, activate the desired reference point.
The eligible reference points are shown by small squares in the drawing area that can be activated by clicking. The active reference point is red while the others are green.
- Use the **Mirror** and **Rotate** buttons for the optimal setting of the profile.
OK Closes the dialog box.

The profile directory can be extended with closed and open profiles. To do so, use the *Building menu – Accessories – Define closed profile or Define open profile* instructions.



For the description see Chapter 9.11.5 on *Creating profiles*.

8.9.11. Last value

The selected profile is the last defined profile (if any).

9. Architecture

Introduction

Architectural objects (walls, doors, windows, slabs, etc.) are used to design 2D floor plan drawings and to develop 3D model of a virtual building. The modification of the position or dimensions of any of the architectural objects updates the model.

In this chapter you can find the commands to create a virtual building.

9.1. Wall

Introduction


Walls are drawn on 2D floor plan, but they have 3D characteristics as they are created. A wall, in ARCHLine.XP® is not a series of lines drawn in floor plan, but represents a 3D object having a width and a height structure. It is a 3D object as it is drawn having a two-dimensional representation in plan.

Surveying

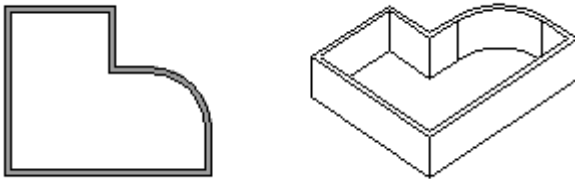
If you started the drawing with the survey of an old building, you will have a surveyed room with walls transformed into real walls. Now you can continue your work with drawing the new part of the building and connecting it to the old building, of course, depending on the actual task.

New building

You can start drawing - without any preparation - with the creation and modification of walls, and the drawing of the floor plan.

In both cases you will use the  *Wall tool* commands.


Walls are made up of one or more vertical layers (single or sandwich walls). Walls are independent and separate objects that are not linked to rooms, and they can be straight or curved.

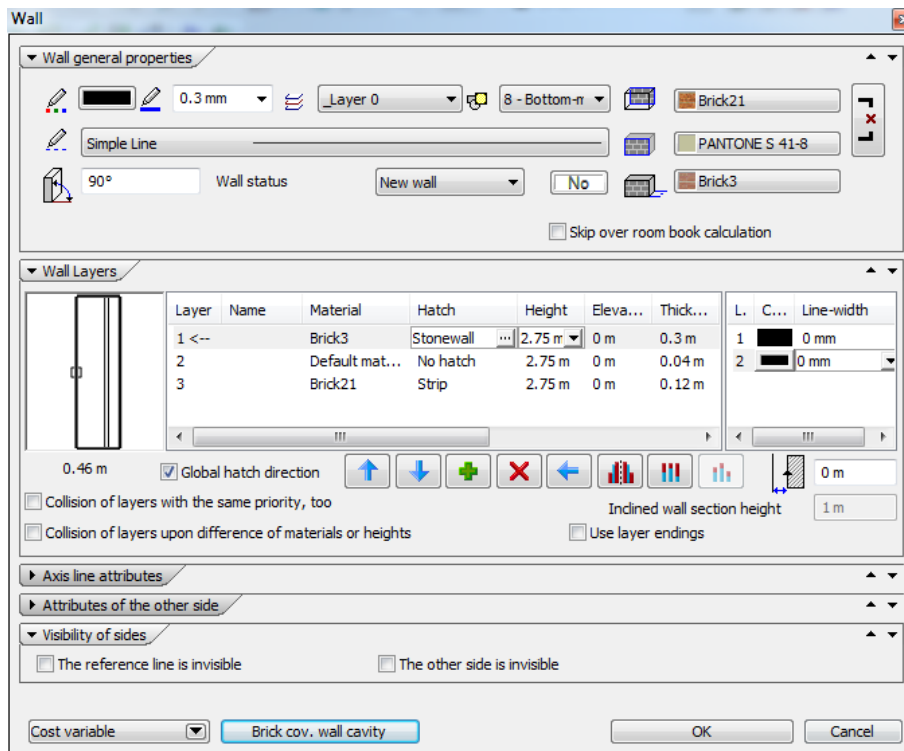


In this chapter we will discuss the setting of wall properties, the creation of walls, wall editing and wall modification.

9.1.1. Wall properties

Define wall properties before starting drawing.

You can set these properties by right-clicking  **Wall tool** or with the **Building - Properties - Wall** command. If you modify any of the wall properties that will affect the walls created later on.



9.1.1.1. Wall General Properties

Like any other architectural objects of ARCHLine.XP®, walls have also their colour, layer, line type, and line width and priority properties.



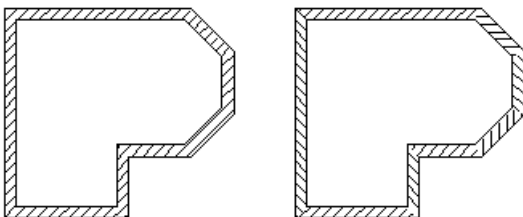
See:

- ❖ the detailed description of general properties in Chapter 3.2.1. *Specifying general properties*,
- ❖ the description of cost variables in Chapter 3.2.4. *Assigning cost variables*.

Walls have further general settings: specific hatch direction and the position of the reference line, or enabled side marker. You can also set the exterior and interior wall material.

Hatching directions

☒ Global hatch direction



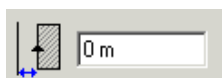
You can select the global hatching direction or you can disable this option if you want to use a hatching direction related to the wall direction.

You can see a hatching angle of 45° in this example.

Side marker

Enable this option to mark the outer side of the wall. This is a global switch for marking wall reference lines on each wall. Markings will not be plotted.

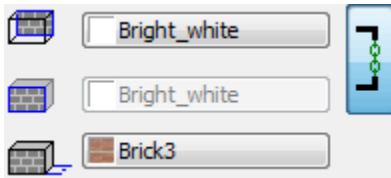
The Reference line



Type in the distance of the wall reference line and the location line. Also you can change the reference line during drawing by pressing TAB key on your keyboard.

Exterior and interior wall material

You can define different interior and exterior wall materials and an inner material for the wall.



- Press the button referring to the material.
- Select material type in the **Material** dialog box. Click on the right side Link button to use identical interior and exterior wall materials.



You can perform material selection by selecting the appropriate material in the *Design Center, Material set* and dragging and dropping onto the wall. See chapter 8.5. *Modifying properties* for a detailed description.

Wall status

There are four possible wall statuses:

- ❖ New wall
- ❖ Existing wall
- ❖ Wall to be demolished
- ❖ Wall not connected

New wall

The New wall status is the default. Should be used for drawing walls in general if other statuses are not necessary to visualize.

Existing, Wall to be demolished

The first three statuses make it possible to distinguish existing walls, walls to be demolished and new walls on your drawing in the case of the reconstruction or extension of an existing building.

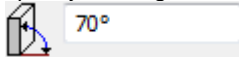
You can assign colours to the existing walls and to the walls to be demolished in accordance with standards in force. The program will colour walls in the drawing with these colours. Colour assignment is global, so the program will apply settings to all the existing walls and walls to be demolished in the drawing. Walls to be demolished will not have 3D model.

Wall not connected

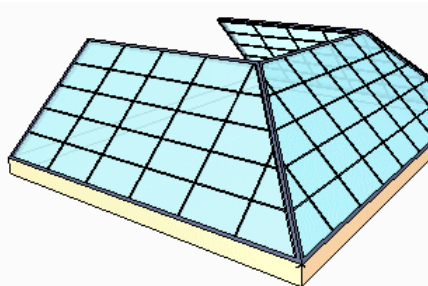
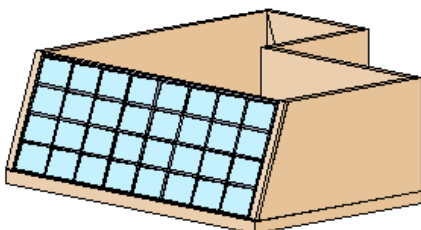
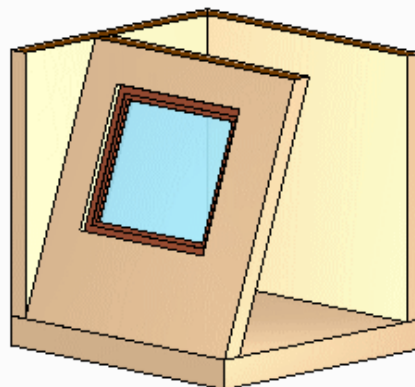
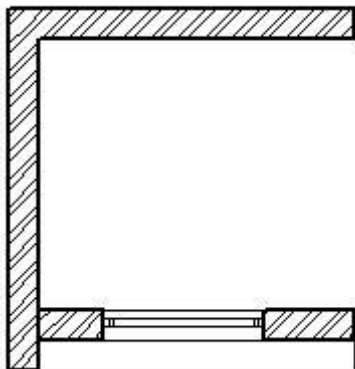
Using the *Wall not connected* status, you can create a special wall by which will not be automatically connected to other walls and cannot be connected manually also.

Slanted wall

- Specify the angle of inclination. The positive direction is specified by the wall reference line.

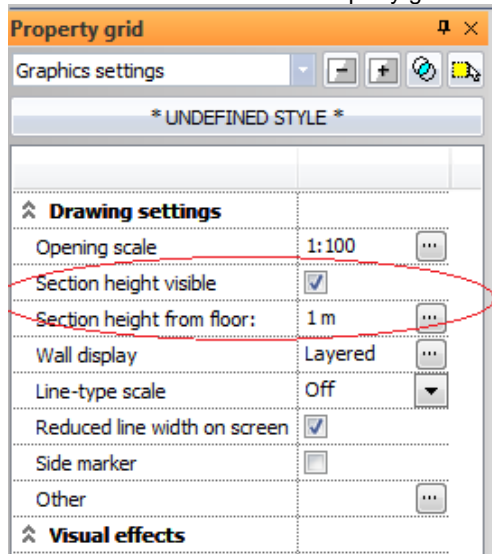


- Slanted walls are displayed on the floor plan with their section view at the height of 1 m.



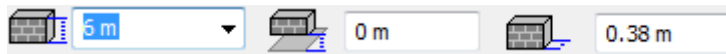
Wall – No hatch under elevation 1m

There is no wall hatch displayed when the wall elevation plus the wall height is under the **section height from floor** value. You can set this value in the Property grid when 2D floor plan is the active window.



Geometry properties

In **Geometry properties** you can define the geometry specific properties of the wall: wall height, wall height related to the current floor and wall thickness.



Wall height

You can define wall height in accordance with the elevation of the actual floor. In this case wall height will take the value set in the *Modify floor elevation* dialog box.

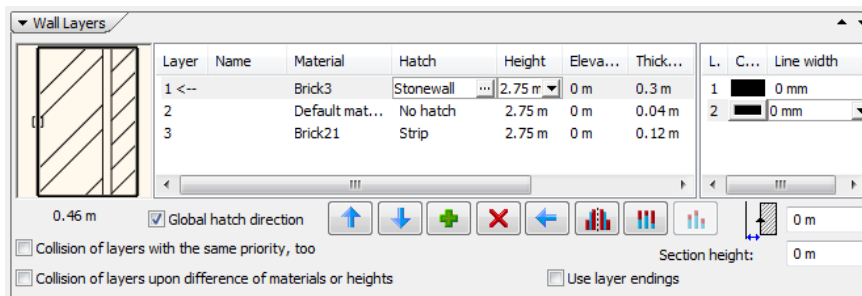
If you select the *Floor elevation* option in the pull down list of wall height, the height of the 2.7 meters wall will change to 3 meters, in line with the actual floor elevation.

In the case of layered walls, click on the *Mirrored* button to change the layer order to be mirrored.

9.1.1.2. Wall Layers

Click on the **Layers** option on the left hand side of the dialog box.

In the open dialog box section you can create multi-layered walls, consisting of up to 7 layers. You can also select multi-layered wall structures from the default sets or you can create your own one layer by layer. It is worth creating and saving the wall structures often used. With the help of these structures you can display the nodes on the section drawing similarly to the way they are displayed in a construction drawing. You should prefer using multi-layered slabs to achieve this.



Click on the **Insert new** button to add new layers. Layers before the insertion will be intact, while layers after the insertion will be shifted.

Click on the **Delete** button to delete the wall layer selected.

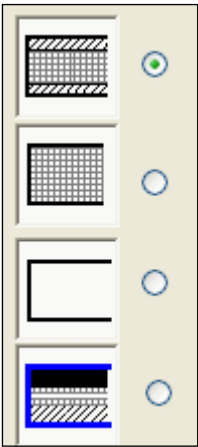
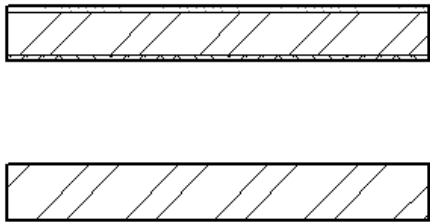
The program will display the total thickness of the multi-layered wall.


Displayed layer

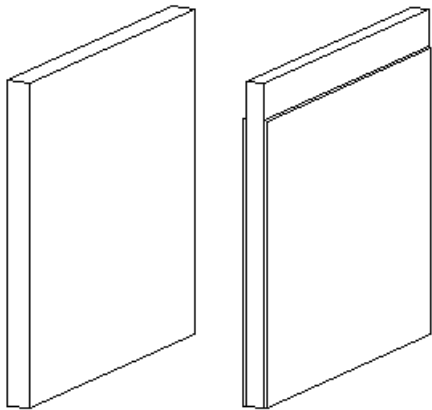
Select the layer in the list you want to display and click on the **Displayed layer** button. The *Arrow* will jump to the number of the layer to mark the representative layer (usually a brick or concrete layer).

This is very useful when displaying walls on the floor plan or in 3D without any layer. The program will use the marked layer's properties to display the wall.

In the case of the floor plan:
Enable the second icon at the wall in the View menu - Doors, windows, and wall scale dialog box.
The wall will have the properties of the hatches of the displayed layer.



In 3D:
If you want to see the layered wall in 3D, the wall will be displayed with the properties of the displayed layers.
To display layers, enable the **With laminate** option in the  **3D** **Build 3D model** dialog box. You can see layers of different width in the example.

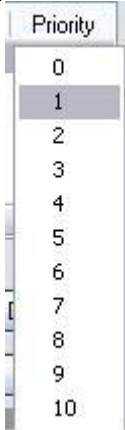


Layer properties

| Layer | Name | Material | Hatch | Height | Elevation | Thickness | Priority | L |
|-------|-----------|-----------|-------|--------|-------------|-----------|----------|---|
| 1 <-- | Brick3 | Ston... | | 2.75 m | 0 m | 0.3 m | 5 | P |
| 2 | Defaul... | No h... | | 2.75 m | 0 m | 0.04 m | 1 | P |
| 3 | Brick21 | Strip ... | | | Floor elev. | | 1 | P |

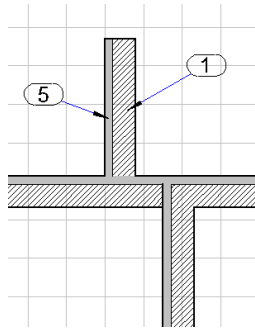
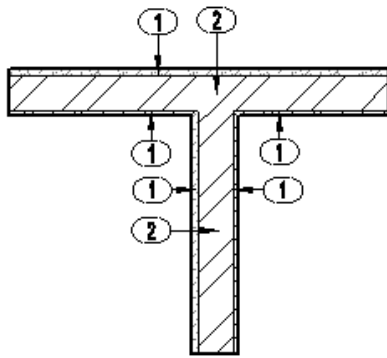
Click on the field to activate the desired wall layer. To modify layer name, material, height, elevation and thickness, double-click on the actual field. You can also define wall height with specifying elevation. To do so, select the *Floor elevation* option in the drop down list.

Layer priorities



In the case of layered walls, you have to specify the priority (drawing order) of individual layers to have proper wall joints. Click on the *Priority* field.

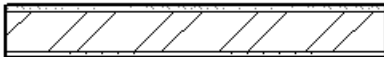
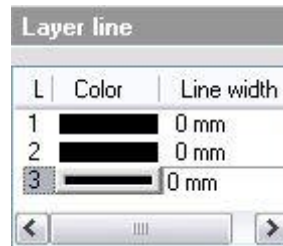
You can assign a priority index to each wall layer (ranging from a minimum of 0 to a maximum of 10), and this index will define which layers will join (with L or T joints). High priority layers will cut through low priority layers.



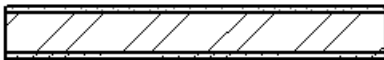
Layer line

You can set the width and colour of the line between the layers of the multi-layer wall layer by layer.

The program will offer the 0 line width as a default.



Line width between layers: 0

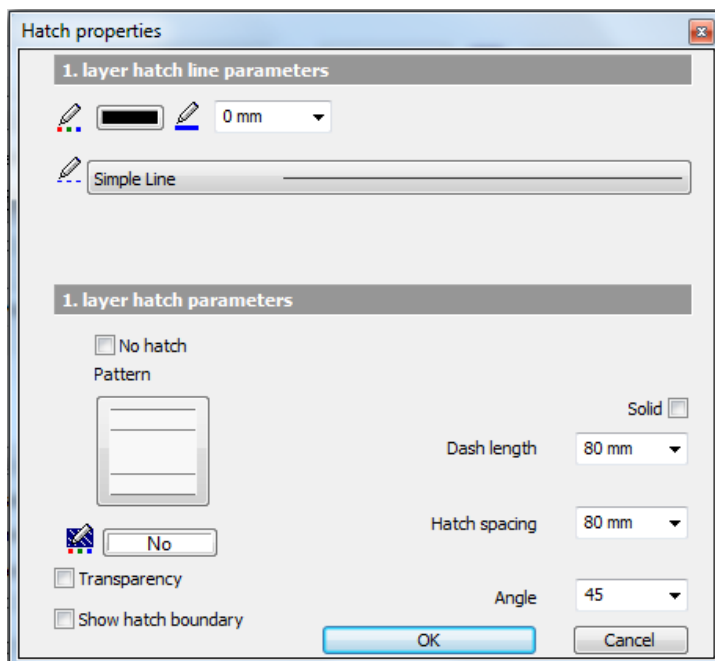


Line width between layers: 0.3 mm.

Layer hatching

Select **Layer hatch** on the left hand side of the window to set the hatching parameters of the selected wall layer when displayed on the floor plan.

- Select the layer in the **Layers** dialog box, and
- Click on the **Modify layer hatch** button. ...



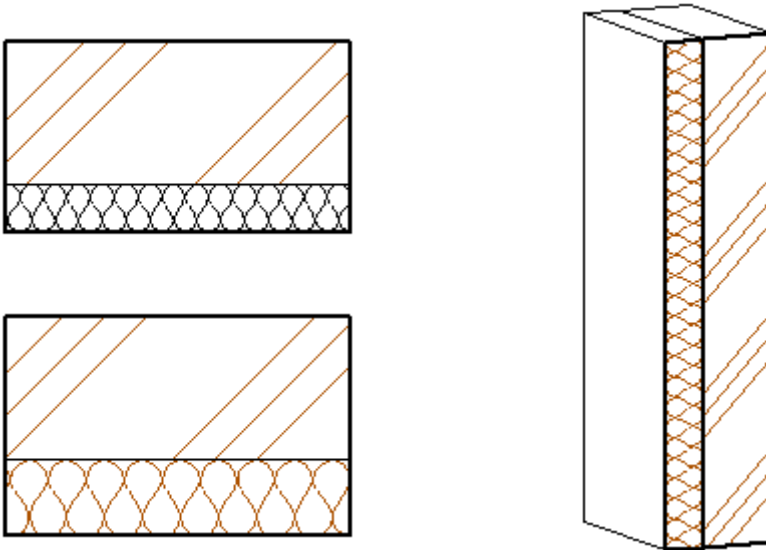
You can set the general hatching properties of the wall in the upper side of the dialog box, i.e.: colour, line type, line width. In the specific parameters section you can set the background colour, the pattern, the hatch density, the transparency, the visibility of hatch boundary, the angle of wall hatching and you can also turn it into a solid pattern.



In the case of walls you also have to define hatching parameters for the cross-section view. You can set this parameter by changing the appropriate material's properties of the actual layer.

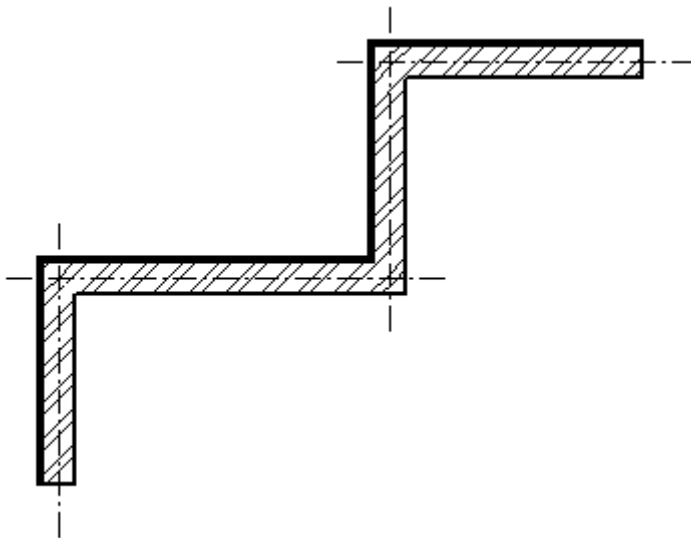


See Chapter 3.2.2. *Material properties dialog box* and Chapter 11.7.1 *Hatch properties*.



9.1.1.3. Walls with layer axis line representation

On the floor plan, the active wall layer axis line can be represented with different line properties. The line properties can be set in the *Displayed layer axis line* panel:



9.1.1.4. Walls with different inner and outer line representation

On the floor plan, the other side of the wall contour line can be represented with different line properties. Other side means the opposite side to the wall reference line. The line properties can be set in the *Other side* panel:



Wall


► Wall general properties

► Wall Layers

▼ Axis line attributes



☐ Visible


  0 mm Elongation 0 m

 Dotted-dashed

▼ Attributes of the other side


☐ Different

  0 mm

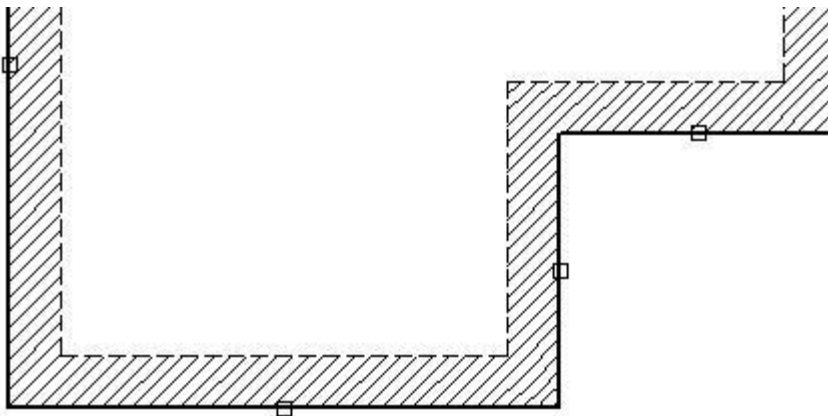
 Simple Line

▼ Visibility of sides

☐ The reference line is invisible ☐ The other side is invisible

Cost variable  Brick cov. wall cavity

OK Cancel



9.1.1.5. Visibility of the sides

▼ Visibility of sides

☐ The reference line is invisible ☐ The other side is invisible

9.1.1.6. Wall sets

Wall


► Wall general properties

► Wall Layers

► Axis line attributes

► Attributes of the other side

► Visibility of sides

Cost variable  1 layered 38 wide wall

OK Cancel

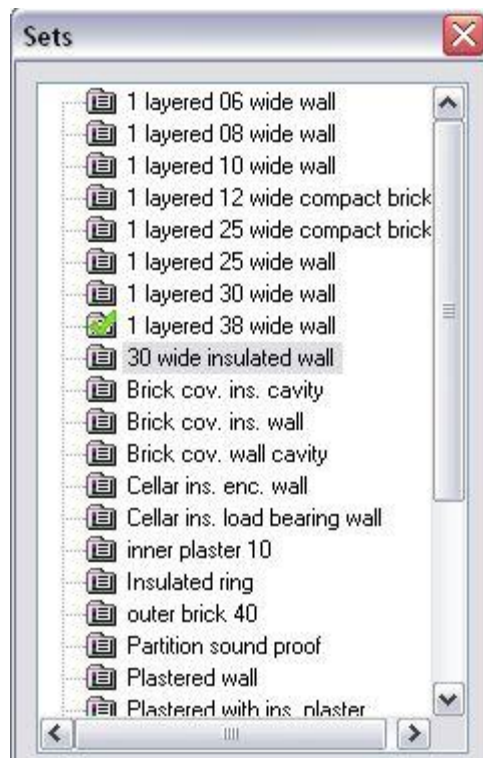
Sets

You can save your own wall properties into the sets, and you can also load wall properties from the sets.

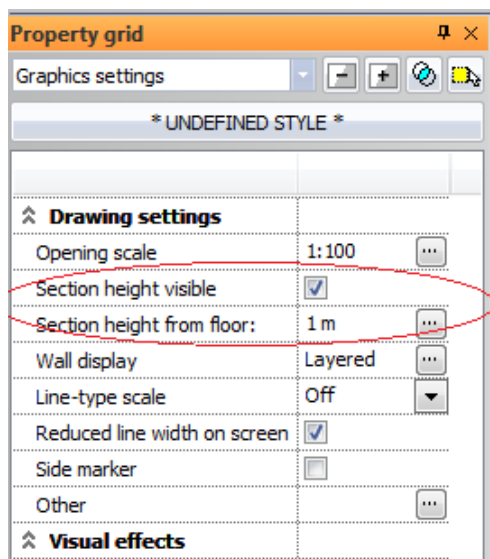
The program contains default wall properties; you can select any of them or add new properties.



See the description of sets in Chapter 3.2.3. *Using sets of properties.*



9.1.1.7. Property grid – Wall properties



Wall – No hatch under elevation 1m

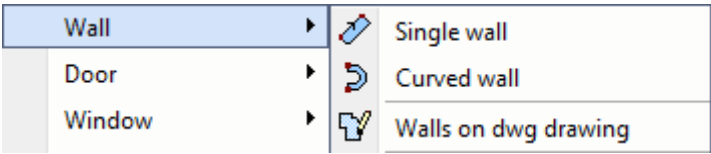
There is no wall hatch displayed when the wall elevation plus the wall height is under the **section height from floor** value. You can set this value in the Property grid when 2D floor plan is the active window.

9.1.2. Creating walls

You can create walls in different ways using

- ❖ the **Building menu - Wall** commands or
- ❖ the **Toolbox – Building -  Wall tool.**

Here **click** with the mouse **left button** on the icon the related submenu appears:



9.1.2.1. Single Wall

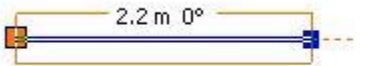
With this command you can draw one or more walls along a reference line. Define wall corner points one by one.

- Define the starting corner point of your wall and then the end corner point.
- Define the endpoint of the next wall (the wall endpoint coincides with the starting point of the next wall), or
- **Enter** start drawing a new wall, irrespective of the previous one.
- **Enter** completes the command.

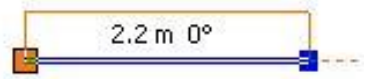
Wall directions depend on the settings of the reference line; to modify press TAB when drawing. After pressing the TAB move the cursor to see the result.



The wall will be placed on the right side of the reference line.



The wall will be placed onto the axis.



The wall will be placed on the left side of the reference line.

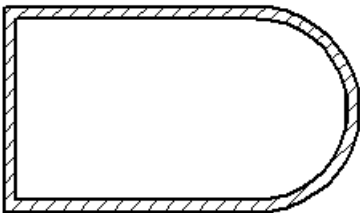
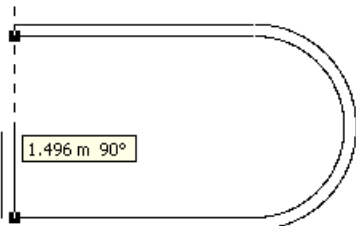
Options:

| | |
|------------------------|---|
| In the middle | Places the reference line centred. |
| Right side / Left side | Places the reference line on the right / left side of the wall. |
| Smooth | The next wall will be joined to the previous one tangentially. |
| Arc | Draws arc wall. |
| Tangent | If the first object of a polyline is an arc, you can define a tangential vector for the arc. You can continue an existing wall with a tangential arc. |
| Select an object | Places the selected object into the contour of the profile. |
| Inverse | Places wall reference line to the other side. |

Draw by polygon option

With this option you can draw the wall along a reference line, defining nodes with each click. The reference line may contain arcs and lines too. It is different from the previous function because the program will draw wall alignment only until you end the command.

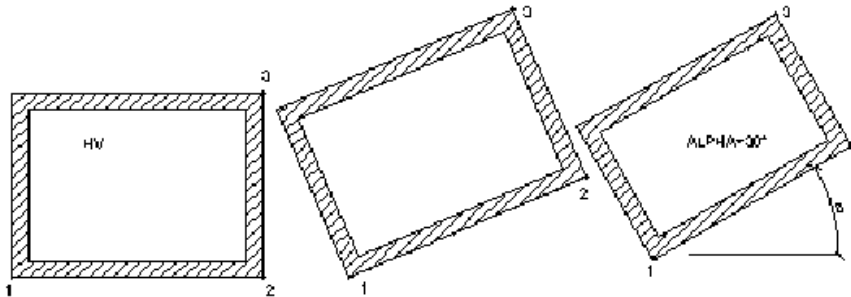
- Define the starting corner point of the wall and then the other nodes. The endpoint of the wall coincides with the starting point of the next wall. The joint can be normal or tangential, and the wall can be linear or arc.
 - Define the endpoint of the next wall, or
 - **Enter** you can start drawing a new wall, irrespective of the previous one.
 - **Enter** completes the command.
- The program will display the walls.




Draw by rectangle option

With this option you can create walls along a rectangle contour and define walls with their base lines and width.

- Define one corner of the rectangle base line and then a second one.
- Move the pointer into the appropriate direction and define the width of the rectangle with its other corner point.
- **Enter** completes the command.
-

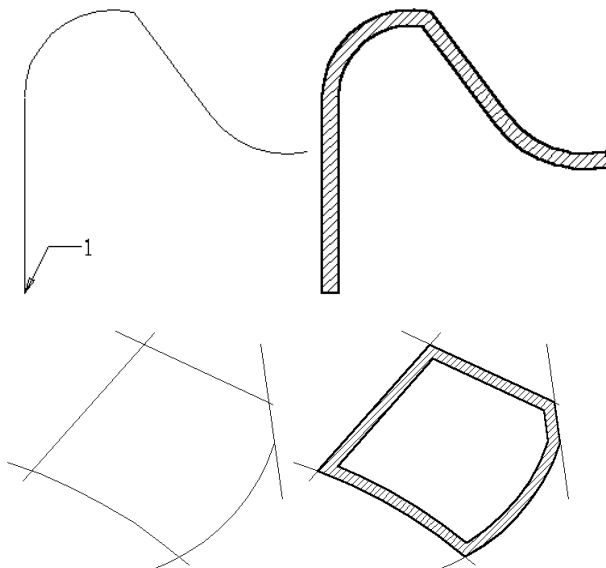


See Chapter 11.3.2.4. Commands for drawing polylines  - General rectangle.

Wall by existing chain options

Use these options to place one or more walls along one predefined open or closed polyline.

- Select the corresponding option and the endpoint of the polyline and the program will draw the walls. The profile may contain lines and arcs.
The program creates the wall along the profile.
- **Enter** Exits the program.
-



The polyline actually indicates the position of the reference line, because the program will place the walls depending on the value of the **reference line settings** which can be changed with the options.

9.1.2.2. Curved wall

With this command you can draw arc wall passing through three points.

- Define the starting point, endpoint and an internal point of the arc wall. The wall endpoint coincides with the starting point of the next wall. The joint can be normal or tangential, and the next wall can be linear or arc.
- Define the endpoint of the next wall, or

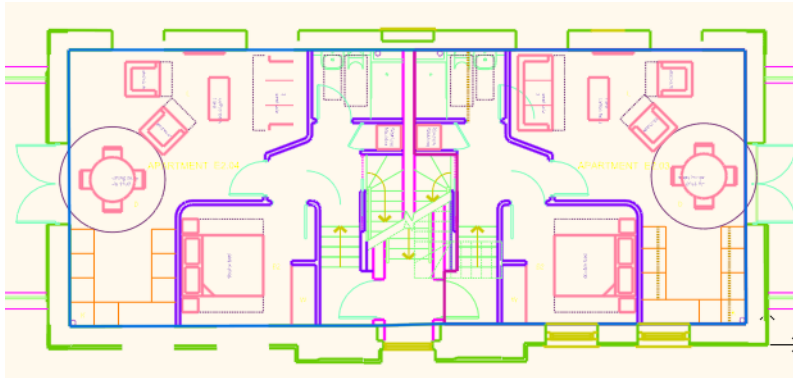
- **Enter** you can start drawing a new wall, irrespective of the previous one.
- **Enter** completes the command.

9.1.2.3. Walls on DWG drawing

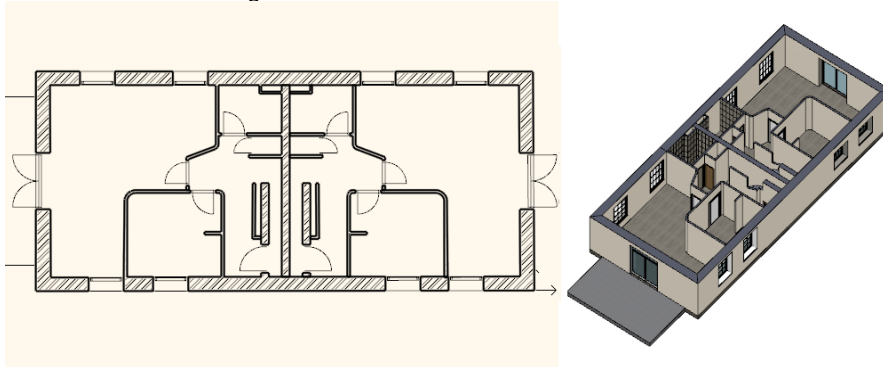
The Walls on DWG drawing command is used to convert a 2D drawing into a 3D model, by using its lines.

Example:

Imported DXG/DWG drawing



2D lines converted into drawing & 3D model



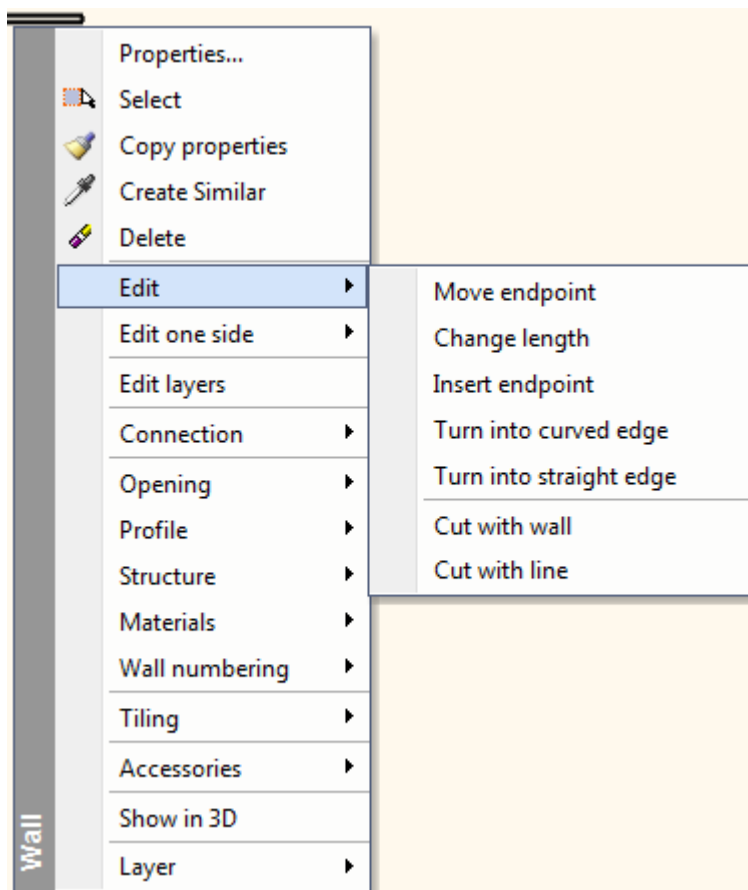
How to use the tool

- ❖ Start the Walls on DWG drawing tool.
- ❖ Left click on a line near to its endpoint, which line represents one side of the wall.
- ❖ Left click on the same line, near to its other endpoint.
- ❖ Left click on the second line, which represents the thickness of the wall. When the tool is finished, you will see the wall object on the 2D and in 3D.

9.1.3. Editing walls

You can edit the walls created. When editing, you can edit the entire wall (i.e. both sides together) or one side only.

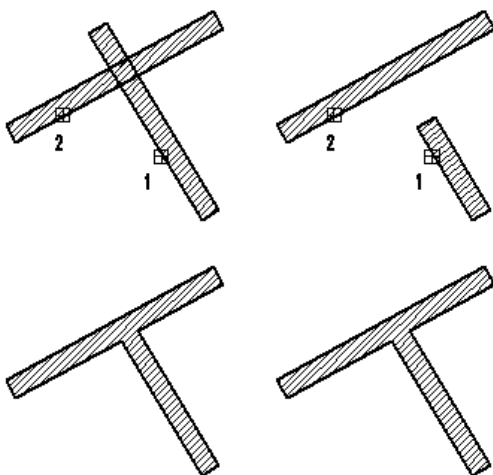
- ❖ Use the **Shortcut menu** commands. Right click on the wall to display the shortcut menu



You can find edit commands for the entire wall and for one side of the wall in the *Shortcut menu*. The menu can be found on both the 2D and 3D views.

9.1.3.1. T connection

This command will join the first selected wall to the second one. The first wall will keep its selection side part, and the second wall will remain intact. Not joined endpoints of the first wall will keep their original position as well.



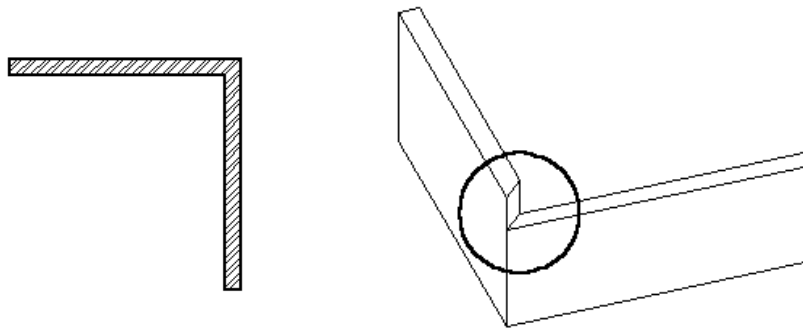
- Select the wall object you want to join to another wall. Select the section of this object you want to keep.
- Select the wall object you want to join to the previous one.
- **Enter**
Completes the command.

Walls connected perpendicularly


In the case of an existing L connection you can convert the corner connection to a perpendicular wall connection. For this, you have to use a T connection.

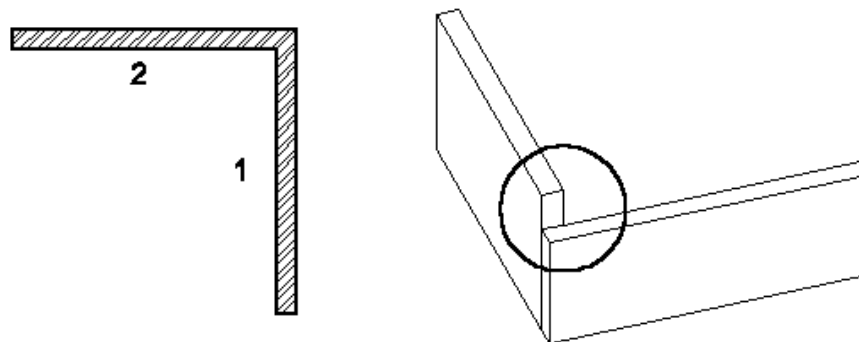
Example:

- Draw two walls of different height, having an L connection.
-



You can see in the hidden line 3D drawing that the walls do not close perpendicularly. Use a T connection to join them properly.

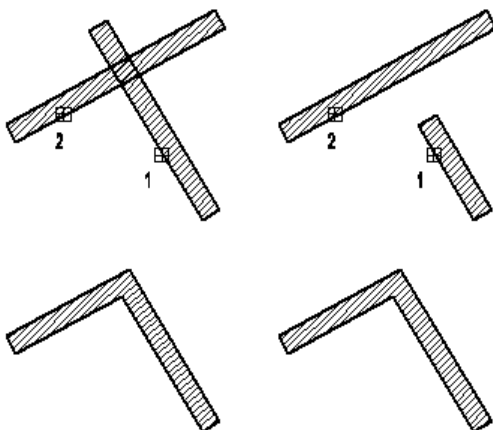
- In the wall Shortcut menu select *T connection* or the  *Trim first object (wall)* icon in the *Edit* toolbar.
- Click on wall 1 and then wall 2 (See figure).
-



Now you have the proper connection with perpendicular walls.

9.1.3.2. L connection



This command will join two walls by cutting them at their intersection or lengthening them at their user defined part.



- Click on the wall you want to adjust to the other one. Select that part of the object you want to keep.
- Select the wall you want to join to the previous one.
- Click **Enter** to end command.

- Click on the wall you want to adjust to the other wall. Select the part of the architectural object you want to keep.
- Select the wall you want to join to the other wall.



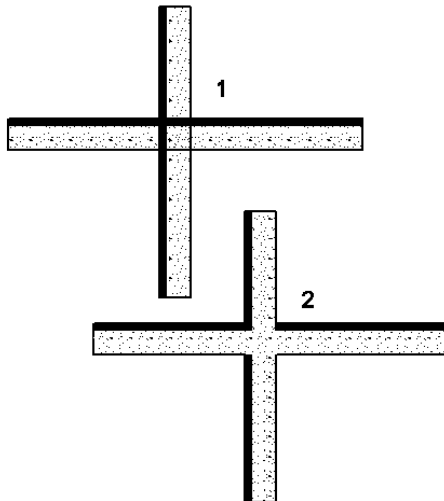
You can join the walls besides the Shortcut menu commands, also with the **Edit toolbar** -  **Trim first object** and  **Trim both objects** commands.

9.1.3.3. X connection

This command will join two walls by cutting both of them at their intersection. In the wall Shortcut menu select *X connection*.

- Right click on the wall you want to adjust to the other one

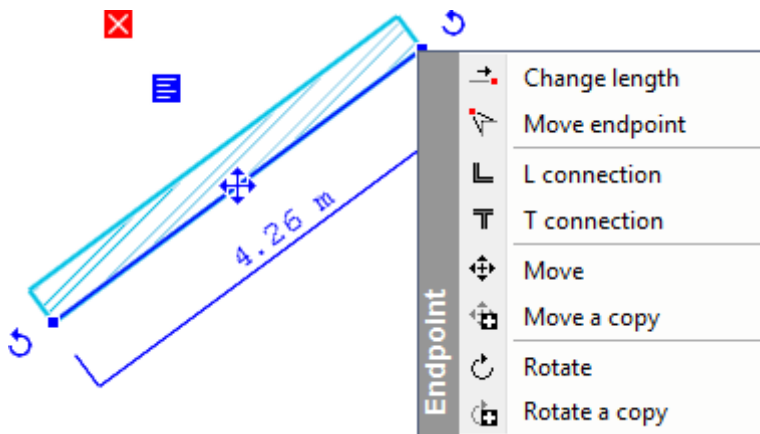
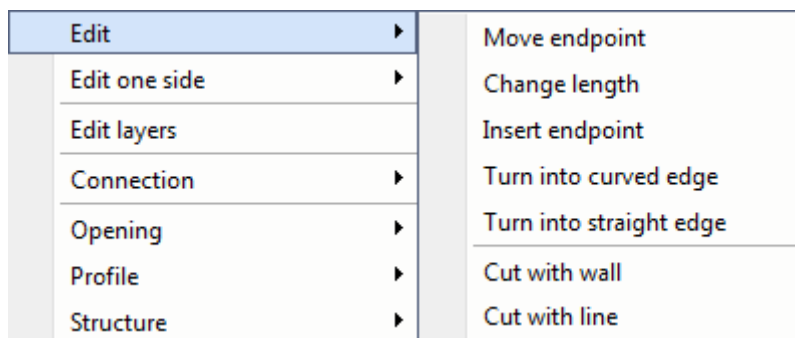
- Select X connection from the pop menu Connections (See figure).



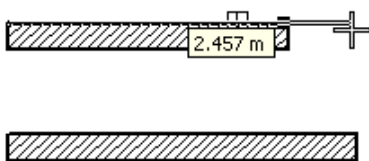
9.1.3.4. Change length

When modifying the length of a wall ARCHLine.XP® automatically recognizes the direction of it. It is enough to select the endpoint and move the cursor to the appropriate direction, then type the relative length value on the keyboard. The positive value is measured in the selected direction along the direction of the object.

You can find this command in the *Shortcut menu - Wall – Edit Change length.* or click on *the wall endpoint marker.*

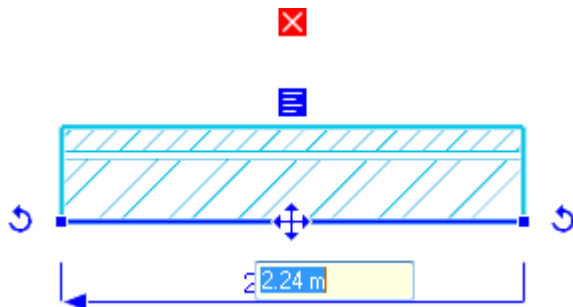


- Define the new length by moving the mouse, or use your keyboard for entering the shift value.

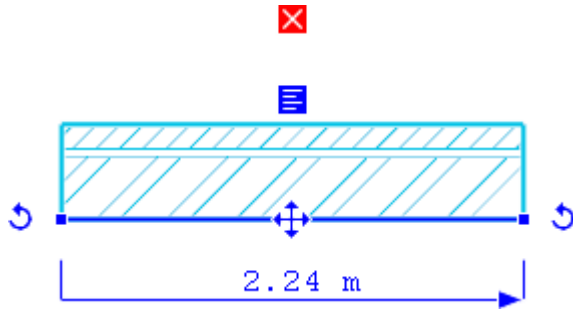


Modify length by typing the absolute length

- Click on the wall and next click on the length value.
- Use keyboard for entering the new absolute length. The length will change relative to the wall direction marker.



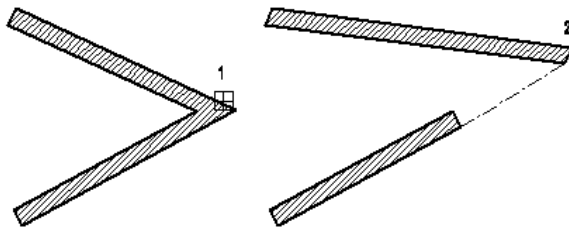
- If you wish to change the order of start point and endpoint positions click on the direction arrow marker to move it to the other endpoint of the wall.
-



9.1.3.5. Move endpoint

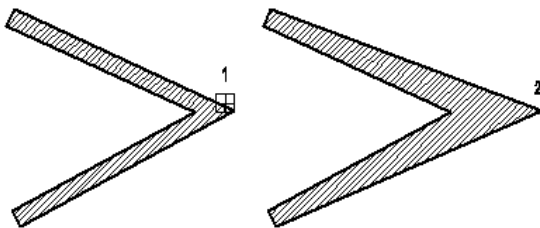
This command will change the location of any corner point of the wall without changing wall thickness. You can find this command in *Shortcut menu - Wall - Edit Move endpoint* or click on *the wall endpoint marker*.

- Select the endpoint you want to move.
- Define a new location for the endpoint.



Move endpoint on one side of the wall

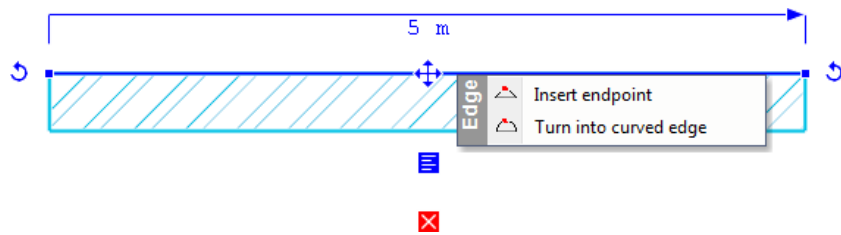
You can move a node to one side of the wall only, which will change wall thickness and the geometry of that wall side. You can find this command in *Shortcut menu - Wall - Edit one side – Move endpoint*



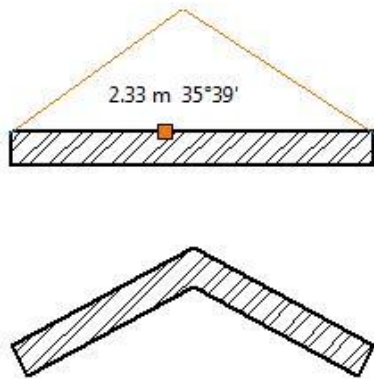
9.1.3.6. Insert endpoint

This command splits a wall to two connected walls by adding a new node on the selected side of the wall.

You can find this command in *Shortcut menu - Wall - Edit– Insert Endpoint* or click on *the wall edge marker*.

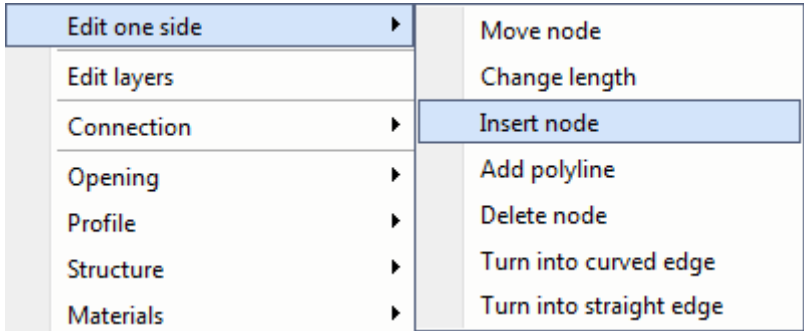


Define a new location for the inserted point.



9.1.3.7. Insert node on one side of the wall

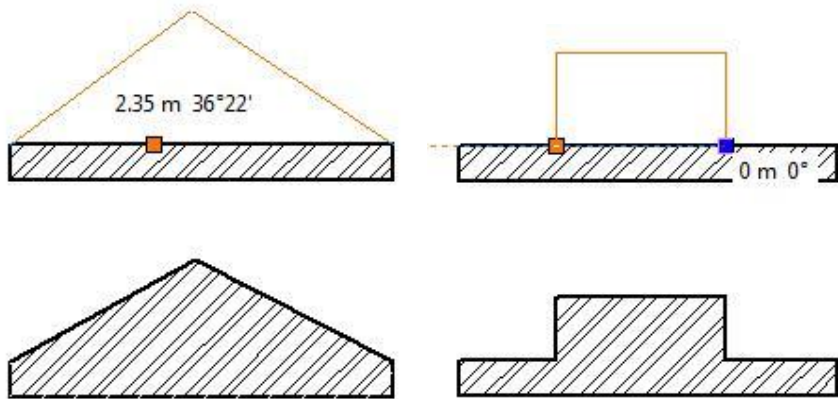
You can insert a node to one side of the wall only, which will change wall thickness and the geometry of that wall side. You can find this command in *Shortcut menu - Wall - Edit one side - Insert node*.



- Specify the location of the new node.
-

Options:

| | |
|----------------|--|
| Polygon | You can define a polyline as new closed contour of the wall side. Specify the corner points to be inserted one by one. |
|----------------|--|



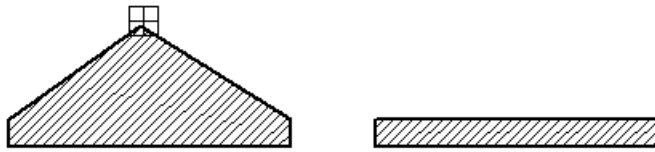
Polygon

9.1.3.8. Delete node

You can delete a node from the selected wall, if you have inserted that node to one side of the wall.

You can find this command in the *Shortcut menu - Edit one side - Delete node*.

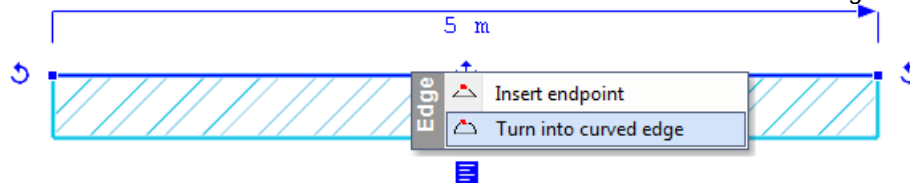
- Select a wall by clicking close to the node to be deleted.



9.1.3.9. Turn into curved edge

This command will convert straight linear walls to arc walls, or modifies the radius of an existing arc wall.

You can find this command in *Shortcut menu - Wall - Edit - Turn into curved edge* - or click on *the wall edge marker*.



- Select the wall to be modified. You can select arc walls as well.
- Click on the desired point to define graphically the arc to be intersected by the arc wall.



Converting lines to arc on one side of the wall

You can convert one wall side to arc only, which will modify wall thickness and the geometry of the wall side concerned.

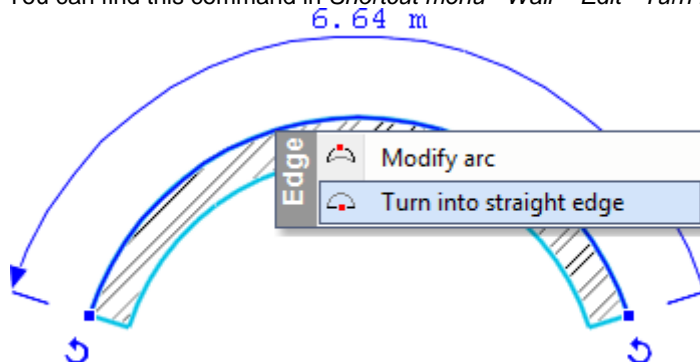
You can find this command in *Shortcut menu - Wall - Edit one side - Turn into curved edge*



9.1.3.10. Turn into straight edge

This command will convert an arc wall to a linear one.

You can find this command in *Shortcut menu - Wall - Edit - Turn into straight edge* - or click on *the wall edge marker*.



- Select the arc wall you want to convert to linear one.
- **Enter** Completes the command.

Converting arc walls to linear on one side of the wall

The command will convert one side of the wall to linear only.

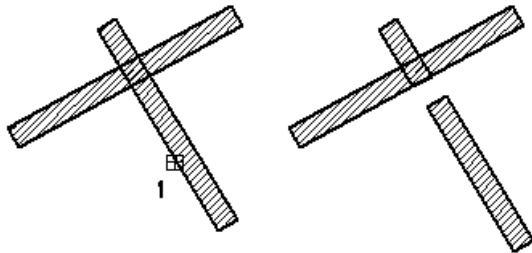
You can find this command in *Shortcut menu - Wall - Edit one side - Turn into Straight Edge*.

9.1.3.11. Cut with wall

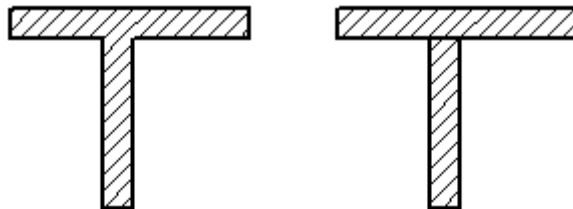
This command will split the wall into two at the point of intersection nearest to the selected point.

You can find this command in *Shortcut menu - Edit - Cut with wall*.

- ❖ The program will create two new walls as the result of this operation.



- ❖ This is also very useful when the intersecting walls are connected. This command will delete the wall T or L connection.



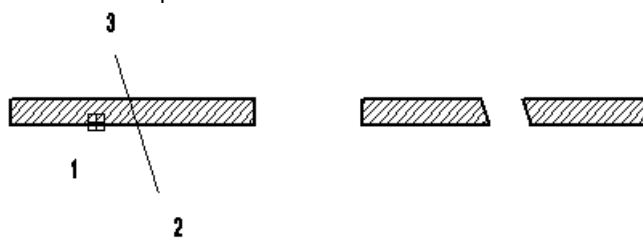
- Select the wall you want to split.
- Select further walls, or
- **Enter** Completes the command.

9.1.3.12. Cut with line

This command will cut the selected wall along a specified line.

You can find this command in *Shortcut menu - Wall - Edit - Cut with line*.

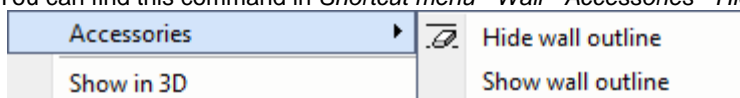
- Specify the wall you want to split (point 1).
- Specify the starting point and the endpoint of the secant line.
- **Enter** Completes the command.



9.1.3.13. Hide/Show wall outline

This command will delete a part of the wall contour line.

You can find this command in *Shortcut menu - Wall - Accessories - Hide wall outline* and *Show wall outline*.



- Select the appropriate part of the wall.
- Click on the start point of the wall outline from where it will be hidden.
- Click on the endpoint of the hidden part.

Using the *Wall shortcut menu- Accessories - Show wall outline* command you can show the hidden part of the wall contour.

- Select an endpoint of the hidden part of the contour to make it visible.

9.1.4. Modifying wall profiles

You can modify or delete the upper, total or cross-section profile of walls with the following commands. You can activate the wall profile modifying commands from any of the followings:

❖ **Building - Wall – Profile**

| | |
|--|---------------------------|
| | Add whole frontal profile |
| | Add upper frontal profile |
| | Delete frontal profile |
| | Add section profile |
| | Delete section profile |
| | Place frontal view |

❖ **Shortcut menu:** you can activate the commands from the floor plan or the 3D window.

| | | |
|----------------|--|---------------------------|
| Profile | | Add whole frontal profile |
| Structure | | Add upper frontal profile |
| Materials | | Add bottom profile |
| Wall numbering | | Add section profile |
| Tiling | | Edit section profile |
| Accessories | | Place frontal view |

9.1.4.1. Add upper frontal profile

This command modifies the top profile of the wall and you can also make open wall profiles with it. You can also modify the wall top profile on the floor plan, or in the 3D window.

- Select one side of the wall to be modified in the floor plan or the front side of the wall in the 3D window display its front view (*point 1*). The program will automatically create the front view of the selected wall. (If you have modified a wall profile before, the program will display the current front view of this wall.)

Options:

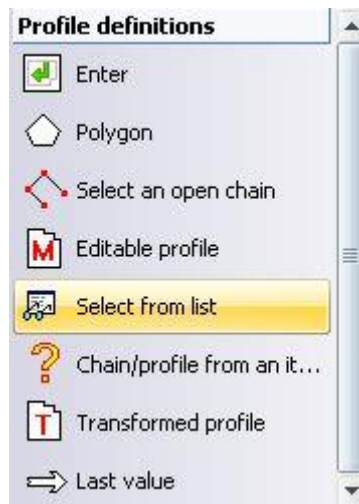
| | |
|--------------|---|
| NEXT | You can change corner points of the developed facade view to specify the appropriate reference point. Pressing the TAB on keyboard execute this command. |
| STAIR | The side view of stairs connected to the wall will also be represented in the front view of the wall - this will facilitate the definition of the profile of the wall under the stairs. |

- Place the developed frontal view of the wall (*point 2*).

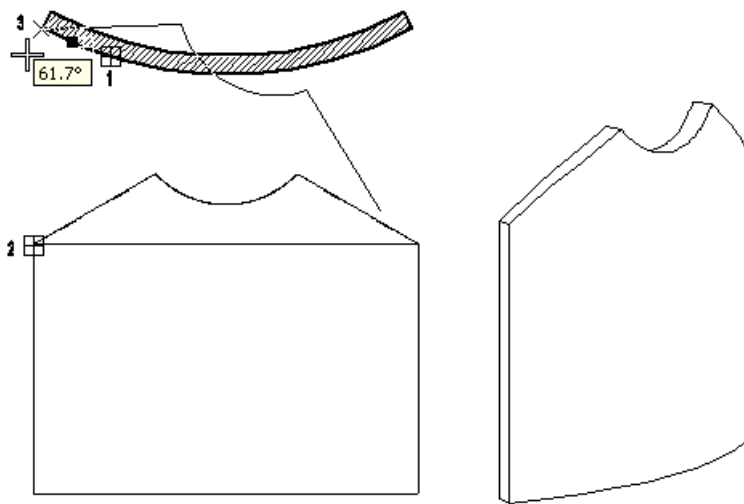
- Specify an open profile with which you can define the new frontal view of the wall. If it is a closed profile, the program randomly deletes a part of it. Select any option to specify the profile in the *Toolbox – Profile definition tool*.



For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.



The modification will be displayed in the 3D view. You need to enable the *View – Refresh 3D* option to get it.



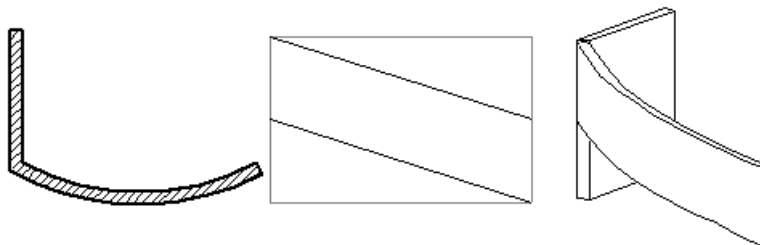
You can create a new profile with the menu *Building/Object*



Open profile command; and you can save your profiles in the profile library.

9.1.4.2. Add whole frontal profile

With this command you can convert an existing wall facade to an asymmetrical one. You can create *closed* profiles with this command; modifying these walls. You can modify the whole profile on the floor plan and in the 3D dialog box too. The operation of this command corresponds to that of the **Wall top profile** command. The difference is that you have to specify a closed profile here.

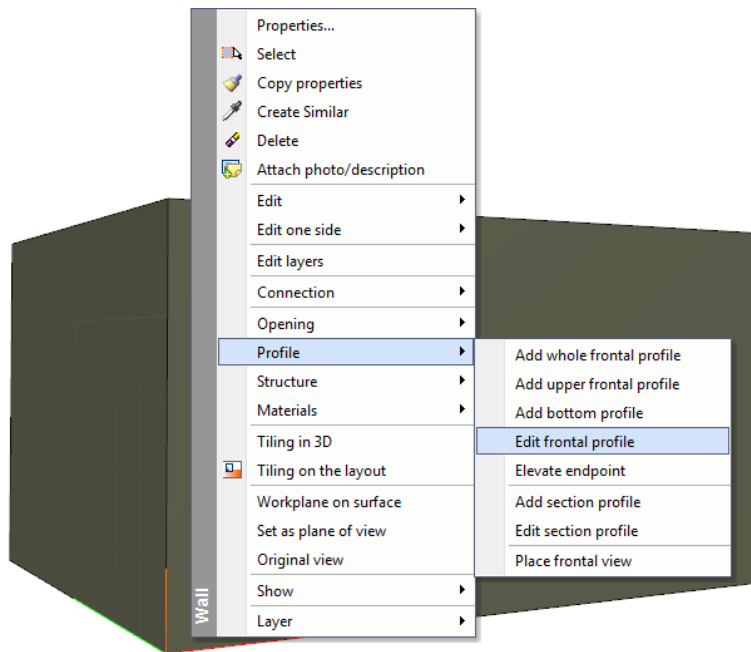


See Chapter 9.1.4.1. *Add upper frontal profile* for description.

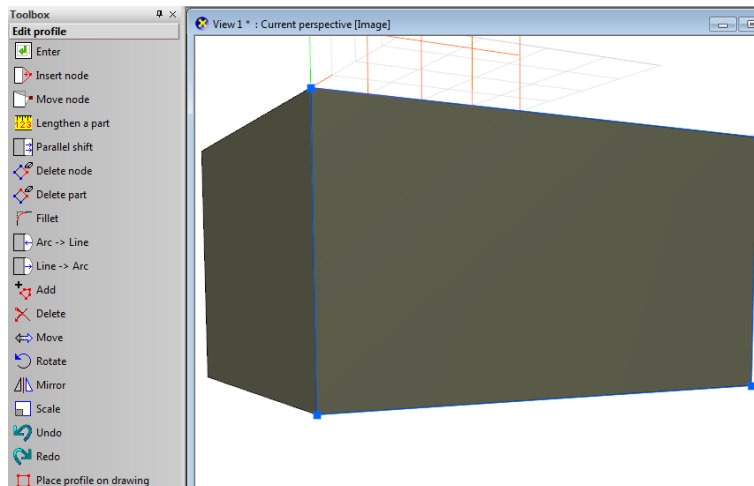
Example: the *Edit frontal profile in 3D*

How to use the tool

- ❖ Right click on the wall surface in 3D and from the appearing pop menu choose *Profile / Edit frontal profile*.



- ❖ Use the Edit profile tools to change the shape of the wall surface as you wish.



Press **Enter** to complete the command.

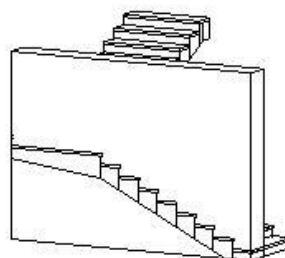
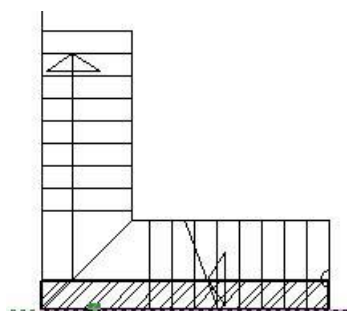
Example: Setting the wall profile under the stairs

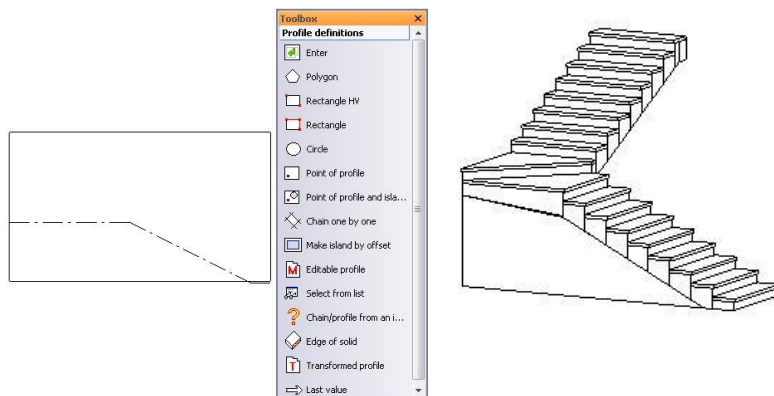
Option:

STAIRS

The layout image of the stairs attached to the wall will be displayed on the front view of the wall. This helps you to define the profile.

- Select the stairs to which you want to adjust the wall.
- When you set the profile define the closed profile under the stair.





9.1.4.3. Add section profile

With this command you can change the cross-sectional profile of the walls. You can create a wall with a slanting plane or place a wall under an exterior entablature.

- Select one side of the wall to be modified in the floor plan. The program will automatically create the cross-sectional profile of the selected wall. (If you have modified a wall profile before, the program will display the current cross-section of this wall.)

Options:

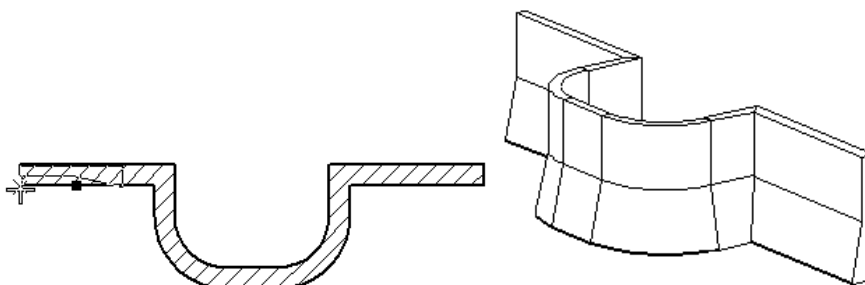
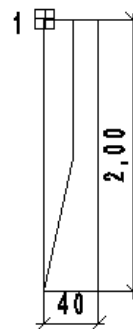
| | |
|-------------|--|
| NEXT | You can change corner points of the developed cross-section to specify the appropriate reference point. Pressing the TAB on keyboard execute this command. |
|-------------|--|

- Place the developed cross-section of the wall (point 1).
- Specify a closed profile with which you can define the new cross-section of the wall. Select any option to specify the profile in the *Toolbox – Profile definition tool*.



For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.

- Place the cross-section profile on the wall



If you wish to use a predefined profile, choose the Select from the list command and you can use any of the predefined objects of the profile library.

To create a new profile, use menu Building/Object



Closed profile command; and you can save your profiles in the profile library.

9.1.4.4. Mirror section profile

This command mirrors the cross section profile of the wall. The mirror axis is the imaginary middle axis of the wall cross section.

- Select any wall in the floor plan to mirror its assigned cross section profile.
- **Enter** Completes the command.

9.1.4.5. Delete profile (frontal)

With this command you can remove modified front profile from the wall and reset the wall to its original status.

- Select any wall in the floor plan to delete its assigned profile.
- **Enter** Completes the command.

9.1.4.6. Delete profile (section)

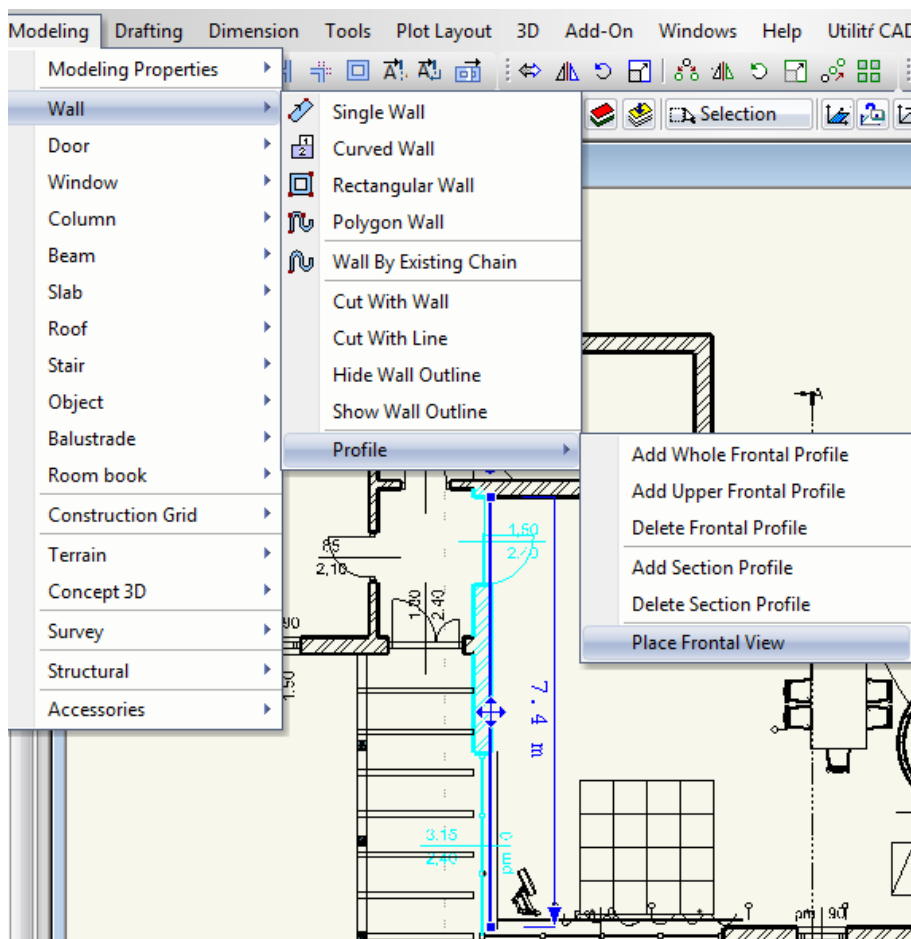
With this command you can remove modified cross-section profile from the wall and reset the wall to its original status.

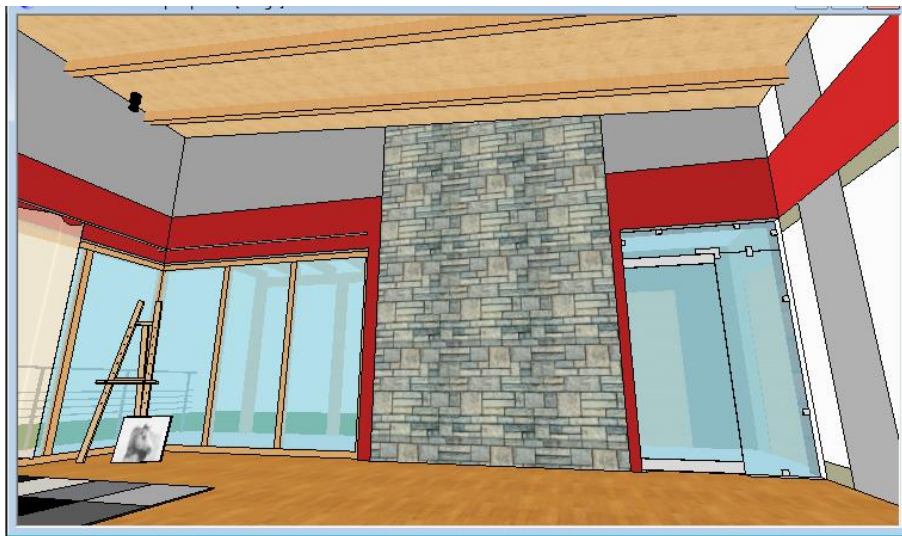
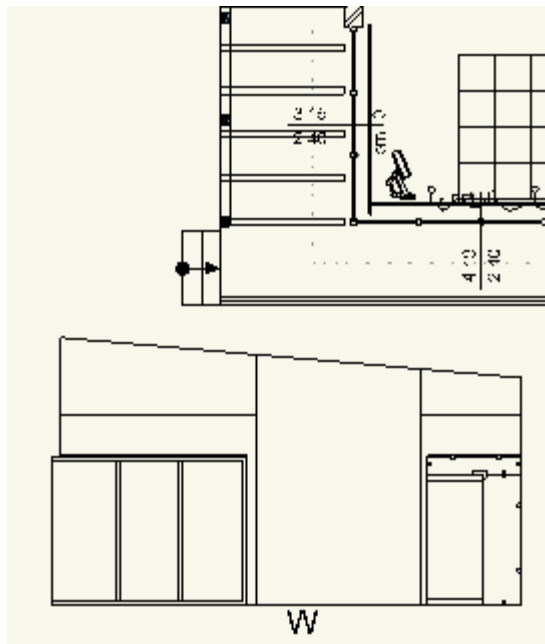
- Select any wall in the floor plan to delete its assigned profile.
- **Enter** Completes the command.

9.1.4.7. Place frontal view

This command places on the drawing the wall facade layout with openings and tiling. The wall layout indicates the wall orientation with the four cardinal directions, commonly denoted by their initials - N, S, E, W, or the intermediate directions as north-east (NE), north-west (NW), south-west (SW), and south-east (SE).

- Select any wall in the floor plan to place its facade.
- Place the facade view of the wall on the drawing.
- **Enter** Completes the command.



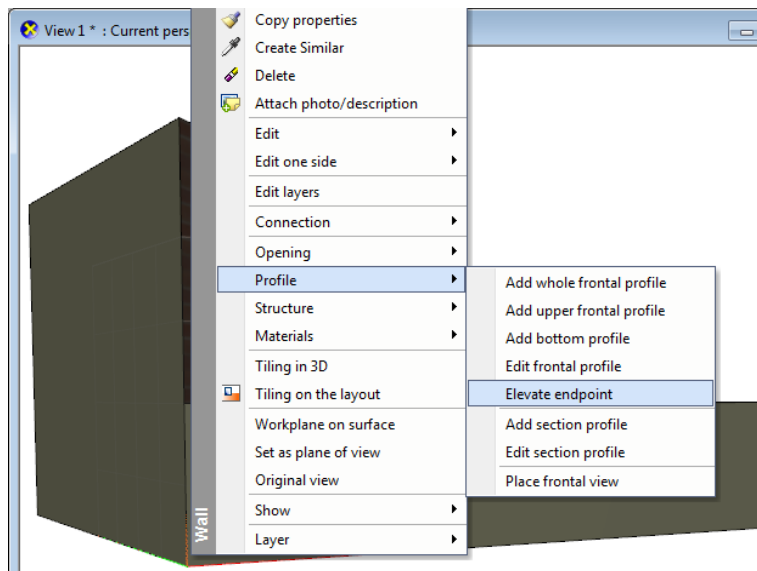


9.1.4.8. Elevate endpoint

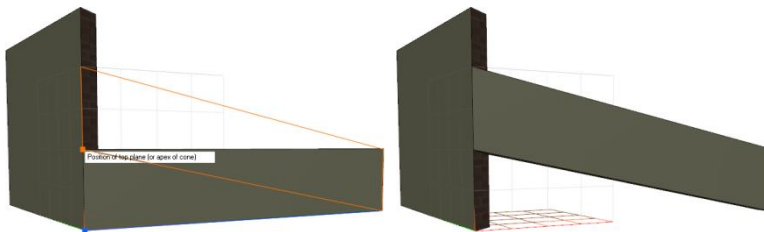
By using the Elevate endpoint tool in the 3D window you can graphically set the wall endpoint's accurate position by elevating it.

How to use the tool

- ❖ Right click near to the wall endpoint in 3D and from the appearing pop menu choose Profile / Elevate endpoint.



- ❖ Set the elevation graphically and left click or type a distance and press ENTER.



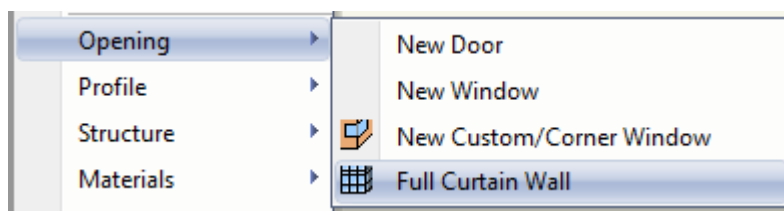
9.1.5. Other commands to modify walls

You can find other commands to modify walls in the Shortcut menu.

9.1.5.1. Full Curtain wall

Curtain walls can be created two ways:

- ❖ 1. By creating a corner window by the *Building/Window - Edit custom/corner window* command. This command is advisable to use if you want to create windows with complex profiles and glass plane patterns in a single wall or in two connected walls at the corner.
- ❖ 2. Convert the whole wall into window use the *Wall shortcut menu - Opening - Full Curtain Wall* command.



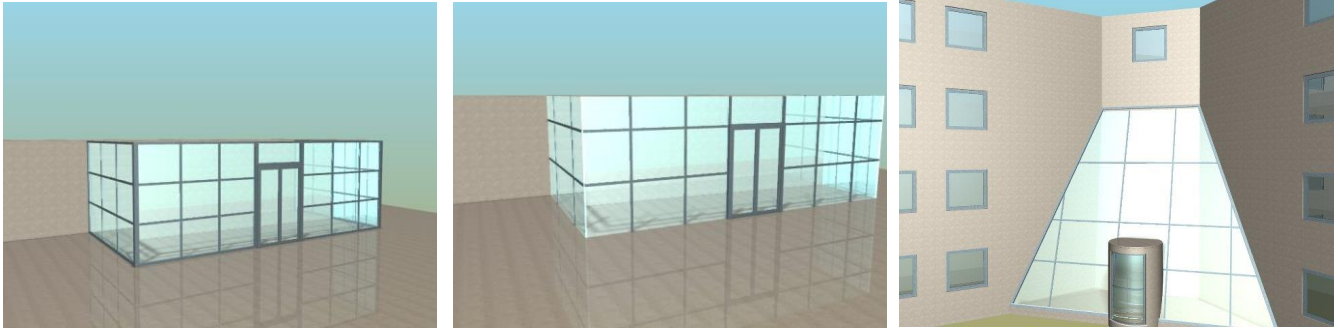
This command will convert the whole wall into a window. The glass properties can be set in the *Building/Properties - Curtain wall* dialog.



See Chapter 9.3.8. *Corner window* for a description.

Curtain wall has the following properties:

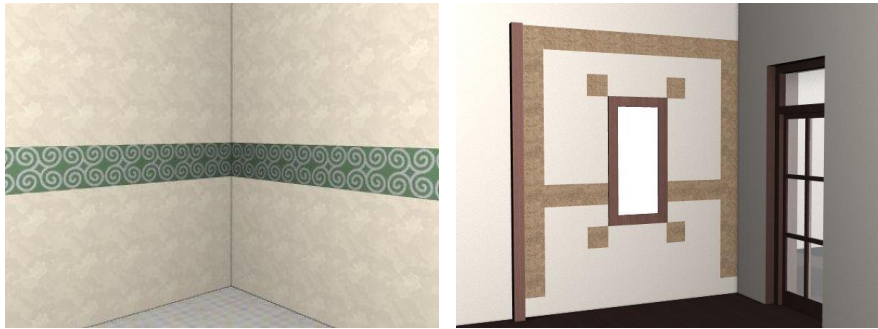
- ❖ The window can extend as far as the wall ends.
- ❖ Divisions can be created in X and Y directions by specifying either the number of divisions or the glass plane dimensions in horizontal and vertical directions. It is possible to define unequal divisions, too.
- ❖ At the sides of the window it is possible to switch off the frames so you can see only the glass plane edges.




9.1.5.2. Tiling

Activate this command to assign a new material to the selected wall by specifying a contour. This way you can easily specify the plinth on the wall, the tiling etc; these will be clearly represented in the photorealistic display. You can edit, delete etc. this contour later on.

You can access this command in the Shortcut menu.



You can check out the result of this command in the 3D window. To activate the latter one, go to the  **Build 3D**

☒ Create tiles

dialog box and enable the ☒ As solid options.

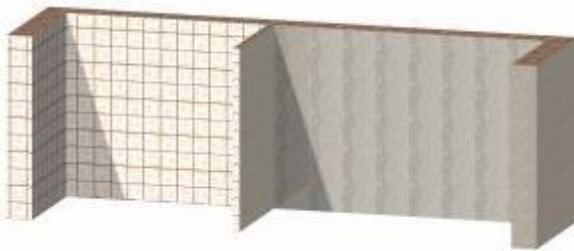


See Chapter 15.1. *Tiling* for the description of the command.

9.1.5.3. Adding materials

Usually there are partition walls connected to the main walls therefore different materials belong to the same wall in the different rooms created this way.

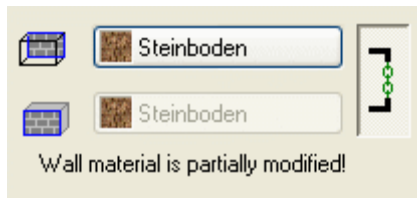
You can define different materials to the surface of the same wall bordered by two walls.



Material assignment

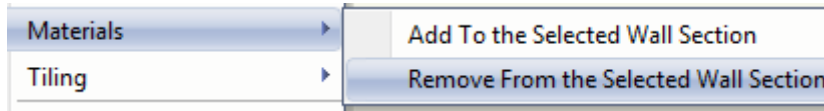
- Right mouse click on the piece of the wall contour.
 - Select Materials - Add to the selected wall section from the Shortcut menu.
 - Select the desired material.
- Enter Close the command.

The wall material will change partially independently from the material settings in the wall dialog. However, in this case a short message informs the user about the change.



Remove material

The material of the modified wall part can be restored to the original state. If you would like to return to the material defined in the *Properties* dialog, use the *Shortcut menu - Materials - Remove from the selected wall section* command.



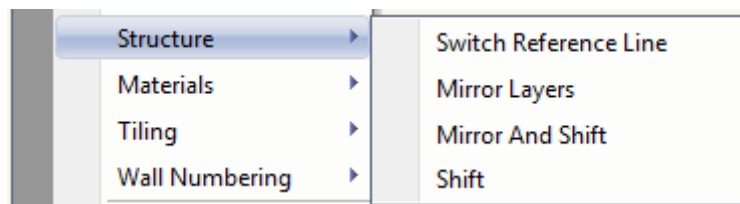
Materials can be assigned to selected parts of a wall with the *Wall – Shortcut menu - Decoration* command.

9.1.5.4. Layers

The reference line of the wall defines the sequence of the layers in the case of layered walls.

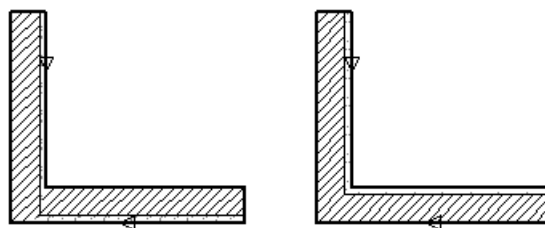


The wrong selection of the reference line may cause the inappropriate sequence of layers. As a result, layers cannot be connected. In this case you have to reverse the layers. Use any of the following commands to reverse layers:



Mirror layers

The simplest way to reverse layers is to use the *Mirror* command. This command reverses the layer sequence of the selected wall by mirroring that across the centre line of the wall.



Mirroring + shifting

With this command you can mirror the selected wall layers. The mirroring axis is the user specified side of the wall, which means that the wall will be offset at a distance corresponding to the value of the wall thickness. To achieve the proper status, use the *Shift* command, which will offset the wall automatically to its place:

Shifting

You can offset the selected wall at a distance corresponding to its own thickness. This distance will be measured from the side you select.

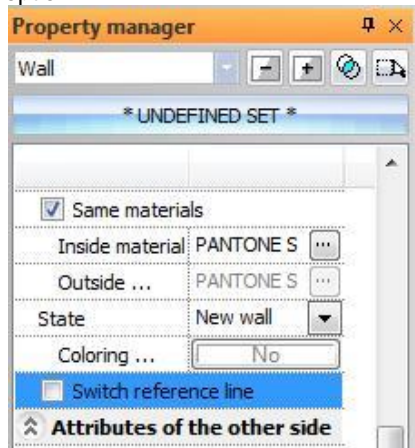
You can use this command when reversing layers as well as when simply offsetting walls with their own thickness.

Switch reference line

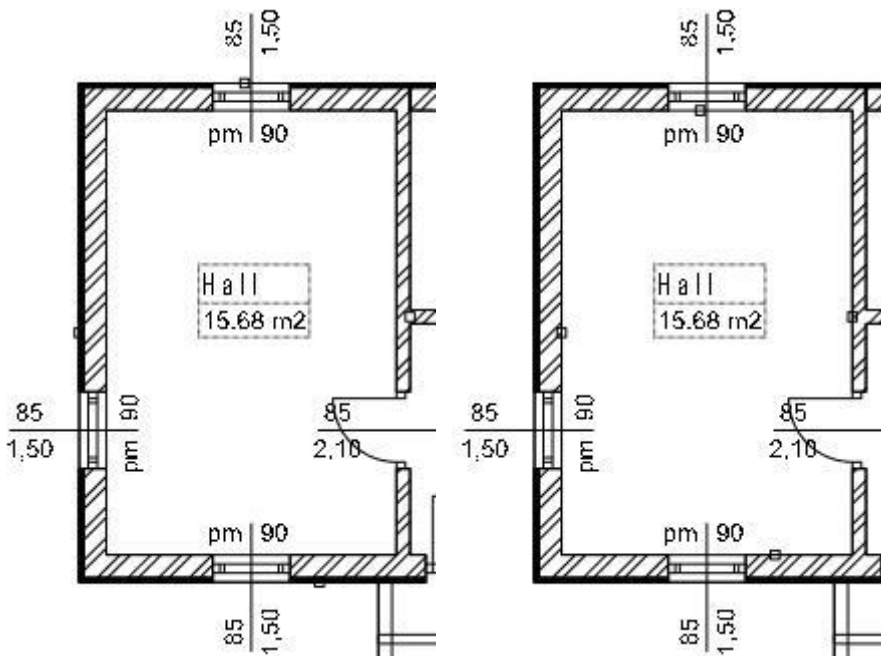
Wall is placed along its reference line on the left, right or in the middle. Reference lines on the left or right can be exchanged.

When you need to exchange the reference line of an existing wall, click the existing object with your right mouse button. Select the *Switch the reference line* command from the appearing shortcut menu. You can choose more walls to change the reference line.

In the property grid you can change also the reference line of the selected wall. Here click on the *Switch reference line* option.



Before using the command, it is recommended to use the Side marker option in the general properties dialog of the wall. The command exchanges the reference line of the wall without changing the position of the wall.

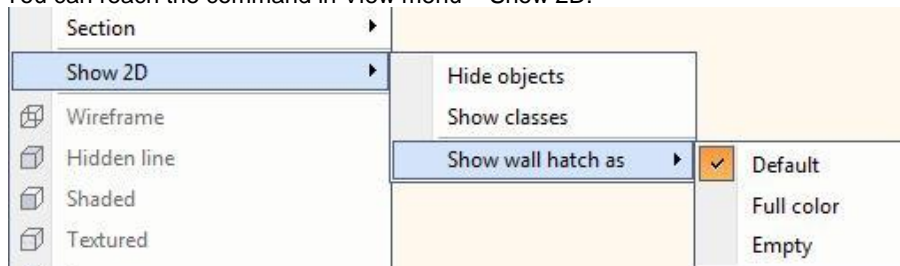


The command changes only the location of the reference line used for the construction, and has no effect on the material settings of the wall surfaces.

9.1.5.5. Hatching

You can use different tools to display hatching:

You can reach the command in View menu – Show 2D.



Display modes other than normal can speed up drawing without having an effect on hatching values set by the user. You are suggested to use normal display when printing.

Display settings are valid for all the walls in the drawing, so it has got a global effect.

Normal

Use this command to hatch the wall with the value specified in the dialog box. This value is used when printing.

Full colour

Use this command to hatch the wall with the color specified at hatching.

Empty

Use this command to display walls without any hatching. This display mode is fast, but will not inform the user about the actual hatching.

Normal Full color



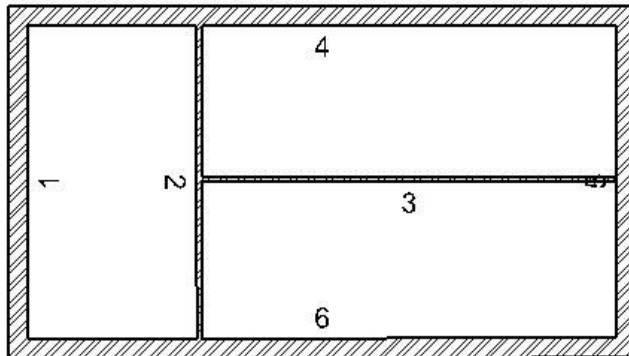
Empty

9.1.5.6. Data

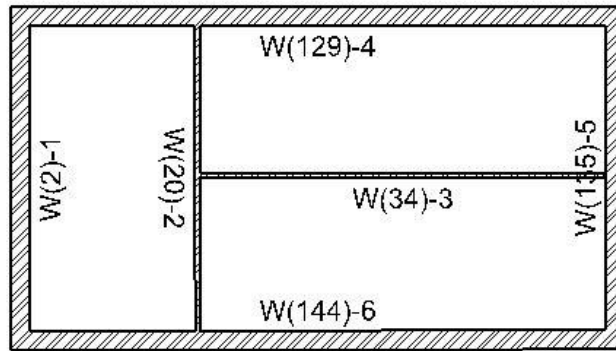
You can number walls and delete wall numbers when needed.

**Wall numbering**

Wall numbering means the sequential numbering of walls, starting from 1.

**Wall numbering with ID**

Besides wall numbering, you can use wall IDs, together with a mark "W" (meaning wall). The same ID will be used in the List menu - Word, Excel and *Building calculations* lists. This way you can associate walls with their corresponding calculations.



| Building calculation | | | | | | | | | |
|----------------------|-----|--------|------------|-----------|------------|----------|----------|------------|------------|
| Floor | ID | Height | Av. Height | Thickness | Volume | Length 1 | Length 2 | Area 1 | Area 2 |
| 0 | 2 | 2.75 m | 2.75 m | 0.38 m | 6.67 m3 | 6.002 m | 6.763 m | 16.507 ... | 18.599 ... |
| 0 | 20 | 2.75 m | 2.75 m | 0.1 m | 1.648 m3 | 5.994 m | 5.894 m | 16.484 ... | 16.208 ... |
| 0 | 34 | 2.75 m | 2.75 m | 0.1 m | 2.195 m3 | 7.984 m | 7.984 m | 21.955 ... | 21.955 ... |
| 0 | 129 | 2.75 m | 2.75 m | 0.38 m | 12.233 ... | 11.226 m | 12.086 m | 30.872 ... | 33.237 ... |
| 0 | 135 | 2.75 m | 2.75 m | 0.38 m | 6.639 m3 | 5.974 m | 6.733 m | 16.428 ... | 18.515 ... |
| 0 | 144 | 2.75 m | 2.75 m | 0.38 m | 12.233 ... | 11.226 m | 12.086 m | 30.872 ... | 33.237 ... |
| Total: | | | | | 41.619 | 48.406 | 51.546 | 133.117 | 141.751 |



In the case of *Excel* lists, you can speed up the assignment of walls to the relevant calculations if you use the



Show ID in ArchLINE XP

command. The program will select the requested object in the drawing according to the ID of the object on the *Excel* list. See Chapter 12.2.2. *List by selection*.

Delete wall numbering

This command deletes all wall numbering in the drawing automatically.

9.2. Structural and decorative objects

Structural objects

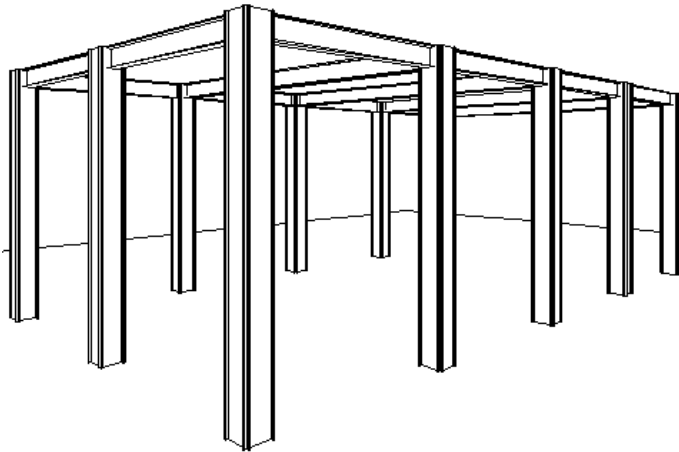
Structural objects are components of the building's supporting structure, e.g. columns, beams, plinth.

When making calculations, the Structural objects can be collected and the data can be exported into static software.

The program offers the same method for creating columns and beams:

After selecting the column or the beam profile, the program creates the object of the specified height and length. The architectural object thus created is not part of the object library.

Such objects placed as supporting structures are not identical with the columns and beams placed taken the object library.



Decorative objects

The simplest method for creating individual facade decorations, foundations, string courses and gutters is dragging a selected profile along a specified trajectory on the floor plan. By doing this the object is created, its trajectory appears on the floor plan and the 3D model is displayed.

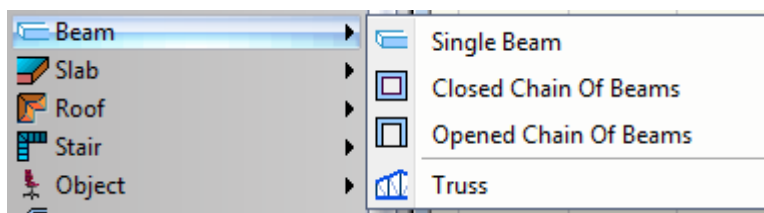
The architectural objects thus created do not belong to the object library either.

No calculation is made about the decorative objects.

You should specify the properties of the columns, beams and decorative objects when creating them. You can modify their properties later.

It is a common feature of the structural and decorative objects that both object types should be specified by the cross-sectional profile.

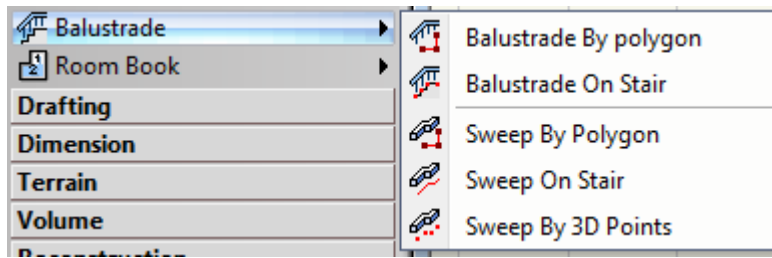
Objects of the Beam tool:



Objects of the Column tool:



Objects of the Balustrade tool:



9.2.1. Column

A column in structural engineering is a vertical structural object that transmits, through compression, the weight of the structure above to other structural objects below.

ARCHLine.XP® enables you to place columns on the current layer or on the terrain. Such columns can be placed into the wall and doing so the column and the wall will form one structural object.

The column properties can be set in the *Building - Properties - Column* dialog.

Profile selection

Columns are characterized by their cross-sectional profile. Therefore first select the cross section in the *Select profile* dialog box and specify the cross-sectional parameters of the column.



For a detailed description of the **Select profile** dialog box see Chapter 8.9.10. *Select from list*.

Click **OK** to close *Select profile* dialog and activate the *Column* dialog box again.


The cross section previously selected appears in the drawing field on the left side of the dialog box.

Hotspot

You can select the column's hotspot for placing it. The active point is red, while the other points are green. Click on a green point to select a new hotspot.

Visualization

In the upper part of the dialog box you can set the general properties: colour, layer, line width, line type, priority and the hatch.

The floor plan display of the column can be indicated by hatching if you turn on the option. Click the  button to select the appropriate pattern in the appearing dialog box.



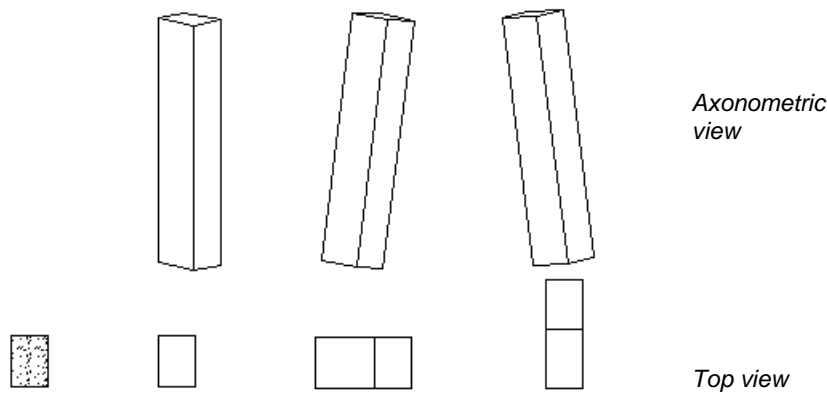
See:

the detailed description of the general properties in Chapter 3.2.1 *Specifying general properties*,
the detailed description of the hatch in Chapter 11.7.1. *Hatch properties*,
the description of *Sets* in Chapter 3.2.3 *Using sets of properties*.

Solid properties

Set the following properties of the column:

| | |
|--------------------------|---|
| Relative height | Height relative to 0 m of the active floor |
| Height | Column height or pick up the floor elevation as column height. |
| Angle of inclination | It defines the inclination angle of the column according to the direction of inclination |
| Direction of inclination | Rotating the inclination defines the direction the solid will be inclined by the inclination angle. The result cannot be seen on the floor plan, only in the 3D view, since it is only symbolically displayed on the floor plan. |



Floor plan

Direction of inclination: 0° 0° 90°
 Inclination angle: 0° 80° 80°

The floor plan view is the same in all the three cases.

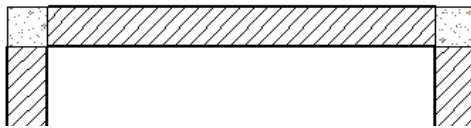
Rotation angle

You can specify the Z-rotation angle to be used when placing. This rotation has an effect on the floor plan as well. If you do not specify the rotation angle at this point, you can also define it upon placing.



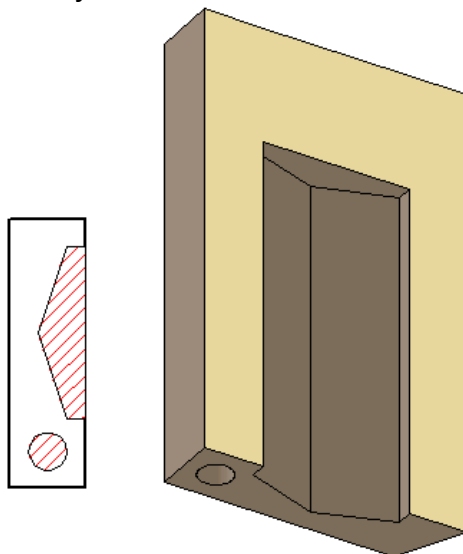
Insert into wall

Automatically inserts the column into the wall, cutting its hole in the wall. This way the program does not display the wall hatch and the wall contour 'behind' the column. The object inserted into the wall has the same connection with the slabs and roofs as the wall itself. The object thus inserted becomes part of the wall, so when deleting the wall, the object is deleted as well.



Columns inserted into wall

Make only hole in the wall




Automatically inserts the object into the wall, but in the 3D view extracts it from the wall, that is makes only its hole in the wall. This option can be activated only after turning on the *Insert into wall* option. With this method you can easily create vents, stacks and ducts. When requesting calculations concerning the wall, the program extracts the 'column holes' from the volume of the wall.



You can also access the last two options from the shortcut menu of the object.

Slab-roof cutting

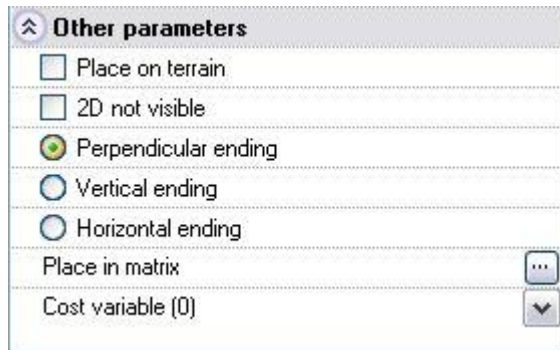
When the *Wall-slab-roof cutting* option is turned on in the *Build 3D model*  dialog box, the slabs and walls for which cutting was selected will cut the columns together with the walls. The result is irrespective of whether the column is part of the wall.

Material

You can set the *solid* and the *surface material* of the column. By double-clicking the material name you can select the appropriate material type in the **Material** dialog box.

If you click in the Same materials option, then the material of the solid and the surface will be the same.

Other parameters



Place on terrain

You can place a column not only on architectural floors but also on the terrain.

- After closing the dialog box, select a point of the terrain the height of which the program specifies.
- Place the column on it.
The program places the column on the terrain at the height of the point you selected.

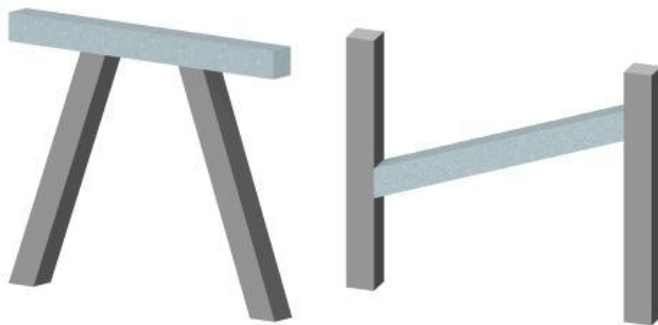
2D not visible

If you enable this option, the column is shown by a dotted line on the floor plan, while the model is displayed in the 3D window.

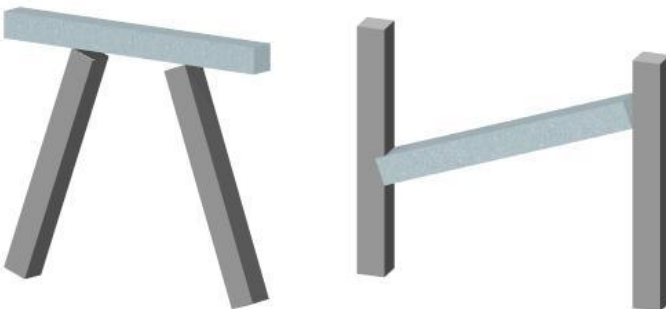
The column doesn't display on the floor plan in print.

Beam and column ending condition

In case of beams and columns with some angle of inclination, you can select, that the ends depending on the object, will be perpendicular, horizontal or vertical.



Slant columns with horizontal ends. Slant beam with vertical ends.



Columns with perpendicular ends.

Beams with perpendicular ends

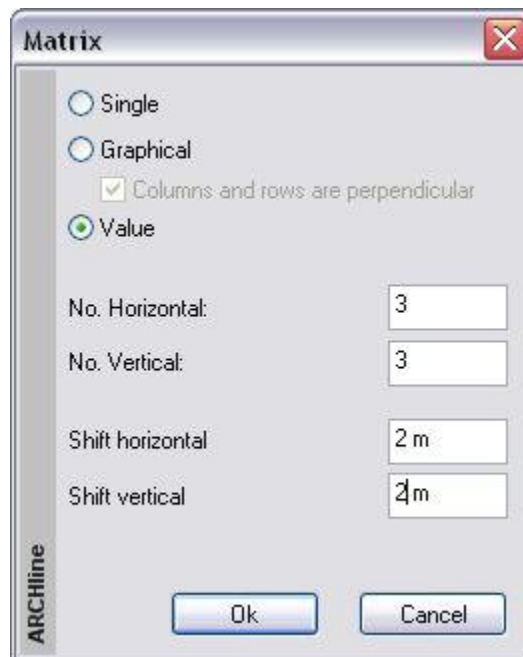
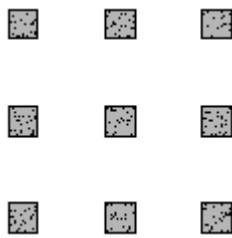
Matrix

Clicking the matrix button enables you to place more columns in the matrix window at a time.

If you select the **Value** option, you can specify the number of the objects of the matrix and the distance between them.

If you select the **Graphical** option, the total width, height and the direction should be graphically specified so that the program can place the objects of the specified number.

If you select the **Single** option, you can restore the one by one placement.



Cost variables



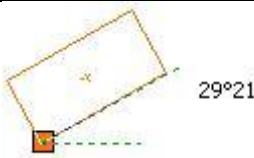
See the description of Cost variables in Chapter 3.2.4 *Assigning cost variables*.

Placing

After setting the column properties and closing the dialog box with **OK**:

- Place the column with the selected hotspot in the drawing.

Options:

| | | |
|------------------------|---|---|
| XANGLE | Specify the rotation angle. Enter . Place the column in the drawing. | |
| GRAPHIC | Specify the rotation centre and sign graphical the arm. The reference point of the object will be the centre point of rotation. |  |
| NEXT / PREVIOUS | If You click on these commands, You can move between the reference points of the object. | |
| DEFHOTSPOT | A window appears in which you can modify the active hotspot. | |

You can require calculation from the *Add - On* menu concerning the structural columns. Click the Column button in the *Building calculation* dialog. In addition to the geometrical parameters the list contains the coordinates for placing the columns.

| Building calculation | | | | | | | | | | |
|----------------------|----|--------|-------|--------|-------|--------|---------|----------|------------|--|
| Floor | ID | Name | Width | Height | Elev. | Length | X1 | Y1 | Inclinatic | |
| 0 | 1 | Circle | 0.3 m | 0.3 m | 0 m | 2.7 m | 2.633 m | 6.338 m | 90° | |
| 0 | 6 | Circle | 0.3 m | 0.3 m | 0 m | 2.7 m | 4.633 m | 6.338 m | 90° | |
| 0 | 11 | Circle | 0.3 m | 0.3 m | 0 m | 2.7 m | 6.633 m | 6.338 m | 90° | |
| 0 | 16 | Circle | 0.3 m | 0.3 m | 0 m | 2.7 m | 2.633 m | 8.338 m | 90° | |
| 0 | 21 | Circle | 0.3 m | 0.3 m | 0 m | 2.7 m | 4.633 m | 8.338 m | 90° | |
| 0 | 26 | Circle | 0.3 m | 0.3 m | 0 m | 2.7 m | 6.633 m | 8.338 m | 90° | |
| 0 | 31 | Circle | 0.3 m | 0.3 m | 0 m | 2.7 m | 2.633 m | 10.338 m | 90° | |
| 0 | 36 | Circle | 0.3 m | 0.3 m | 0 m | 2.7 m | 4.633 m | 10.338 m | 90° | |
| 0 | 41 | Circle | 0.3 m | 0.3 m | 0 m | 2.7 m | 6.633 m | 10.338 m | 90° | |

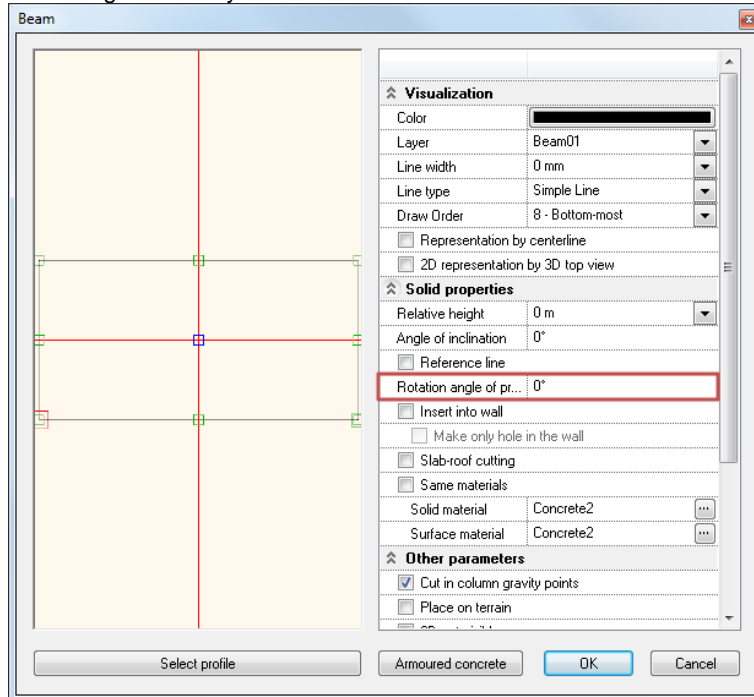
9.2.2. Beam

A beam is a structural object that is capable of withstanding load primarily by resisting bending.

ARCHLine.XP® enables you to place beams on the current layer or on the terrain. Such beams can be placed into the wall and doing so the beam and the wall will form one structural object.

The beam properties can be set in the *Building - Beam - Properties* dialog

The dialog box is very similar as in the case of the *Column* command.



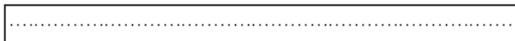
The following options cannot be found:

❖ hatch

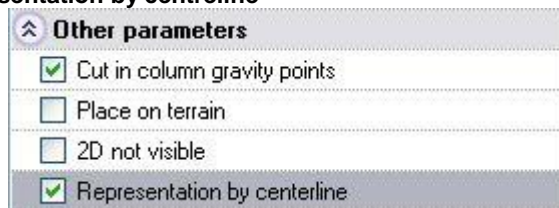
However, it has the following options:

Reference line

The program marks the centre line of the beam with a dotted line.



Representation by centreline



You can give all type of beam representation with centre line on the floor-plan.

Cut in column gravity points

Let's place a beam with its starting and end point the way, that arch through more columns. When you switch on the option, the program divides the beam to each other joining parts.





It's important, that beam fits to the columns.

Enable to adjust ends in beam chain

Switch on the option if you want to connect the beams in the chain.

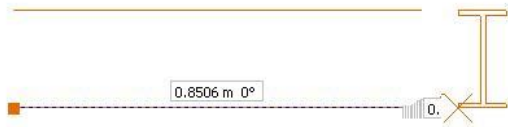
You can modify the adjust ends enabled beams to disabled, but if you didn't switch on the adjusting advanced, you can't set the adjust ends enabled afterwards.

See the  *Open chain of beams* and  *Closed chain of beams* commands.

Placing beam on the drawing

After setting the beam properties

- You can place beam in 2D drawing and 3D view as well.
- Specify the starting point then drag the cursor in the proper direction and define the endpoint of the beam. Beside the endpoint appears the profile of the beam, which signs the active reference point.



The placing options are the same as at the column, but completed with the followings:

| | |
|------------------|---|
| MIRRORING | You can mirror the profile of the beam by clicking on the command |
| ROTATE | You can rotate the profile of the beam by clicking on the command |



You have to give the length of the beam, when you place it. The length field in the dialog box has only role, when modify: it signs the real length of the beam, or if you give the value you can modify the length.

9.2.3. Sweep - Move profile along path

With this command you can create any decorative object, foundation, string course or gutter.

You should apply the following method: drag the selected profile along the specified trajectory. By this the object is created, its trajectory appears on the floor plan and the 3D model is also displayed.

The method is the following:

- ❖ First specify the trajectory you will drag the profile along. The trajectory can be open or closed.
- ❖ You must select the profile and set the appropriate parameters.

Specifying trajectory

- Choose a keyword on the command line, thus you can freely specify the trajectory of the profile.

Options:

| | |
|---------------|--|
| OPEN | You can specify an open trajectory for the profile. |
| CLOSED | You can specify a closed trajectory for the profile. The command connects the endpoints of the decoration. |

- Specify the points of the trajectory one after another.
The trajectory may contain both lines and arcs. These can also be tangential to each other: **TANGENTIAL** and **ARC** keywords
Enter completes the command.

Path points with the same height

After specifying the nodes of the path and pressing *Enter*, the *Profile with path* dialog will appear. On the last panel of this dialog you can specify a height. This height will be assigned to all nodes of the path. This means a quick solution for that common case.

Path points with different heights

- After specifying the nodes of the path you can select the node to which you want to assign a different height.
- Give the height of the node relative to the base points.
- Repeat the node selection and height specification with any other nodes. At this point we don't assign heights to the base points.
- Pressing *Enter*, the *Profile with path* dialog will appear. The height of the base points can be given on the last panel of this dialog.

Stair

For giving the height value you can choose a point of a stair.

- After selecting the node and the **STAIR** keyword, choose a point of a stair to obtain its height.

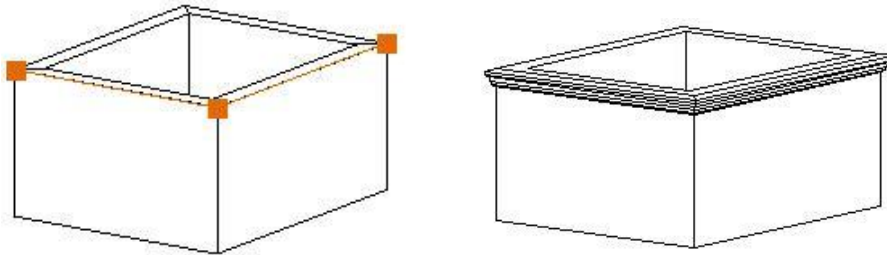
Roof

Similarly, for giving the height value you can choose a roof.

- After selecting the node and the ROOF keyword, choose a point of an edge of a roof to obtain the required height. By default, the top height of the roof plane at the selected point will be assigned. By selecting the BOTTOM keyword, you can assign the bottom height of the roof plane at the selected point.

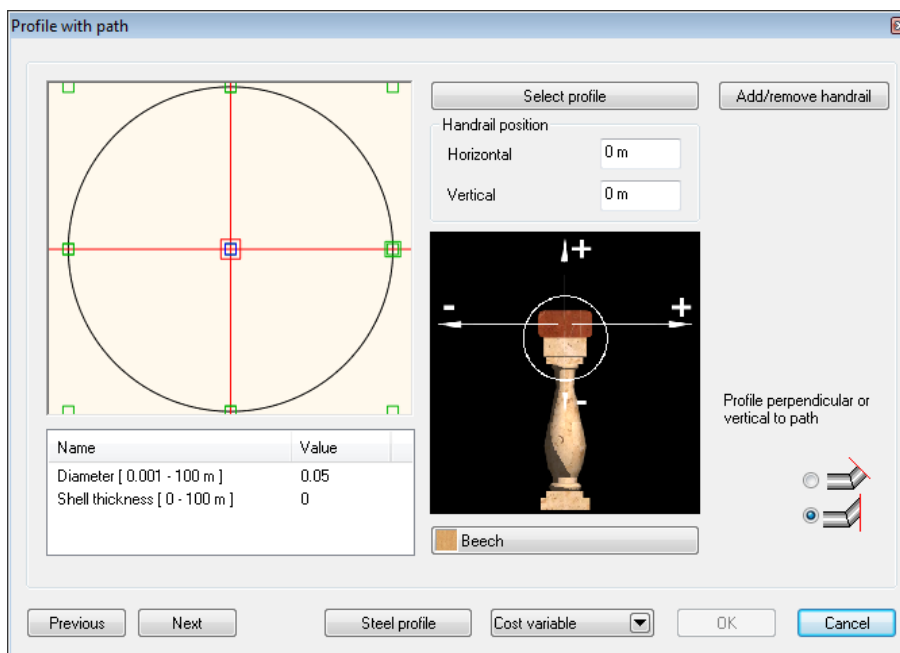
Move profile along path in the 3D window

- Start the command from the 3D window.
- Specify the profile and its reference point in the *Insert profile* dialog.
- Define the path by selecting the next 3D curve clicking on the edges of the objects to sweep the profile along it.
- Using the CLOSED keyword it is not necessary to define the last curve; the program makes the connection automatically.
- During the path definition the NEXT/DEFHOTSPOT/MIRRORING/ROTATE keywords help you to redefine the reference point of the profile you defined previously in the *Insert profile* dialog.
- Use the BACKWARD/FORWARD keywords to undo/redo your moves.
- After specifying the path, the *Profile with path* dialog will appear. On the last panel of this dialog you can view the result.



Profile definition

After specifying the trajectory, the program automatically displays the *Profile with path* dialog box:



The decorative object is characterized by its cross-sectional profile. Click the button *Select profile* and select the cross-sectional profile in the *Insert profile* dialog box and define the cross-sectional parameters of the decorative object.



For a detailed description of the *Insert profile* dialog box see Chapter 8.9.10. *Select from list*.

Click **OK** to activate the *Profile with path* dialog box again.

The selected profile appears in the drawing field, and its properties can be set in the list below.

Hotspot

Select the object's hotspot of placement. The active point is red, the other points are green.

Shift

You can define the horizontal and vertical distance between the selected hotspot of the profile and the selected trajectory. As it can be seen in the figure below, you can specify negative and positive values.

Material

Clicking the **No material** button the **Material** dialog box appears in which you can select the material you want to assign to the decorative object.

General settings

Click the **Next** button to display the General settings dialog box.

Here the program displays the entire profile according to the specified values.

You can set the layer you want place the decorative objects on, or specify the colour and line width you want to use on the floor plan or in the 3D view.

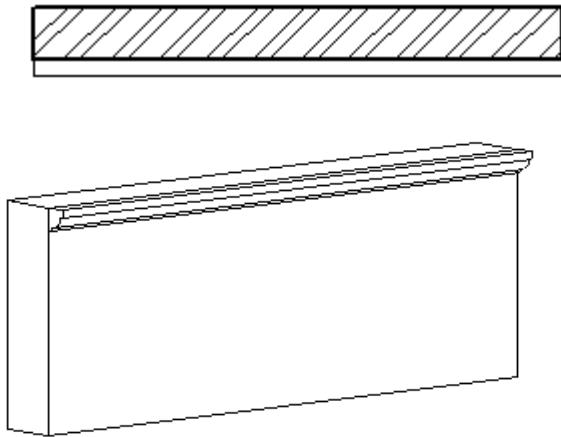
Representation by centre line

You can give all type of decorative object representation with centre line on the floor-plan.

Height

In the last field you can set the base height of the specified trajectory.

After setting the profile properties in the dialog box, and closing it with **OK**, the trajectory of the decoration appears on the floor plan. The decoration can also be displayed in 3D.

**9.2.4. Sweep by points in 3D**

With this command it is possible to define decorative objects in the 3D windows by the path definition

- ❖ with 3D objects,
- ❖ with 3D points, or
- ❖ with work plane.
- ❖
- Start the command from the 3D window.
- Specify the profile and its reference point in the *Insert profile* dialog.
- The *Solid with path and profile* dialog will appear which works the same like the Sweep – Create command in the 3D Object modeller.
- The difference is the result: instead of a 3D object, a real architectural object is created.



If you start the command from the 2D window, it will draw the decorative object along the side of the stair. The command is similar to the *Stair tool - Balustrade* command, with the difference, that here places just the handrail.

9.2.5. Place object in wall

The command inserts the object or the structural object into the wall while cutting out its hole from the wall. This way the program does not display the wall hatch and the wall contour 'behind' the object.

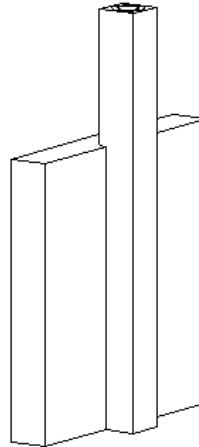
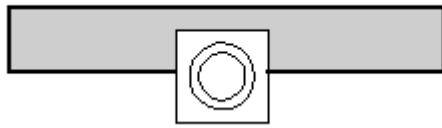
To execute the command use the *Object or Column or Beam shortcut menu- Place it into wall* command.

This command can be replaced by enabling the *Object - Column - Beam properties - Insert into wall* option.

- ❖ The inserted object becomes part of the wall. The editing commands (delete, move, copy, etc.) are valid for the whole group.
- ❖ The inserted objects do not acquire the wall hatch.
- ❖

- Select walls to be inserted into the appropriate wall.
Enter Completes the command.

Chimney inserted into wall:



The object inserted into the wall does not acquire the automatic slab-roof cutting that you set for the wall. Cutting depends on whether the *Slab-roof cutting* option in the *Object - Column - Beam properties* dialog box is turned on.

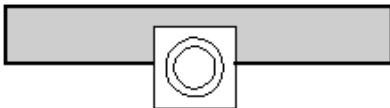
9.2.6. Extract object from wall

The command extracts the previously inserted and then selected object from the wall.

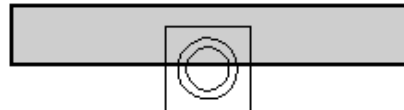
To execute the command use the *Object or Column or Beam shortcut menu- Extract from wall* command. This command can be replaced by disabling the *Object - Column - Beam properties - Insert into wall* option.

Following the extraction:

- ❖ The object regains its original properties and can be regarded as an individual object.
- ❖ Wall hatch is applied to the object as well.
- ❖ Select architectural objects you want to extract from the appropriate wall.
Enter Completes the command.



Chimney inserted into wall



Chimney after extraction

9.2.7. Modifying column, beam and decoration

In the case of columns, beams and decorations the modification of object properties works in the same way as for all objects.

Clicking on the object the *Property manager* visualizes its property or clicking on the *Shortcut menu – Property* command the *Properties* dialog box appears.

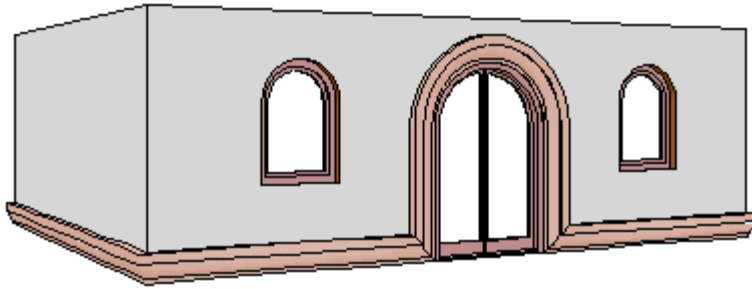
You can modify the object's property.

If you have locked the objects with the *Modify menu - Lock architectural object in 3D* command, the *3D fixed* option is on in the *Properties dialog* when the object is modified.

By turning off the option you can unlock the selected objects. You cannot lock the selected objects in the dialog box. Locking enables you to render 3D images to architectural objects, independent of their 2D drawing. This way you can easily create detailed 3D views without displaying these details in the 2D drawing.

In the **Decoration shortcut menu** you can select further commands to modify decoration trajectory. These are the following:


Modify balustrade path
Edit balustrade
Position balustrade layout



For a detailed description of the commands see Chapter 9.7. *Creating and editing balustrades*.

9.2.8. Place plinth

The program enables you to place plinths from a predefined plinth library.


Select the **Building - Beam** tool  **Place plinth** icon. You can set the plinth properties in the *Position object* dialog.



See 9.11.1.  *Object properties and placement* chapter.

9.2.9. Define custom plinth

You can also create your own plinth and save it into a library in the following way.

- Design your custom plinth object in a 3D window.
- Select the **Building - Beam** tool  **Define custom plinth** icon.


Now you will create a 3D object:

- Select the objects of the 3D group.
- Specify the gravity point of the plinth.
- The *Free object* dialog will appear. First select the appropriate 2D and 3D group, and then specify the object name.
- Save your custom plinth into your own plinth library.

9.2.10. Closed chain of beams

With this command you can draw a closed chain of beams along a reference line, defining nodes with each click. The reference line may contain arcs and lines, too.

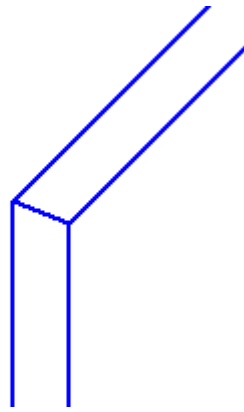
You can use this command to create footing, so the footing will get to the structure objects, when listing.

- Select the **Building - Beam** tool  **Closed chain of beams** icon. The beam dialog will appear where you can set the beam properties. Click **Ok** to exit from the dialog.
- Define the starting point of the chain and then the other nodes. The endpoint of the beam coincides with the starting point of the next beam. The joint can be normal or tangential, and the beam can be linear or arc.
- Define the next endpoint of the beam, or
- **Enter** completes the command, and the last beam will be automatically drawn if the chain of beams you specified is not closed.
- The program displays the beams.

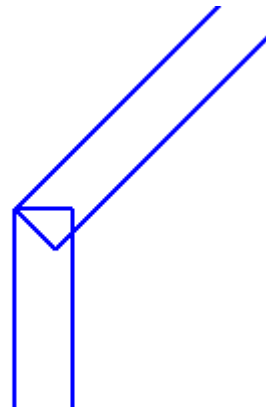
Options:

| | |
|------------------|---|
| SMOOTH | The next beam will be joined to the previous one tangentially. |
| ARC | Draws arc beam |
| TANGENT | If the first object of a polyline is an arc, you can define a tangential vector for the arc. You can continue an existing beam with a tangential arc. |
| SELOBJECT | Places the selected object into the contour of the profile. |
| BACKWARD | Steps back with one command if you make a mistake. |
| FORWARD | Steps ahead with one command. |
| INVERSE | Places beam reference line to the other side. |

In the *Beam* properties dialog use the **Enable to adjust ends in beam chain** option if you want to connect the ends of beams:



Adjust ends enabled



Adjust ends disabled

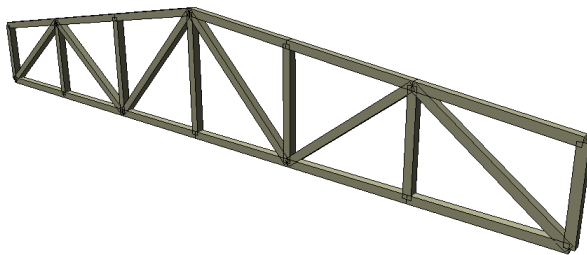


You can modify the adjust ends enabled beams to disabled, but if you didn't switch on the adjusting advanced, you can't set the adjust ends enabled afterwards.

9.2.11. Open chain of beams

This command works analogous with the **Closed chain of beams** command. The only difference is that the chain won't be closed by the program automatically and the adjustment of beam ends will not work in the last node. You can use this command to create footing, so the footing will get to the structure objects, when listing. .

9.2.12. Truss



In architecture and structural engineering, a truss is a structure comprising one or more triangular units constructed with straight slender members whose ends are connected at joints referred to as nodes. ARCHLine.XP® manages planar truss where all the members and nodes lie within a two dimensional plane. For more details about truss see <http://en.wikipedia.org/wiki/Truss>. ARCHLine.XP® enables you to place truss on the current layer.

9.2.12.1. Truss preferences

Before you place a truss, you have to determine its properties. The truss properties can be set in the *Building - Properties - Truss* dialog. After the selection of command a dialog window appears with properties of Truss.

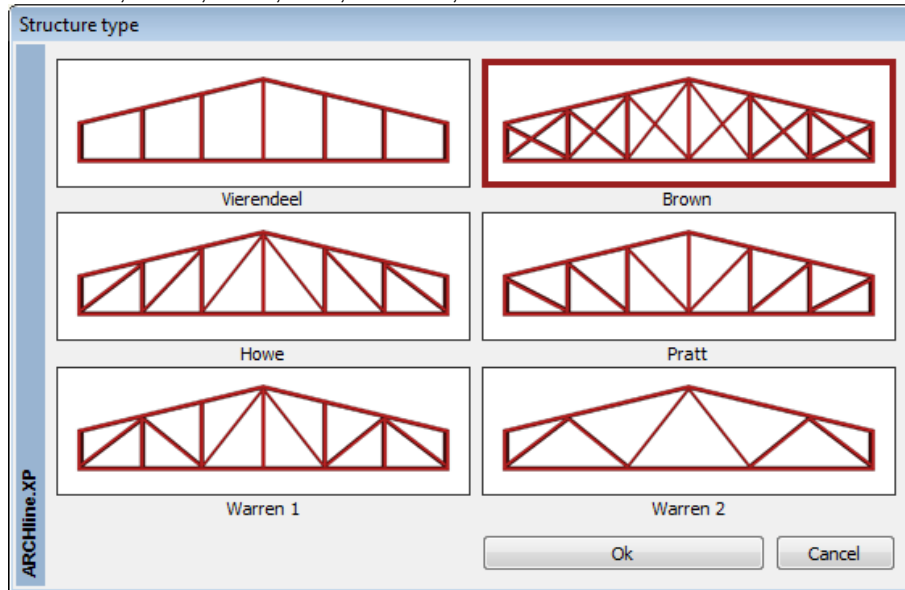
General properties

First there are the general properties of the truss: layer, colour, line type, line width, priority.

Structure Type

You can select the following types:

Vierendeel, Brown, Howe, Pratt, Warren 1, Warren 2.



Relative height

The height of the actual floor compare to its 0 level.

Middle height

The distance between the under and upper belt in the middle of the truss.

Middle elevation

The height of the middle point of under belt compare to the height of the side points.

Symmetric

In switched on status the length of the truss right and left side, the height of the truss on the two outside points, and the number of right-and left side divisions are the same. You can define these parameters separately in switched off status.

Divisions

The number of perpendicular beams, that connect the under and upper belt on the right or left side. You can set the height of the right side only in that case if the *Symmetric* button is switched off.

Side height

The distance between the under and upper belt on the right or left side of the truss: You can set the height of the right side, if the *Symmetric* button is switched off.

Side width (%)

The length of the right or left side compare to the length of the truss, expressed in %: You can set the height of the right side, if the *Symmetric* button is switched off.

Profile sections

Trusses are characterized by their cross-sectional profile. Therefore first select the cross section in the *Select profile* dialog box and specify the cross-sectional parameters of the column. You can assign profile for the following parts of the truss:

Bottom, Top, Side, Vertical, Diagonal



For a detailed description of the **Select profile** dialog box see Chapter 8.9.10. *Select from list.*

Cost parameters

You can assign cost parameters to the truss, as to any other objects.
You can create beam-structures with truss.

9.2.12.2. Placing truss

After setting the truss properties

- You can place truss in 2D drawing and 3D view as well.
- Specify the starting point then drag the cursor in the proper direction and define the endpoint of the truss. Beside the endpoint appears the profile of the truss, which signs the active reference point.

9.3. Door, window

Introduction

A door or window is a moveable barrier used to cover an opening. ARCHLine.XP® contains the set of door and window models organized into *categories* (.oli) under the *Door* and the *Window* folders. All types have parameters, which can be changed when defining the properties. This way you can place the same object with different values on the drawing, without increasing the size of the directory.

However, there cannot possibly be a directory that contains each and every measured or individual door/window.

Therefore, as you will see, the program offers you the possibility to create individual doors/windows.

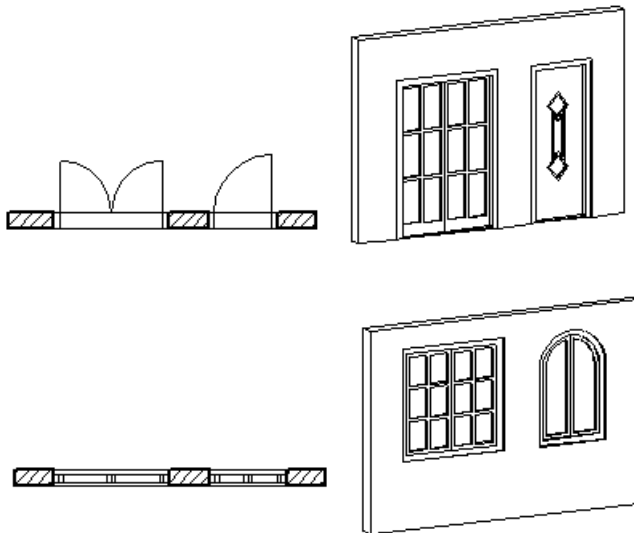
After selecting the appropriate type of door/window and its properties, the functions of the **Door/Window tool** allow to place the doors/windows in walls, and modify them, as necessary.

You can place a door/window on walls of any shape, both on their straight and arched sections. The doors/windows adapt to the modifications of the wall they belong to.

In ARCHLine.XP® doors/windows are represented by 2D symbols, the representation of which depends on the value of the *door/window scale*. This can be defined by the **View menu - Opening and wall scale** command.

The door/window connects to the wall and cannot be separated from it; it is placed on the layer of the wall (except if you

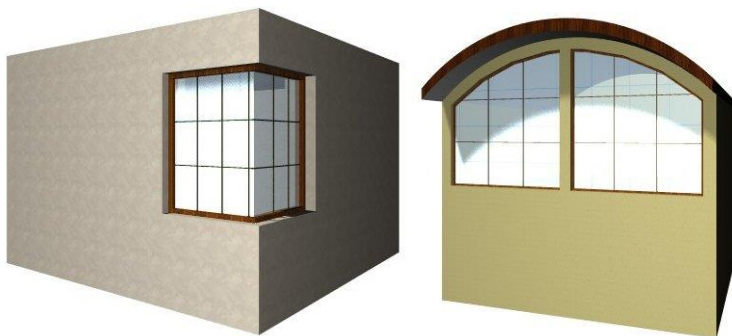
have placed it with the   **Door/window without wall** icon).

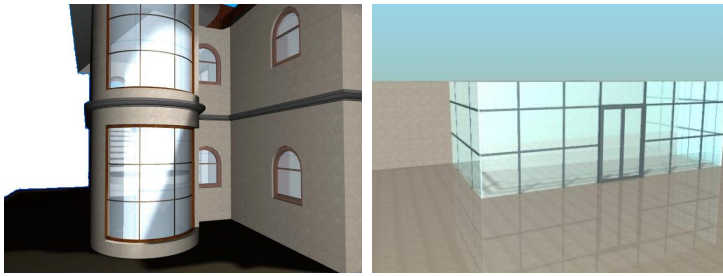


Custom doors/windows

ARCHLine.XP® allows the architect to create a door or window with an individually drawn form.

- ❖ The doors/windows created with the **Define custom door/window** command are saved in the directory, so they can be used in any other drawing.
- ❖ With the **Edit corner window** command you can design a door/window with individual shape and divisions on any wall or wall corner. You can use it even on an arched wall, where the glass will also be arched. An object created with this method is not part of the directory.
- ❖ **Full curtain wall:** You can transform the wall to full curtain wall. Just use the *Wall shortcut menu - Full curtain wall* command.





9.3.1. Door/window properties

Before you install a door/window, you have to define its properties.

Properties can be activated by selecting the Building -   **Door/window tool**, with a right-click on the icon, or by activating the *Building menu - Properties - Door/window* command.



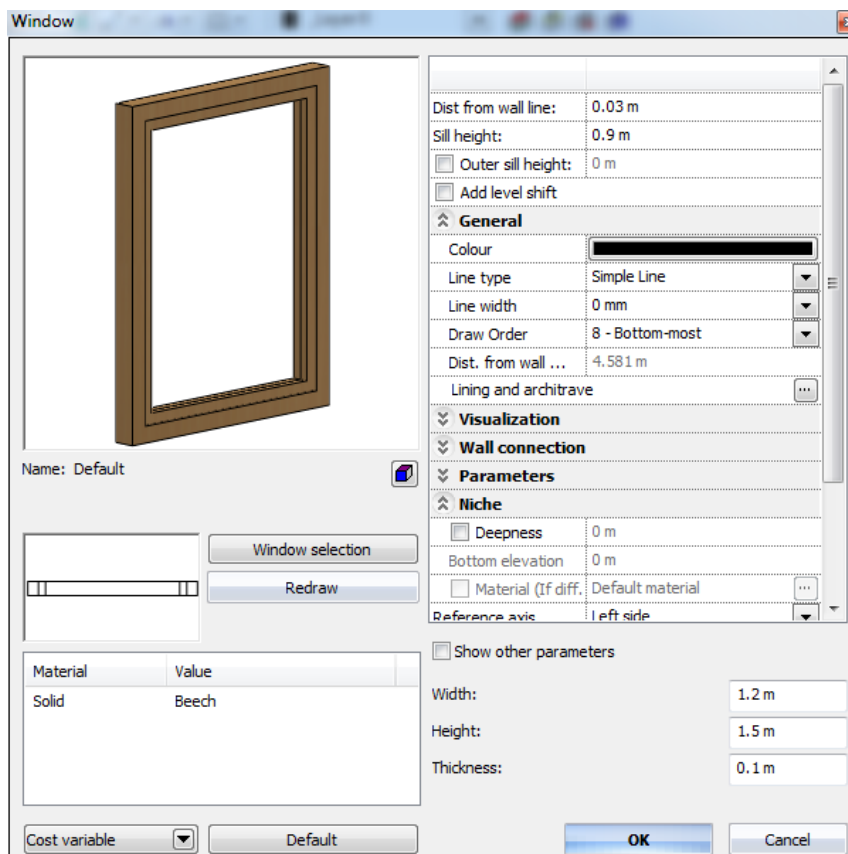
You can select the openings from the *Design Center* too. See chapter 2.16.9. *Design Center*.

The door/window properties dialog box appears. You can open or close the groups in the table to the right with the help of the arrow signs. In the picture you can see the *Visualization* group in closed position and also *General*, *Wall connection* and *Parameters*, which are open.

Here you can set the properties which are the most important for you to appear in the dialog box.

The properties of the window are basically the same as those of the door.

The user can predefine the category and the type of door/window, and set the appropriate geometric values for the selected door/window, its material, etc. Any change in the dialog box is *valid globally*, which means that the doors/windows installed subsequently in the drawing will have similar values to the ones defined here.




Doors/windows created with the Define custom door/window command also appear among the types. These have only three variables (X, Y, Z values), all the other values are fixed.

The properties of doors/windows are discussed under the following headings:

- ❖ Select the type of the door/window

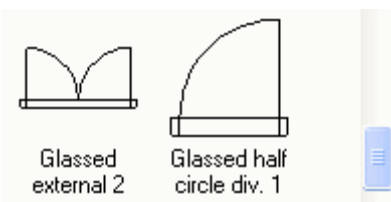
- ❖ Main and other parameters
- ❖ General properties, Set
- ❖ Visualization
- ❖ Parameters of instalment into wall
- ❖ Wall connection
- ❖ Placing parameters

9.3.1.1. Select the type of the door/window

- Click the  icon above the left list to choose the way of representation for the doors/windows in the selected file:




- ↑ Glassed ext segment 1 by the name,
- ↑ Glassed ext. ellips arch. 1
- ↑ Glassed external 1
- ↑ Glassed external 2
- ↑ Glassed half circle div. 1
- ↑ Glassed half circle div.2

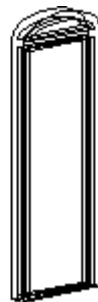


by the 2D symbol,



Or by the 3D coloured image.

Click the other icon  above the lower left list to choose the nature of the 3D image of the required door/window type, which appears in the dialog box.



Wire frame model.



Hidden line drawing.

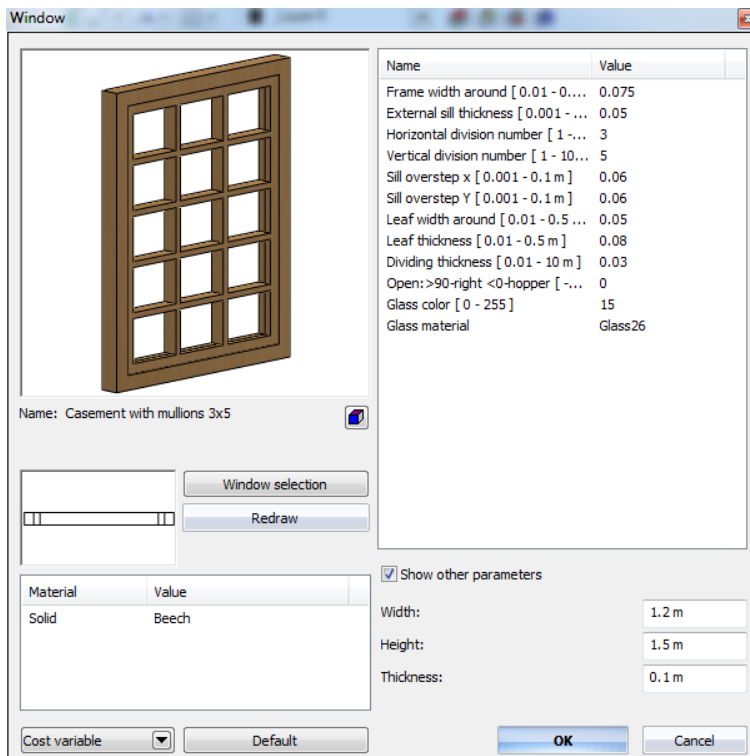
- Select a category within the door/window directory, and select a type from the list there. Then you see the 2D symbol, the 3D image and the geometrical parameters of the selected type, which can be modified, as necessary.

9.3.1.2. Main and other parameters

With clicking on the height, width, thickness fields, you can modify the main properties of the selected door/window.



Doors/windows other parameters become visible when you activate the Show other parameters checkbox.



With double-clicking on the other parameter value, you can modify that.

Among the parameters threshold thickness and opening angle need to be discussed in more details.

With the *Show min-max values* option in the *File menu -Options -Other dialog* it is possible to display the range of parameter values in the doors, windows and object properties dialogs.

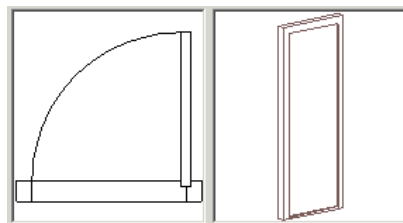
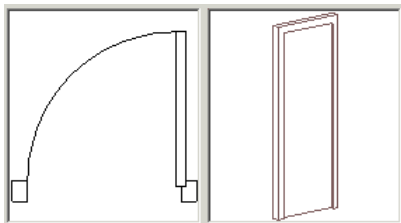
This helps by specifying parameter values.

Threshold thickness:

This value influences not only the 3D model but the 2D representation as well:

Threshold thickness = 0:

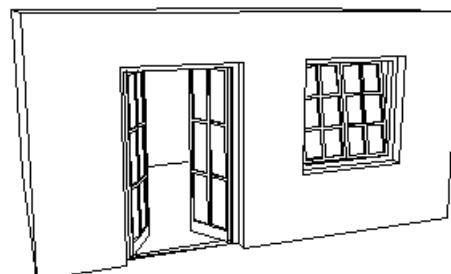
Threshold thickness = 0.02



Here 1:50 is set as the scale of the door/window in the *View menu*.

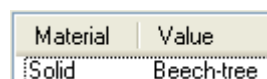
Door/window angle:

Doors/windows can be open. You can enter a value between 0° and 90°. For the most part of the window you can also define a value between 0° and -15°, which means that the window is represented as a hopper window. This parameter only affects the 3D model.



Materials

- Define the material of the door/window. Double-click the name of the material and the **Material** dialog box appears. Here you can define the materials of the objects.





See also chapter 3.2.2 *Material properties*.

If you modified the parameters of the selected door/window, press **Redraw** to see the result of modification in the dialog box.



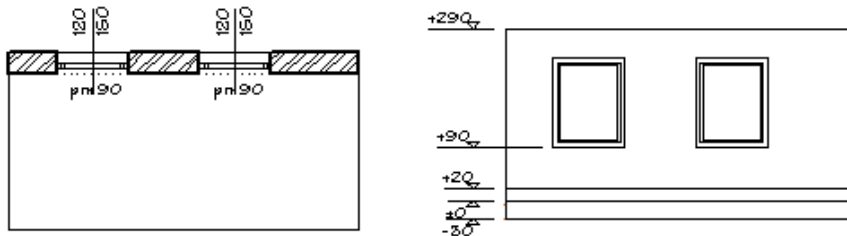
When you set the other parameters, the program verifies the specified values on the basis of various internal criteria. If a value fails to meet the criteria, after clicking the *Redraw* button the program informs you that the values cannot be accepted and restores the original settings. Therefore we suggest that if you alter more parameters you should click the *Redraw* button after each value definition so that the program can instantly indicate if it accepts the specified value or not.

Parameters of instalment into wall

- ❖ **Distance from wall line**
The distance between the frame of the door/window and the wall reference line.

| | |
|----------------------|-------|
| Dist from wall line: | 0.1 m |
| Parapet height: | 0.9 m |

- ❖ **Parapet height**
The program measures the parapet height from the bottom of current level, and not that of the wall.

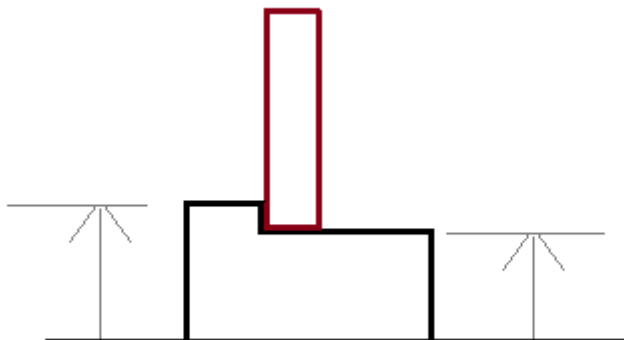


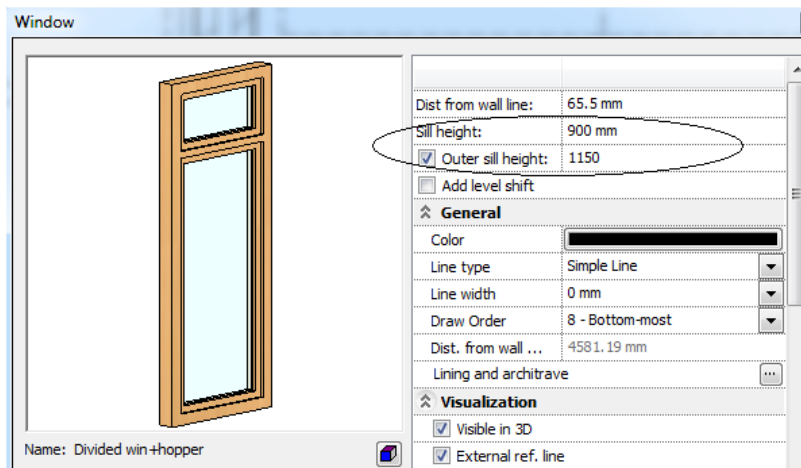
In the picture the wall starts at 20 cm height. 90 cm have been entered for parapet height, which means that the distance is 70 cm between the bottom of the wall and that of the window.

Of course, you can also decide to define the internal floor elevation in the **Door/window properties - Dimensioning** dialog box.

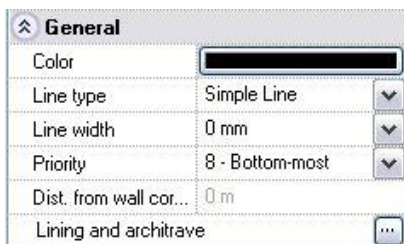
Different interior and exterior sill height

You can define the interior and exterior sill height separately relative to the finished floor level or the external slab level. When you assign dimension to the door or window the displayed sill height value depends on the size of the wall where you click on.





9.3.1.3. General properties



Define the colour, line type, line width and priority of the door/window.

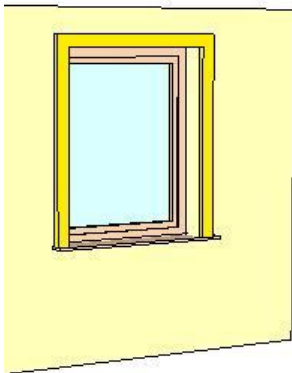
You can edit the *Distance from wall corner* when you modify an existing door/window. This field is disabled at definition.



See:

- ❖ the detailed description of the general properties in chapter 3.2.1. *Specifying general properties*,
- ❖ the description of sets in chapter 3.2.3. *Using sets of properties*.
- ❖ the description of cost variables in Chapter 3.2.4. *Assigning cost variables*.

9.3.1.4. Door / Window Frame around - Lining and architrave



You can assign frame to the inside or the outside of the doors or windows, and specify cross section. The frame is the property of the door or window, so it stays, when you copy it. You have to specify separately the inside and the outside properties of the frame.

Frame properties

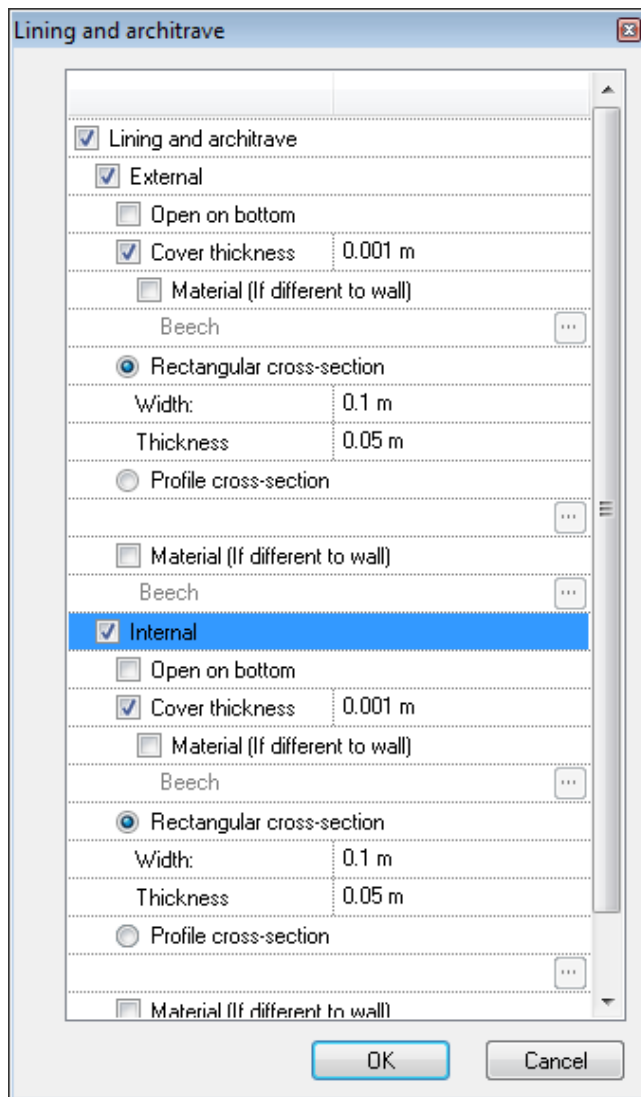
You can assign full frame or down open frame.

The cross section can be rectangular or profile selected from the library.

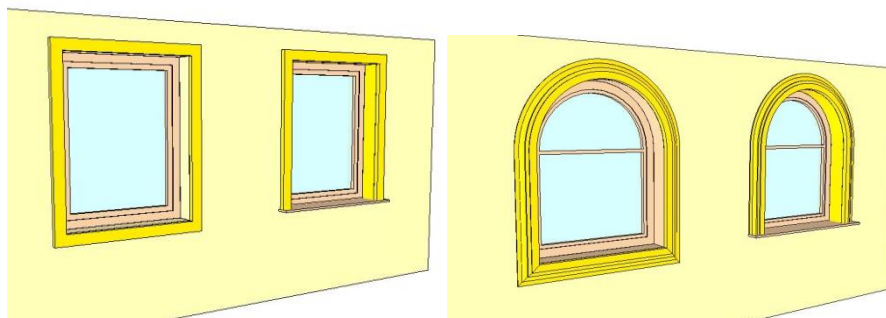
You can put covering between the frame and reveal, and you can assign thickness and material to it.

If you don't assign any material to the frame or covering, then it copies its material from the wall.

Click on the *Door / Window Properties - Lining and architrave* button to define the frame properties.



The following pictures show the different possibilities:



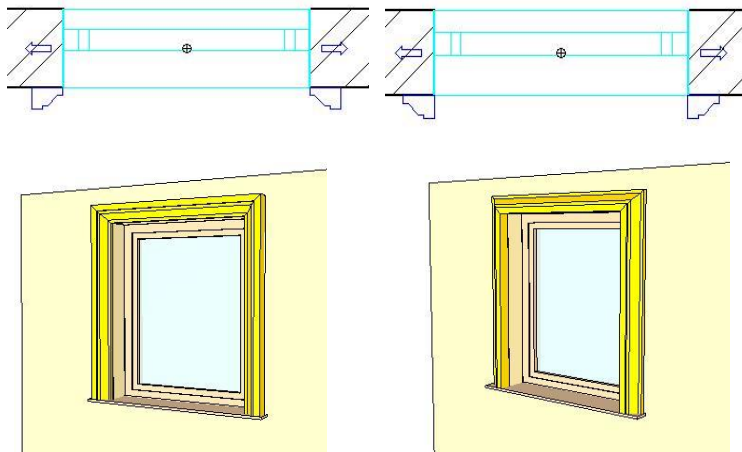
Changing the position of the cross section

- After clicking on the door / window on the floor plan the profile of the assigned frame is displayed.
- You can mirror or rotate the profile by clicking on the profile and choosing **Mirroring** or **Rotate** keywords in the command line.
- **Enter** finishes the command.

The advantage of the method is (contrary to changing Insert profile window in the Property window) the result of the changing is viewable on the floor plan as compared to the door or window, so it is evident.

Expanding frame



Tapering frame



9.3.1.5. Visualization group

When you click the  sign in front of the *Visualization* group, you can specify the following properties:

| Visualization | |
|-------------------------------------|---------------------------------|
| <input checked="" type="checkbox"/> | Representation in 3D |
| <input type="checkbox"/> | External ref. line |
| Ref.linetype | Dotted |
| <input type="checkbox"/> | Internal ref. line |
| Ref.linetype | Dotted |
| <input type="checkbox"/> | Use ref. linetype for threshold |
| <input type="checkbox"/> | 3D fixed |
| Bend wall | ... |
| Opening dir. | ... |
| 2D Shape | ... |
| Dimension | ... |

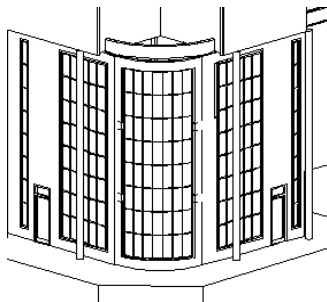
Where names are followed by the  icon, double-click the name or click the  icon to see the dialog box.

Representation in 3D

If you switch this function off, the 3D model of the door/window does not appear.

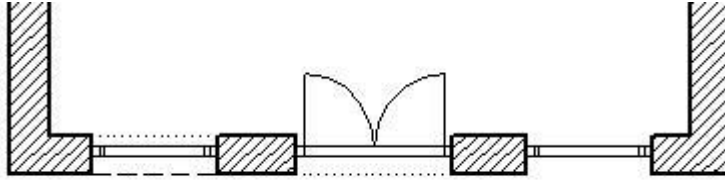
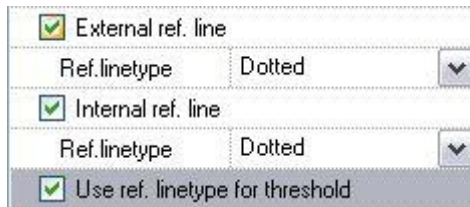
The door/window will only have a 2D symbol, the contour cuts an opening in the wall in the 3D model, but there will be no 3D representation.

This can be useful when drawing staircases for instance. This way the door/window installed on the ground floor has the full height, it has got a 2D symbol, and also a 3D model. The window on the next floor has no 3D representation, but it has a 2D symbol. The contour of this window cuts an opening in the wall, which is filled by the full height door/window installed one level lower.



Reference line

If you switch on the options the program draws the external and internal reference line of the wall at the door/window. You can define the type of the internal/external reference line from the pull-down list:

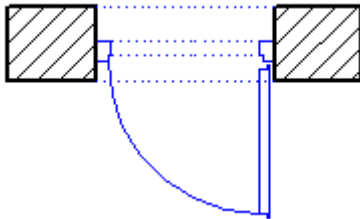


Threshold line type

In case of doors we can represent the line of threshold on the openings' floor plan symbol, if we determine the height of threshold (≥ 1 mm) between the parameters. (Naturally the threshold will appear in the 3D model too.)

In case of parametric doors in *General* category, there is a possibility to represent the threshold's line with the external, internal reference line type (for example: in case of hidden threshold).

- Set the thickness of threshold among the door parameters.
- Switch on the external, internal reference line.
- Select the reference line type.
- Switch on the Use reference line type for threshold
-



3D fixed

If you use the **Modify menu - Lock architectural object in 3D** command to lock the 3D image of a door/window to a wall for instance, the 3D fixed option is switched on. By switching it off you can unlock the object. You cannot switch on the 3D fixed option in the dialog box.

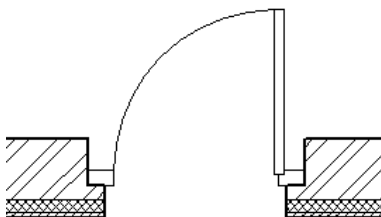


For a detailed description see chapter 8.5.6. *Locking in 3D*

Form reveal - Bend layers

You can define a door/window by a reveal. To do so, you need to define the reveal width among the parameters you set when installing into wall.

Reveal width means the overhanging of the external side of the wall on the frame of the door/window. It equals the total width of the bending wall layers.

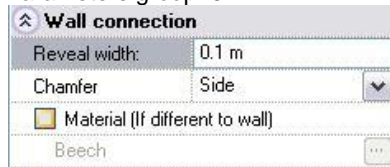


If the reveal width is higher than zero, the program displays it by default as shown in the picture; wall layers are not bent to the frame of the door/window.

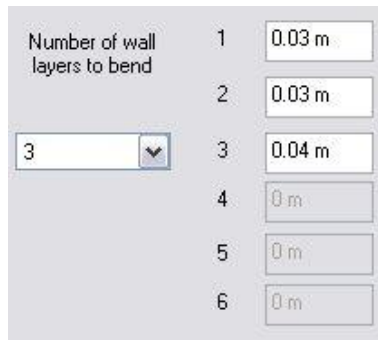
In the case of layered walls you need to bend layers to form a reveal:
Layers can only bend if:

- ❖ the wall containing the door/window consists of at least two layers, and
- ❖ the value of reveal width is not 0.

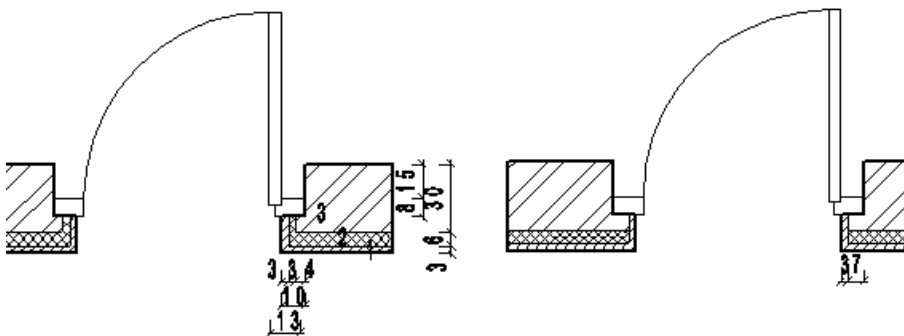
- Define reveal width in the Parameters group: 0.1 m



- Click the *Bend wall* icon to see the dialog box appear.
- Select from the list the number of wall layers you wish to bend to the frame (max. 6).
- Define the width of each layer to bend. The total of these values cannot exceed the reveal width of the door/window.



The width of wall bending can be 0 as well:

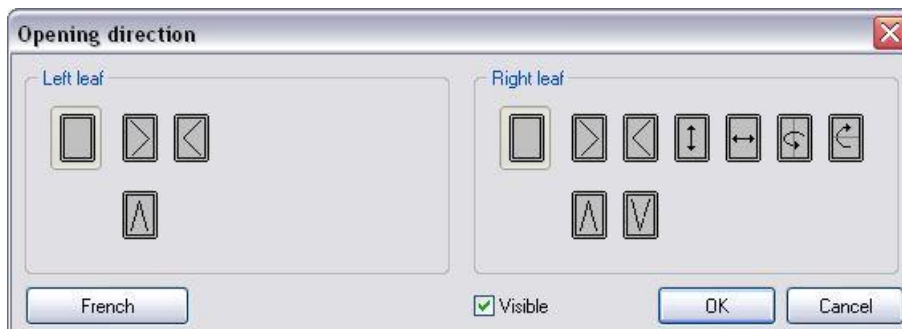


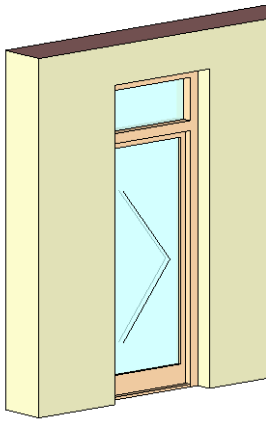
Opening Direction

In the windows properties dialog you have the possibility to specify the possible opening directions. In ARCHLine.XP® you have the option to represent these opening directions in the 3D model of windows by drawing opening direction symbols on windows. This can be very useful in case of more detailed façade drawings.

There are two prerequisites to represent the opening direction symbols in 3D:

- ❖ The represented window should be closed. You can set this in the door/window properties dialog.
- ❖ The *Draw opening direction* option checkbox must be checked in the *Build 3D model* dialog.



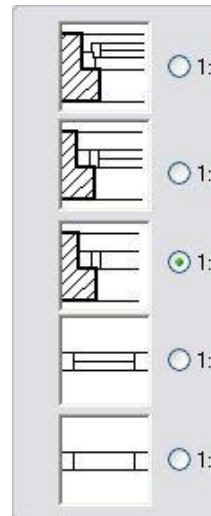
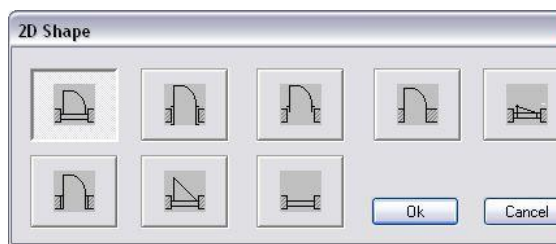


2D shape - For doors only

You can choose from among six different 2D shapes for the doors. You can apply them for various types.

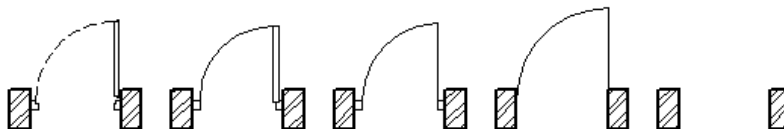
Ways of visualization depend on the scale of representation. Scale can be set in the **View menu - Door/wall and wall scale** dialog box.

Click the **2D shape**  icon to see the dialog box:



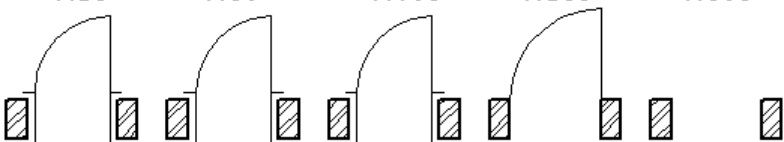
Standard frame

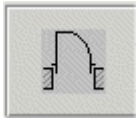
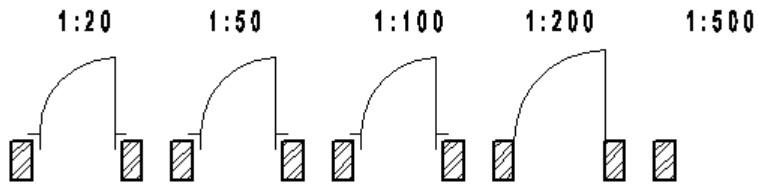
1:20 1:50 1:100 1:200 1:500



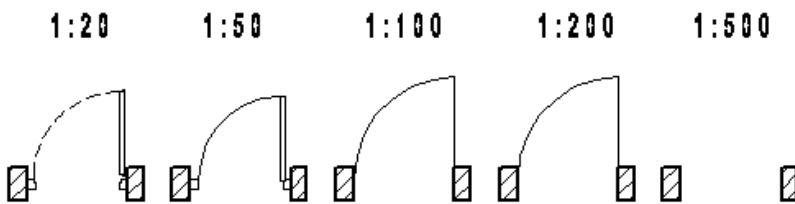
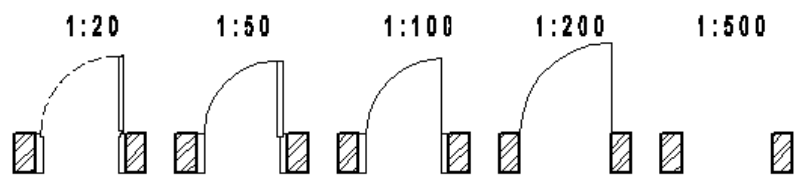
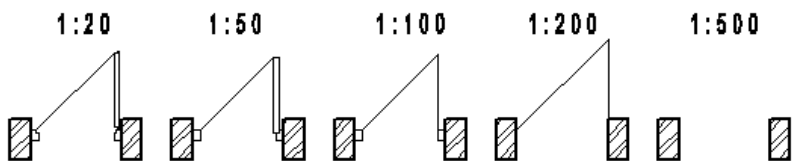
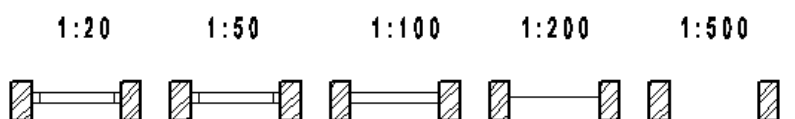
Timber lining frame

1:20 1:50 1:100 1:200 1:500




**Metal frame of angle****Simplified standard frame**


Same as the representation of pocket frame, but it is simplified in 1:100.

**Shadow line frame****Opening direction: dashed line instead of an arc****Simplified symbol**

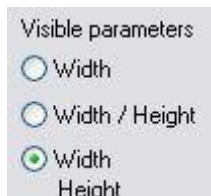
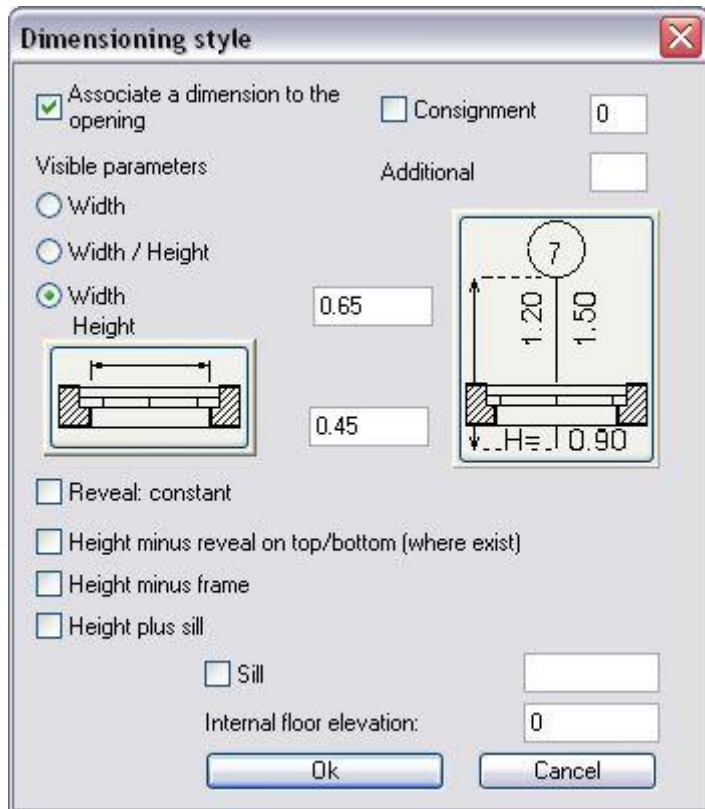
In 2D representation threshold appears, if, among the main geometrical parameters, the value of threshold thickness is not 0.

Dimensioning

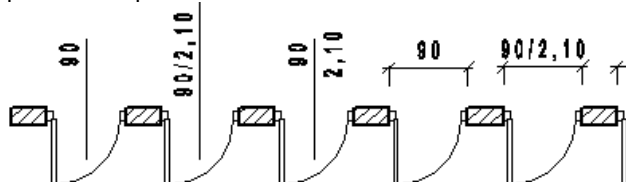
When you click the *Dimensioning*  icon, the dialog box appears where you can specify the dimensioning properties of the door/window.

The Dimension  **Dimension - Openings** command places the dimensioning of the door/window with the values set here.

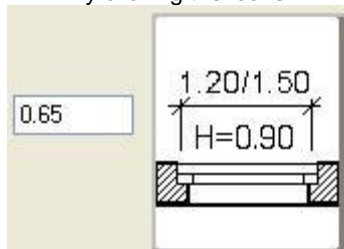
When you switch on the **Associate a dimension to the opening** option, dimensioning will also appear automatically when placing the door/window.



Specifies the parameters fitted to the dimension.

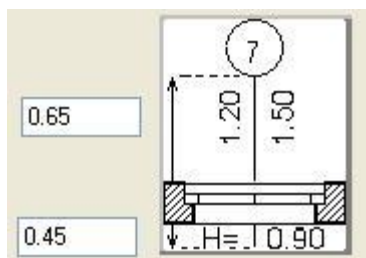


By clicking the icons:



Dimensioning is parallel with the direction of the door/window.

You can specify the distance of the measurement line in the field. This value can be negative as well, in that case dimensioning is put on the other side of the door/window.



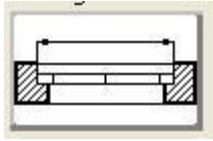
Dimensioning is put on the axis of the door/window.

This way you can define the length of the line at the side of the text or on the other side. You cannot enter a negative value here.

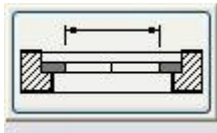
☒ Consignment

Additional

If you switch on consignment, you can enter a number in the dimension circle of the door/window. If the number is 0, the program replaces it with the **ID** number of the door/window in the field. You can complete the consignment number with an alphanumeric expression.



External dimensioning of the door/window (with frame).

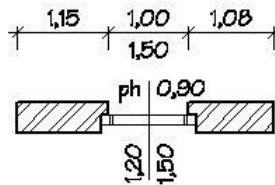


Internal dimensioning of the door/window (width of casement, which means the width of the door/window without frame).

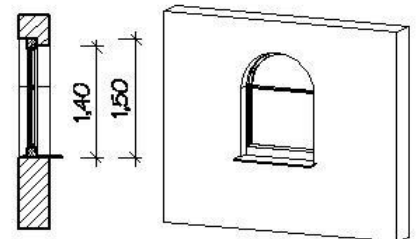
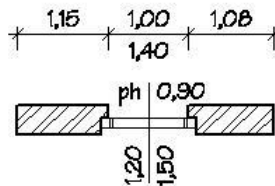
Height minus reveal on top/bottom (where exist)

When you use reveal for the opening, you can define, the height of the opening contains the reveal or not. You can switch on / off the Height minus reveal on top/bottom (where exist) option:

OFF



ON



If you use an opening with rectangle form, you have to set the state of the chamfer to go on the top or around also.

Height minus frame

By switching on this option the height of the door/window is calculated without its frame.

Height plus sill

With this option you can decide whether or not to include the *height of the threshold* in the height of the door. In case of windows it is important if the parapet wall under the window is removed and replaced with the structure of the window. In this case the total height of the window has to contain the height of the parapet wall („threshold”) as well.

☒ Reveal: constant

Here you can decide whether to change the width of the window when forming the reveal. (According to the standard you should keep this option switched on.)

☒ Sill

Internal floor elevation:

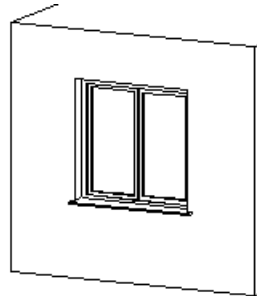
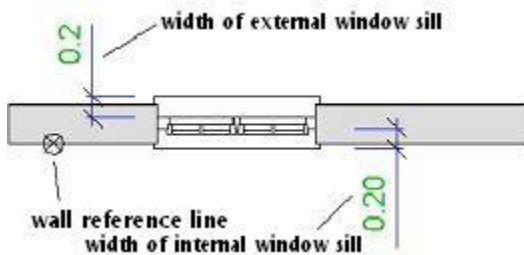
When the **Parapet height** option is switched on, the parapet height is also entered after the text given in advance (for instance: ph =). You can enter the internal floor elevation in meters. This way the parapet height is measured from this level.

9.3.1.6. Parameters group

External, internal sill: can be switched on, values can be specified:

- **width:**
Defines the width of the external/internal sill, measured from the external/internal frame level
- **overhanging (ext):** overhanging of the external/internal sill, parallel with the wall.
- **height**
Specifies the thickness of the external/internal sill. (The upper level of the sill is the same as the lower level of the window.)
- **material:** material of the external/internal sill can be specified.

| Parameters | |
|--|----------------------|
| <input checked="" type="checkbox"/> External sill | |
| width | 0 m |
| ext | 0 m |
| height | 0 m |
| material | Default material ... |
| <input checked="" type="checkbox"/> Internal sill | |
| width | 0 m |
| ext | 0 m |
| height | 0 m |
| material | Default material ... |



The sill only appears on the floor plan if the door/window scale is 1:50 or 1:20 (View menu).

9.3.1.7. Wall connection group

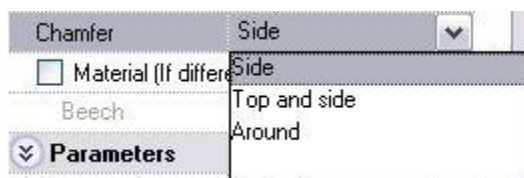
Reveal width

Overhanging of the external side of the wall on the frame of the door/window.

Chamfer types

It is possible to create a door/window with a chamfer. You can modify the door/window-wall connection with the *Move insert point* command from the *Shortcut menu – Wall connection*.

You can create various types of chamfer:

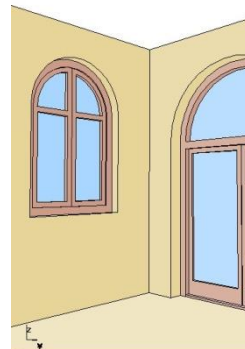
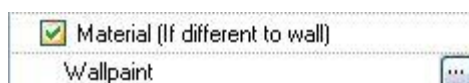


The chamfer is created only on the two sides of the door/window.
The chamfer is created on the two sides and the top of the door/window.
The chamfer surrounds the door/window.

Material of wall connection

This command can be important when working in 3D view. The material of the wall ending around the door/window can be set here.

Material (switch off), this material is the same as the wall texture. Once you have turned on this option, by clicking the name you can select another material for the wall connection from the **Material** dialog box (for instance *Wall paint*) instead of the current material.

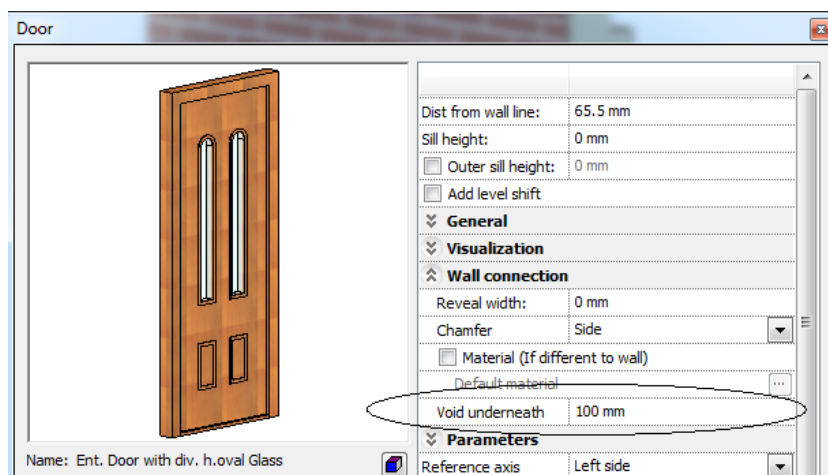


Void underneath

Gap under door (called void underneath) is a technical extension of the door opening hole at the bottom side of the door. It extends the door hole in the wall by a value defined in the properties dialog. It can be used to make space for floor layers to create the proper connections.

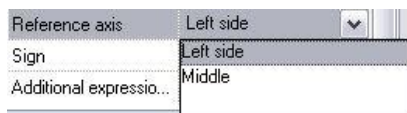
The void underneath value can be found in the Door properties dialog, in the Wall connection section. Its default value is Zero.

Door with void underneath as 100 mm:



9.3.1.8. Parameters of placing



Reference axis



It installs the door/window by its corner point.

It installs the door/window by its axis.



When using the   *Install door/window from wall corner* command, press TAB to change the *Reference axis* defined here. This way you can also select the other corner point as reference axis.

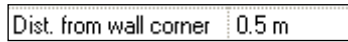
Sign

The program puts the value entered in the box parallel with the door/window. If a # character is entered, parapet height appears.



Distance from wall corner

When setting the properties, this field appears in gray in the dialog box. If you want to modify the door/window that you have already installed it in the wall, the **Door/window properties** dialog box shows the distance of the *Reference axis* of the door/window from the wall corner. Now you can modify the distance between the door/window and the wall corner.



9.3.2. Installing a door/window

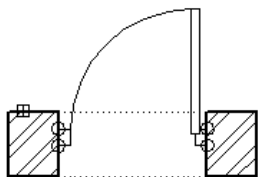
It is useful to install the window on the internal side of wall by default. This way its floor plan symbol (scale 1:20), the door/window dimensioning, the opening direction of window casement in the 3D model, and, in case of a window with reveal, the reveal is put to the appropriate place.

In practice, however, you often know the external values only, so it is more useful to install the window on the external side. In such cases, the door/window has to be mirrored to obtain a correct representation.

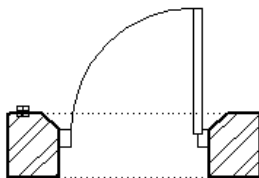
Ways of installing a door/window:

- ❖ by defining the distance between the nearest wall endpoint and the door/window.
- ❖ to the left or to the right from a given point of the wall,
- ❖ by defining to points on the wall, thereby determining its width,
- ❖ as an individual object, independent of a wall,
- ❖ on a given roof plane,
- ❖ by creating an individual door/window, and installing it anywhere in the wall, even as a corner window.

Reference points



The door/window is connected to the wall by its reference points. Every floor plan representation contains four reference points (two at both wall connections). The door/window appears on the external or the internal side of the wall depending on your choice of side at the time of installing the door/window.



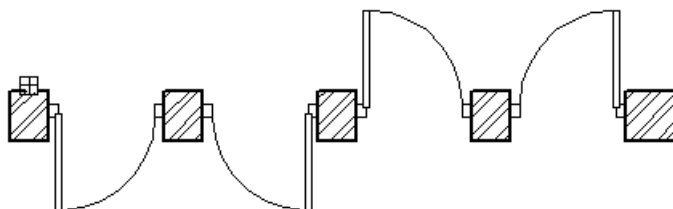
By default, reference points are created perpendicular to the internal wall, but you can move them with the help of the **Move insert point** command.

Reference axis

The reference axis can be the right or left reference point, or the middle axis of the door/window. The program installs the door/window by the reference axis set in the *Properties* dialog box. In the case of *Install door/window from wall corner* command, press **TAB** to change it.

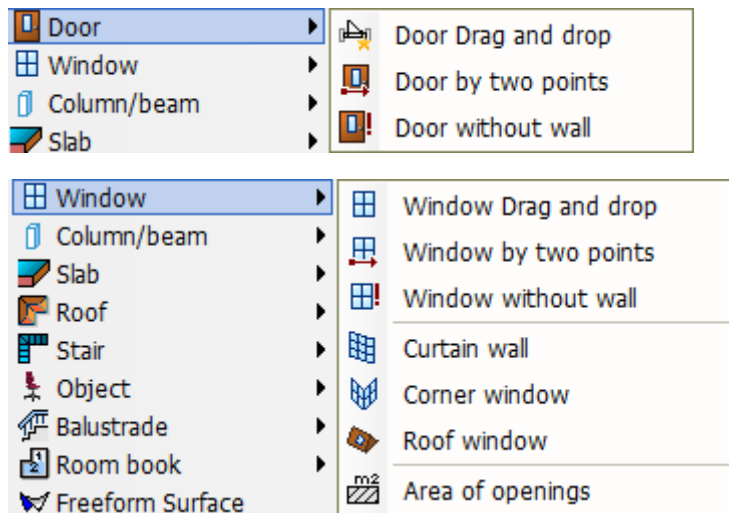
Opening direction

The opening direction of doors can be modified by clicking on the required side, or later using the **Change opening direction** command in the shortcut menu.

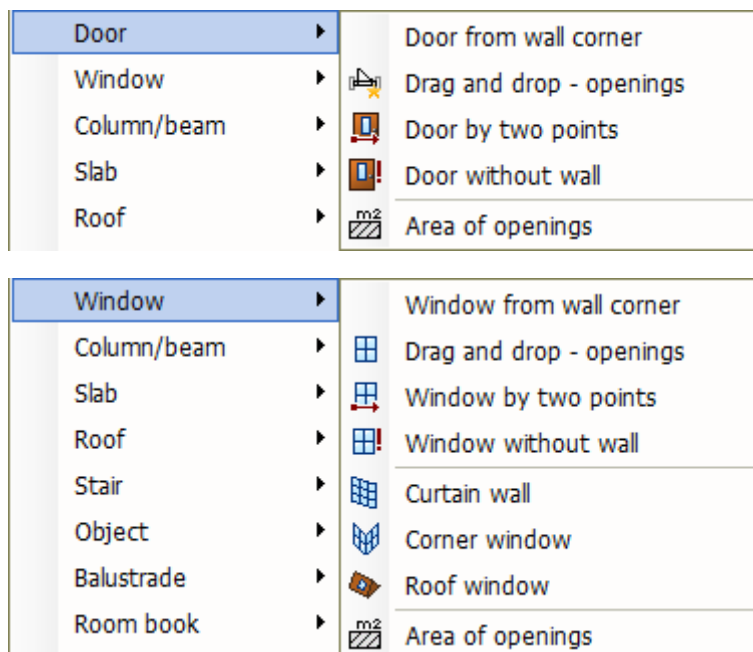


You can install a door/window:

- ❖ using the icons of the Toolbox -  **Door** /  **Window** tool:



- ❖ using the **Building – Door** or **Building – Window** menu commands:



- ❖ from the **Design center**:

Dragging the object to the drawing area with the right mouse-button; you can select the placement type from the list appearing.

Place it from wall endpoint
Place it in given point
Place it with the endpoints
Place it without wall connection
Window (on Roof)



9.3.2.1. Place door/window from wall corner

With this command you can install the door/window in several ways:

- ❖ graphically on the floor plan,
- ❖ at a given distance from one wall endpoint on the floor plan,
- ❖ at a given distance from one wall endpoint by repeat on the floor plan,
- ❖ graphically in 3D view.

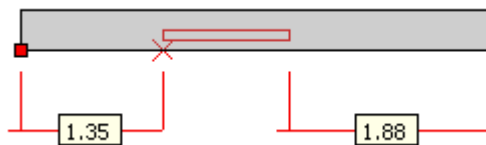
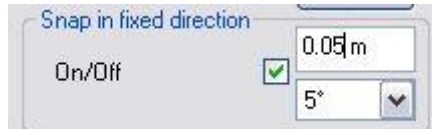
Installing by graphically on the floor plan

- Select the wall where you would like to place a door/window.

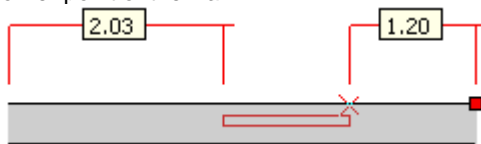
When you move the mouse pointer, the program indicates the distance of window endpoints from wall endpoints. The window can be moved by the set snap spacing.

With this method you can define the place of the door/window graphically.

You can switch on and enter snap in direction in the *File menu - Options - Snap Grid* dialog box



- Before you insert a door/window, press **TAB** so that you can switch the *reference axis* of the door/window. Thus by selecting the other corner point as reference axis, moving by snap in direction also takes place in relation to the other corner point of the wall.



- If you click on the **MIRRORING** keyword, the program will mirror the openings on the wall.
 - Use the keyword if for example you clicked on the external side of the wall to place the window, because the external size is available. In this case You have to mirror the window to be- it's floor plan symbol (1:20 scale), the scale of openings, the opening direction of the casements in the 3D model, or in case of reveal window the place of the reveal -in the right place.
 - Place also graphical the opening.
 - In case of door click on the placed opening to set the proper opening direction.
- Enter** Finish opening direction selecting.
Enter Finish the command.

Installing by a given distance on the floor plan

- Select a wall where you would like to place a door/window.
- When you move the mouse pointer, the program indicates the distance of window endpoints from wall endpoints.
- Pressing **TAB**, the *reference axis* of the door/window can be changed, if needed.
- By clicking **MIRROR** the program mirrors the door/window on the wall.
- Instead of inserting the door/window graphically, enter the distance between the reference axis of the door/window and the wall corner point.

If the reference axis is on the axis of the door/window, the program records the distance from the wall endpoint closer to the click.

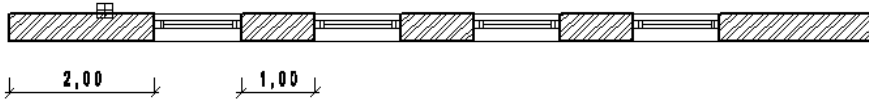
If the reference axis is a corner point of the door/window, the distance is measured from that wall corner point between which and the reference axis the wall section does not contain the door/window to be inserted.

- **Enter** Finishes selecting the direction.
- **Enter** Completes the command.

Installing on the floor plan with repeat:

- Select the wall.

- Select the **REPEAT** keyword.
- Enter the number of copies: e.g. 4. **Enter**.
Enter the distance between the doors/windows: e.g. 1.
- Enter the distance from the selected wall node: e.g. 2 m.
- In the case of doors, click on the installed door to set the appropriate opening direction.
- **Enter** Finishes selecting the direction.
- **Enter** Completes the command.



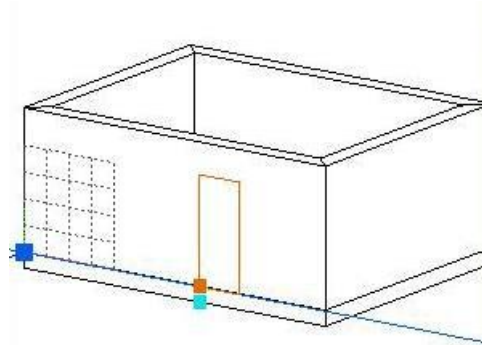
When installing a door/window, a message may warn you if it is outside of the wall, or intersects other objects. When using the REPEAT keyword, the program inserts only that number of doors/windows for which there is enough room without intersecting other objects.



When you insert a door/window with repeat, the program uses the *reference axis* set in the *Door/window properties* dialog box.

Installing in 3D view:

- Activate the 3D window, and, after selecting the command, click a vertical plane of the wall where you would like to place the door.
- Place the door/window on the wall plane. It places the opening always to the given parapet height in relation to the layer.



Enter Completes the command.

Option:

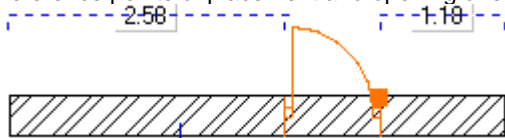
| | |
|--------------|---|
| SOLID | Use this keyword, if the selection of the surface is not evident. Click the appropriate wall, then one of its vertical surfaces. Enter . |
|--------------|---|

9.3.2.2. Installing door/window by drag and drop

By this command you can install door or window mostly graphically on the floor plan or in 3D.

Installing door/window on the floor plan

- Move the mouse pointer over a wall or use the **Wall** keyword to select a wall where you would like to place a door/window. When you move the mouse pointer, the program indicates the distance of door/window endpoints from wall endpoints, reference points of placement and opening directions.



- Using the mouse pointer and/or keywords and/or entering the distance values you can define the final place of door/window.
- Use the **Repeat** keyword and then enter the required distance values to place multiple doors/windows with equal distances from each other.
- Click with your left mouse button to finish the placement graphically or press **ENTER** to finish entering the distance value measured from wall endpoint.
- In the case of doors, click the door installed to set the appropriate opening direction.
- Install subsequent doors/windows or close the command by **ENTER** or right mouse button click.

Installing in 3D view

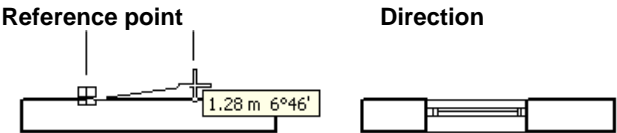
- Use the mouse pointer to select a wall plane where you would like to place door or window.
- Using the mouse pointer and/or keywords and/or entering the distance values you can define the final place of door/window.

- Click with your left mouse button to finish the placement graphically or press **ENTER** to finish entering the distance value measured from wall endpoint.
- Install subsequent doors/windows or close the command by **ENTER** or right mouse button click.

9.3.2.3. Place door/window to arbitrary point

This command installs the door/window by putting its reference axis to a selected point of the wall. The program uses the *reference axis* set in the *Door/window properties* dialog box.

- Select a reference point on the wall where you put the reference axis of the door/window.
- When the reference axis is other than the middle axis of the door/window, select in which direction to put the door/window from the reference point. Click the appropriate direction.
- In the case of doors, click the door installed to set the appropriate opening direction.
- **Enter** Finishes selecting the opening direction.
- **Enter** Completes the command.



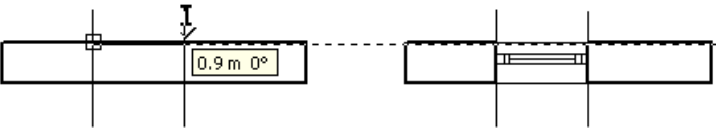
To a given distance from intersection point

By usi

9.3.2.4. Place door/window by two points

This command allows you to insert a door/window by defining its width graphically, giving its starting point and endpoint. This way the program ignores the width values set in the *Door/Window properties* dialog box.

- Click a point of the selected side of the wall to define the place for the endpoint of the door/window.
 - Drag the mouse pointer in the appropriate direction, and click on the appropriate place to define the place of the other endpoint, thereby specifying the width of the door/window graphically, or after selecting the direction enter the width of the door/window: 1 m. **Enter**.
- The program inserts the door/window in the wall.



9.3.2.5. Door/window without wall

With this command, doors/windows can be placed to arbitrary places as individual objects, without being parts of a wall.

- After selecting this command the program warns you that the doors/windows installed from then on are created without wall connection.
- **OK** Close the warning dialog box.
- Install the door/window.

Options:

| | |
|----------------|---|
| XANGLE | Rotates the door/window by a given angle before placement. |
| GRAPHIC | Enter the origin of the door/window, and then define the direction of its axis graphically. |

Enter Completes the command.

The opening direction of doors installed this way, can only be changed by the **Shortcut menu - Change opening direction** command.

9.3.2.6. Place roof window

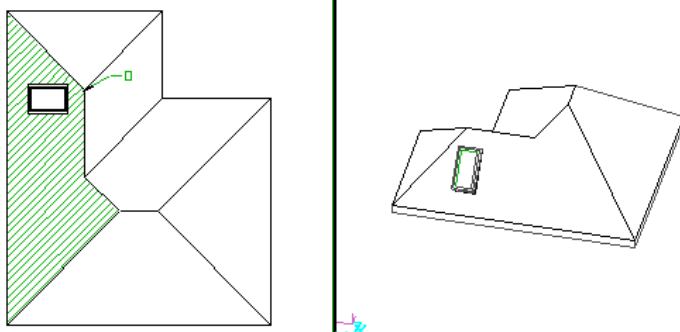
With this command you can place a roof window on the selected roof plane. The program identifies the angular offset of the roof plane, and cuts an opening in the roof under the window.

- Select a roof plane where you wish to place the roof window.

- Select the required window type from the **Roof window** category in the appearing dialog box. **Ok**.
- Select the place of the roof window.
- **Enter** Completes the command.



The **Roof shortcut menu- Info - Level line -out and - Info - Level line -in command** can help installing windows more precisely.

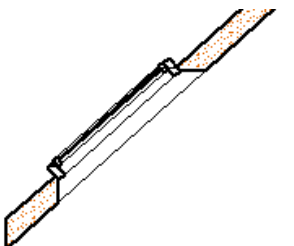


Modify roof window

Click on the roof window, in the toolbox the Property manager visualizes the individual parameters:

| | |
|-----------------------------------|---------------|
| Roof connection | |
| Reveal width: | 0 m |
| <input type="checkbox"/> Material | |
| Beech | ... |
| Parameters | |
| Dist. from plane | 0.1 m |
| Top hole | Perpendicular |
| angle | 0.00° |
| Bottom hole | Perpendicular |
| angle | 0.00° |
| Additional expressio... | |

- Define the required parameters:
-
- ❖ **Distance from roof plane:** Defines the distance between the plane of the window and the roof plane.
- ❖ **Top hole:** In the pull-down list you can decide about the top hole of the roof window in relation to the roof plane:
Perpendicular
At angle
Horizontal
- ❖ **Angle of top hole:** If you define the top hole with angle, the value of the angle means the angle from the horizontal plane upwards.
- ❖ **Bottom hole:** In the pull-down list you can decide about the bottom hole of the roof window in relation to the roof plane:
Perpendicular
At angle
Vertical
- ❖ **Angle of bottom hole:** If you define the bottom hole with angle, the value of the angle means the angle from the vertical plane towards the roof plane.
This way you can define the following roof window - roof connection:



| | |
|-------------------|------------|
| Parameters | |
| Dist. from plane | 0.1 m |
| Top hole | Horizontal |
| angle | 0.00° |
| Bottom hole | Vertical |
| angle | 0.00° |

9.3.2.7. Design center - Doors/Windows

If you activate the **Design Center** it appears on the left side of the screen by default. Here you can select the Doors and Windows directory where the door/window types are classified into different categories (so-called .oli files).



For the detailed description of the Design center see Chapter 2.16.9. *Design center*.



Doors/windows already selected and assigned the appropriate properties can be placed on the drawing by dragging. This is the so-called '*drag and drop*' method, which, in the case of doors/windows, consists of the following steps:

Inserting with a right-click

- Right-click the appropriate door/window.
- Hold the right mouse button, and drag the object to the drawing area.
- Release the button. Select the way of placement from the appearing shortcut menu:

Place it from wall endpoint
Place it in given point
Place it with the endpoints
Place it without wall connection

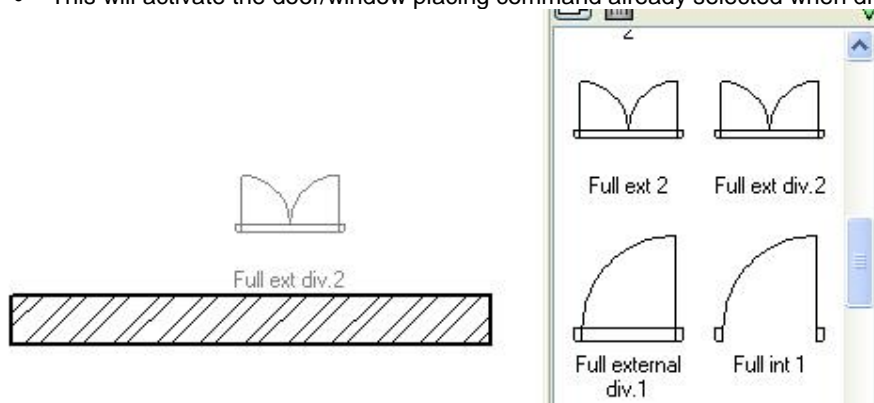
The program will install the door/window according to the selected placing command.



If you continue dragging the object to the drawing with the left mouse-button, the placing command already selected from the list is activated automatically.

Inserting with a left-click

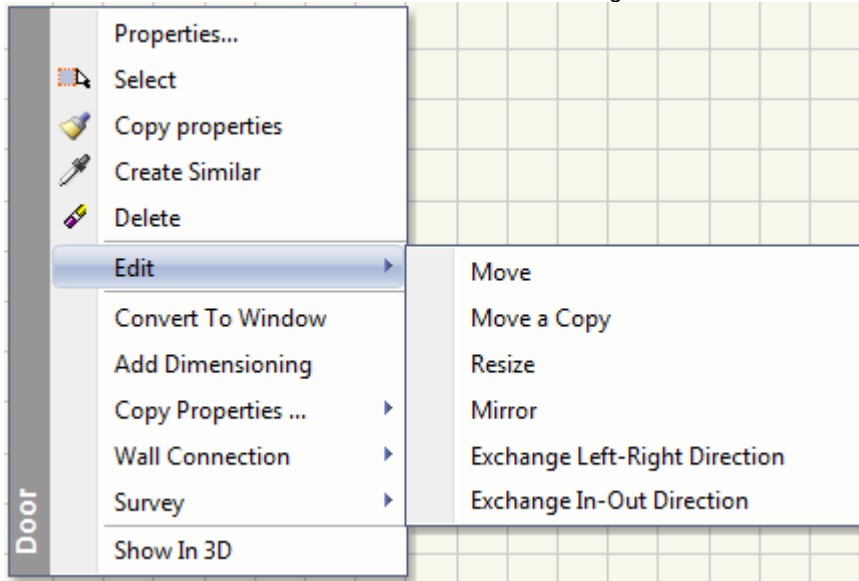
- Left-click the appropriate door/window.
- Hold the left mouse button, and drag the object to the drawing area.
- Release the button.
- This will activate the door/window placing command already selected when dragging with a right-click.



9.3.3. Edit or modify doors/windows

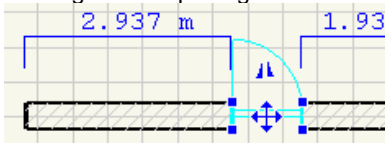
The commands below modify doors and windows in the drawing. You can select these commands:

- ❖ from the **Shortcut menu** which can be accessed with a right-click on a door or window



- ❖ **Using marker**

Clicking on the opening the marker appear

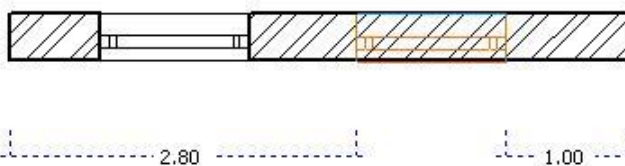


9.3.3.1. Move door/window in wall

With the help of this command you can move the selected door/window in different ways:

Move graphically on the floor plan

- Select the door/window you would like to move.
- When you move the mouse pointer, the program indicates the distance of window endpoints from wall endpoints. The window can be moved by the set snap spacing. With this method you can define the place of the door/window graphically. You can switch on and enter snap in direction in the *File menu -Options -Snap Grid* dialog box.



Move by a given value on the floor plan

- Select the door/window you would like to move.
- Move the mouse pointer in the appropriate direction, and enter the value of the distance.
- **Enter** Completes the command.

Options:

| | |
|--------------------|--|
| ENDDISTANCE | You can place the reference axis of the door/window at a given distance from the selected wall endpoint. |
|--------------------|--|



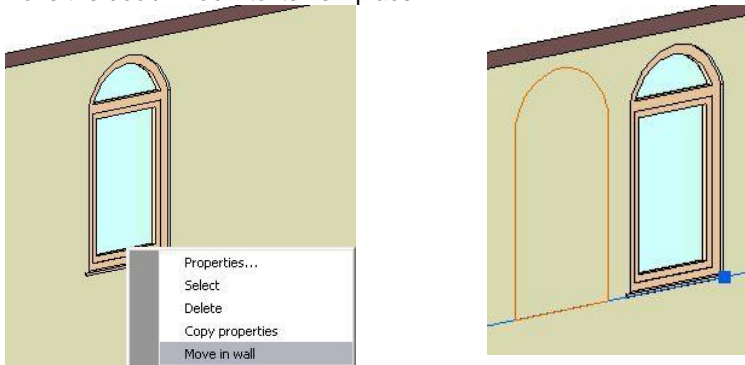
On the floor plan, the active reference axis of the door/window is the one which is near to the selected door/window.

In 3D:

You can move a door, a window, or even a roof window directly in 3D view, horizontally along the wall. The floor plan representation of the moved object follows the modifications.

- Click on the door/window with mouse right click,

- Select from the **Shortcut menu** the Move in wall command.
- You can switch between reference points with the help of the **PREVIOUS** and **NEXT** keywords.
- Move the door/window to its new place.



Move using markers

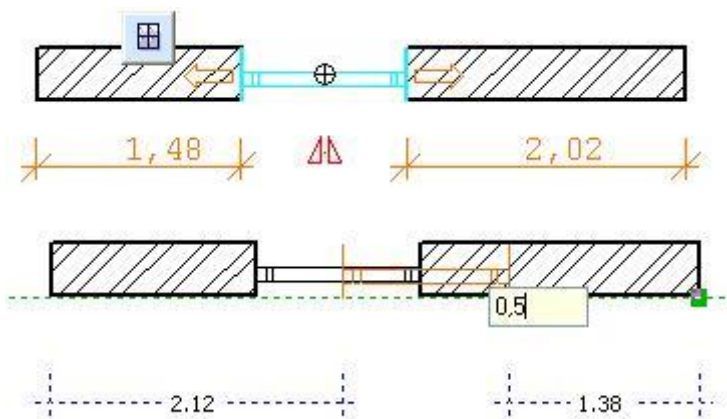


Arrow control - Moving opening control

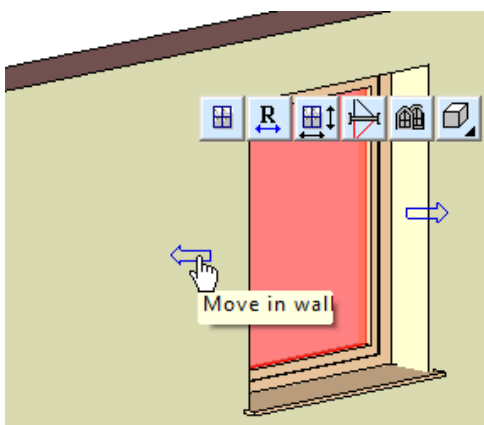
Clicking on the arrow control you can move the opening.

- Click on the arrow control.
- Move your mouse cursor to the desired position and click again (for graphical movement) or use your keyboard for entering the shift value.

In 2D:

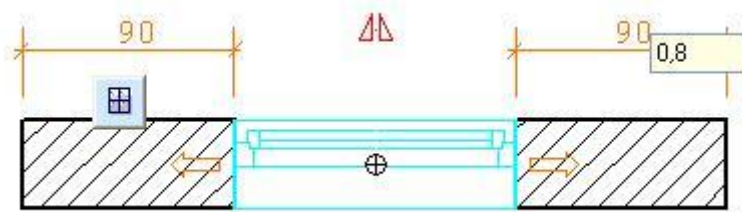


In 3D:



Dimension text control - Distance modification

In case of the openings the dimension text control displays the distances from the wall endpoints. You can change the distance typing a new value.

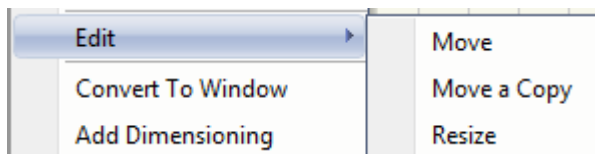


- Click on the dimension text and type the new value in the popup editing field.

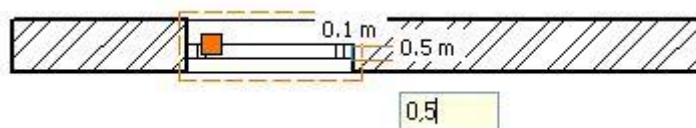
9.3.3.2. Resize door/window

The command changes the width of the selected door/window. The command can be used both in 2D and 3D view.

In 2D:

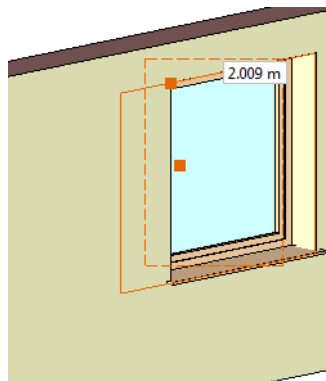


- Select from the **Shortcut menu** the Resize command
- By moving the mouse pointer, define the new width value for the door/window, or
- Enter a relative value by which you wish to increase or reduce the width of the door/window.



In 3D:

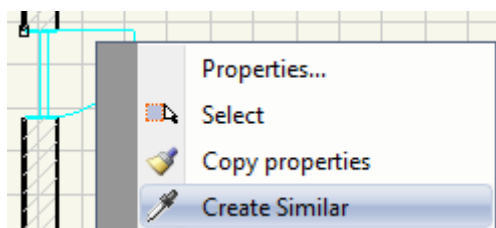
- Click on the door/window in the side of the door/window you would like to move with mouse right click
- Select from the Shortcut menu the Resize command
- Define its new place with the help of the mouse to resize the door/window in 3D. The door/window 2D representation follows the modifications.



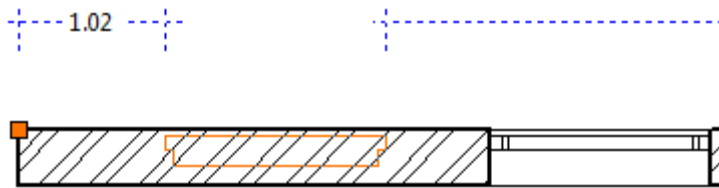
9.3.3.3. Create similar door/window

When you select a door/window installed earlier, the program puts its copy to the required place. The command can be used both in 2D and in 3D view. Wall connection is also copied.

- Click on the window with mouse right click.
- Select from the **Shortcut menu** the Create similar command.
- Select the **UPPER** or **BELOW** keyword from the command line, if you would like to copy the door/window to another floor. You can step up or down any number of floors.



The program records the type and parameters of the selected door/window. The Place **door/window from wall corner** command is activated afterwards.



9.3.3.4. Copy properties - one by one

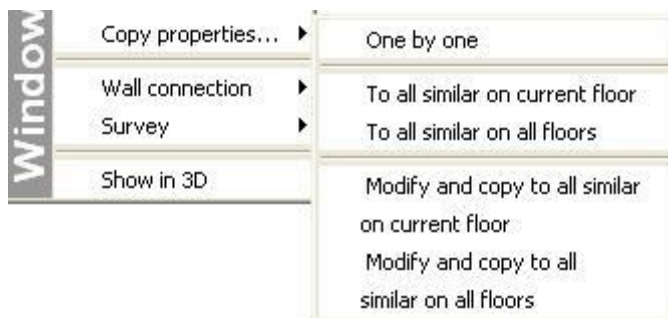
The program copies the properties of the selected doors/windows to the required doors/windows. This command can be used both in 2D and in 3D view. The program also copies the wall connection.

- Click on the door/window with the required properties with mouse right click.
- Select from the **Shortcut menu** the Copy properties / One by one command
- Select the doors/windows you wish to modify.
Enter Closes the command.

Options:

| | |
|--------------|--|
| BELOW | Select a door/window one floor lower. |
| UPPER | Select a door/window one floor higher. |

For **Copy properties** of doors/windows, this command and its further subversions can be found in the **Shortcut menu**. These are the following:



To all similar on current floor

The program copies the properties of the selected door/window to all other doors/windows of the same type on the current floor.

To all similar on all floors

The program copies the properties of the selected door/window to all other doors/windows of the same type on all floors.

Modify and copy to all similar on current floor

With this command you can modify a door/window, the properties of which the program later copies to the other doors/windows on the current floor automatically.

- Select a door/window which shows the properties you wish to copy to the other doors/windows.
- The **Door/window properties** dialog box appears, where you can define the required values.
Ok Closes the dialog box and copies the properties.

Modify and copy to all similar on all floors

With this command you can modify a door/window, the properties of which the program later copies to the other doors/windows on all floors automatically.



When the *Shortcut menu - Copy and paste* command is used, the **UPPER** and **BELOW** keywords can be selected from the command line; the door or window can be copied to another floor.

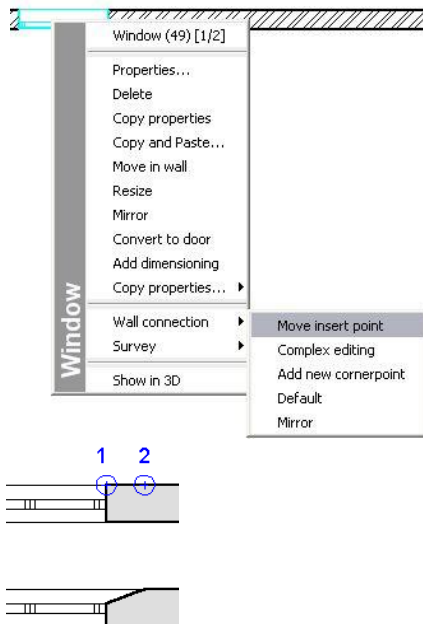


If you would like to copy the properties of doors and windows you can also use the *Modify menu - Copy properties* command. In this case you can select which properties of the door or window you want to copy.

9.3.3.5. Move insert point

With this command you can move the connection points of the door/window on walls to create a chamfer. The chamfer belongs to the door/window, and not to the wall, which means that it cannot be changed by editing the wall or moving the door/window. When copying properties of the door/window, this property is also copied.

- Click on the door/window near to the corner point of the door/window that you would like to move with mouse right click.
- Select from the **Shortcut menu** the Wall connection / Move insert point command.
- Specify the new place of the corner point on the wall, or define the distance of the corner point's displacement after moving the mouse pointer in the required direction.
- Select another door/window corner point to move, or press **Enter** Completes the command.



Options:

| | |
|--------------------|--|
| ENDDISTANCE | Defines the distance of the corner point measured from the selected wall corner. |
|--------------------|--|

9.3.3.6. Complex editing

With this command you can edit the connection between the window and the wall. The program offers the options of the *Profile editing* tool, with the help of which you can easily edit the connection. The only limitation is that the edited profile cannot fall outside of wall thickness.

- Click on the door/window near to the corner point of the door/window that you would like to edit with mouse right click.
- Select from the **Shortcut menu** the Wall connection / Complex editing command.
-

! Warning! Don't select the corner point of the door/window!

-
- Select an editing command from the *Toolbox - Profile editing tool*.



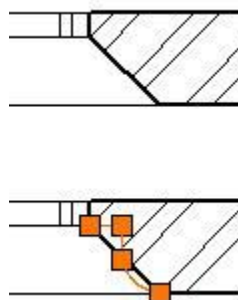
See the description of the *Edit Profile tool* in Chapter 8.9.9 *Editable profile*.

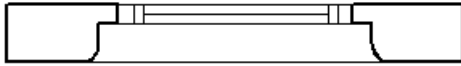
- In the course of editing the program retains the original contour and indicates modification.

Enter Finishes editing. You can select another connection point of the door/window to create a chamfer, or
Enter Finishes the command.

In order to create the chamfer shown in the picture, first use the *Move corner point* command, then add nodes with the *Edit door/window-wall connection* command, and finally use the *Line > Arc* command to chamfer. When editing is complete, the finished chamfer appears.

Apply the *Mirror door/window-wall connection* command to create a chamfer on both sides of the door/window.

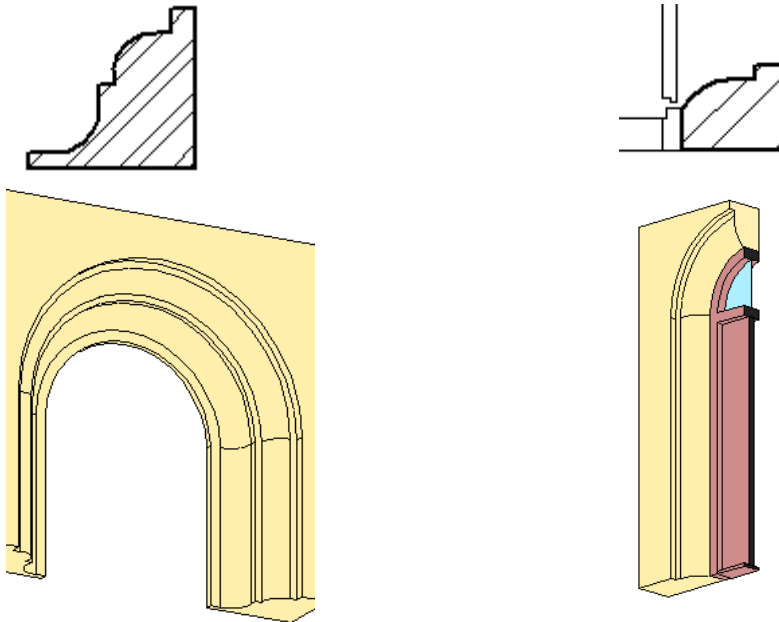




Add new point

If you only want to add new points to the wall connection when the chamfer is edited, use the *Shortcut menu - Add new corner point* command.

Examples:



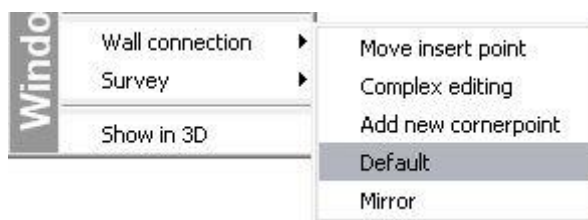
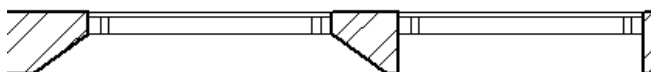
9.3.3.7. Delete door/window-wall connection

This command deletes the door/window connection points created earlier from the wall, and restores the default connections.

- Click on the door/window with mouse right click.
- Select from the **Shortcut menu** the Wall connection Default command
- Select the door/window you would like to delete the chamfer.

Enter Completes the command.

•



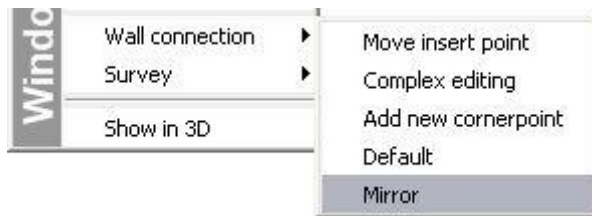
9.3.3.8. Mirror door/window-wall connection

This command mirrors the selected corner connection point of the door/window on the axis of the door/window.

- Click on the door/window with mouse right click.
- Select from the **Shortcut menu** the Wall connection Mirror command
- Select that corner of the door/window whose connection you wish to mirror.

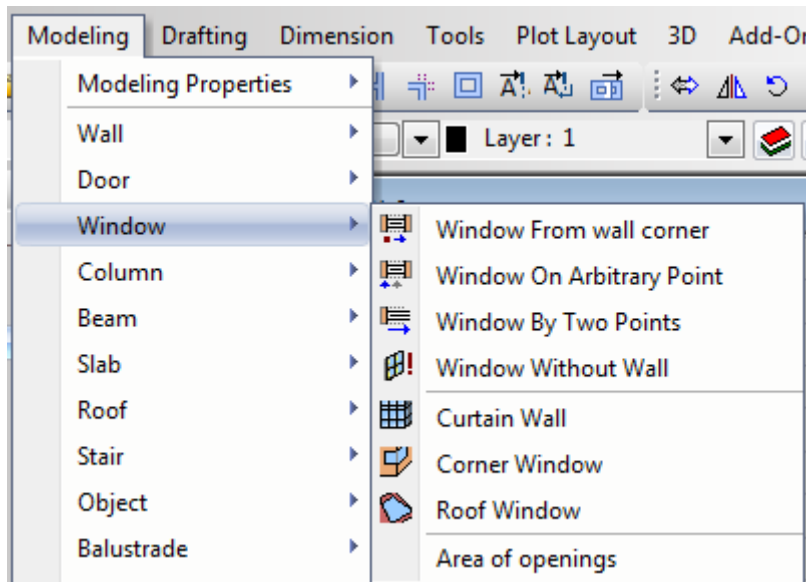
Enter Completes the command.





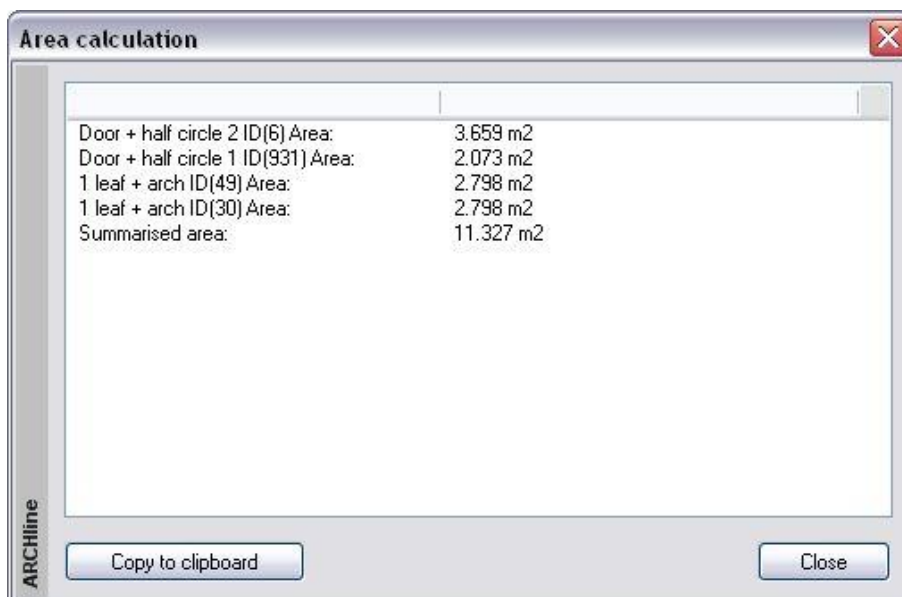
9.3.3.9. Area of doors/windows

Calculates the area of the selected doors and windows, and totals the result. The identification number of the doors/windows is indicated in the list in brackets.



- Select the required doors/windows.
- **Enter** Completes the selection.


The command creates a list containing the type, identification number and area of all selected doors and windows, and the total area of all doors and windows.

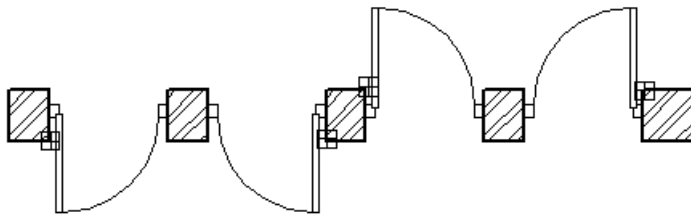
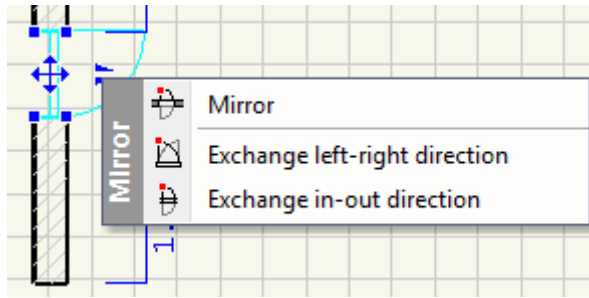


Press the **Copy to clipboard** button to transmit these data to Word or Excel.

9.3.3.10. Change opening direction


Changes the opening direction of doors installed earlier.

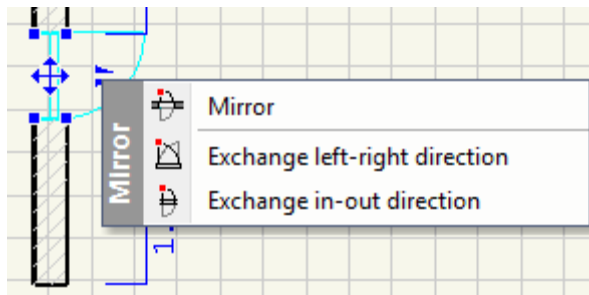
- Click on the door with mouse right click.
- Select the  two triangles marker.
- Select the appropriate command.
-



9.3.3.11. Mirror

The command mirrors the selected door/window on the wall.

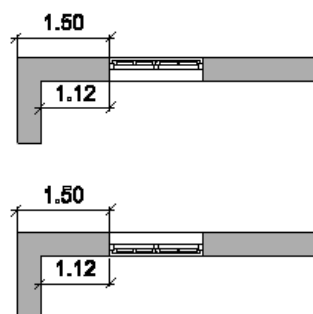
- Click on the door with mouse right click.
- Select the  two triangles marker.
- Select the appropriate command.
-



It is useful to place the window on the internal side of the wall by default. This way its 2D symbol (scale 1:20), the dimensioning of the door/window, the opening direction of the casement and, in case of a window with a reveal, the reveal is put to the appropriate place.

However, in practice the architect often knows external values only, so it is more useful to place the window on the external side (for instance 1.50 m).

In this case use the *Mirror* command to obtain a correct representation in the abovementioned cases.

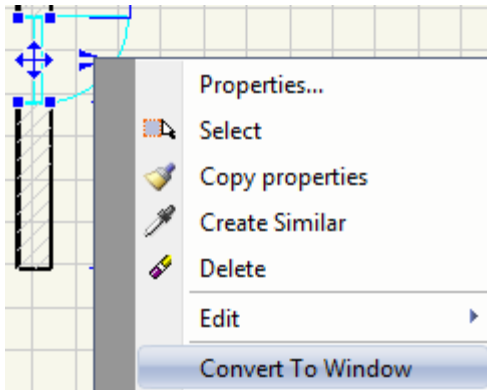


Don't mix up the mirroring with the opening direction change!

9.3.3.12. Convert to door/window

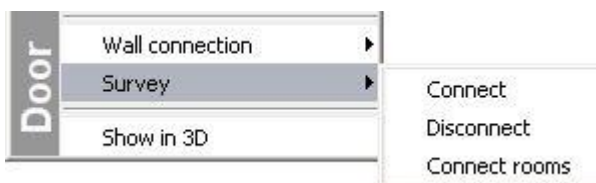
By activating this command the **Door/window properties** dialog box appears. You can select a door instead of a window, or a type of window instead of a door.

- Click on the door/window with mouse right click.
- Select from the **Shortcut menu** the Convert to door or the Convert to Window command.



9.3.3.13. Survey

In case of a survey you can connect or disconnect doors or connect rooms with the available commands.



For the description of these commands see also 15.5. Survey.

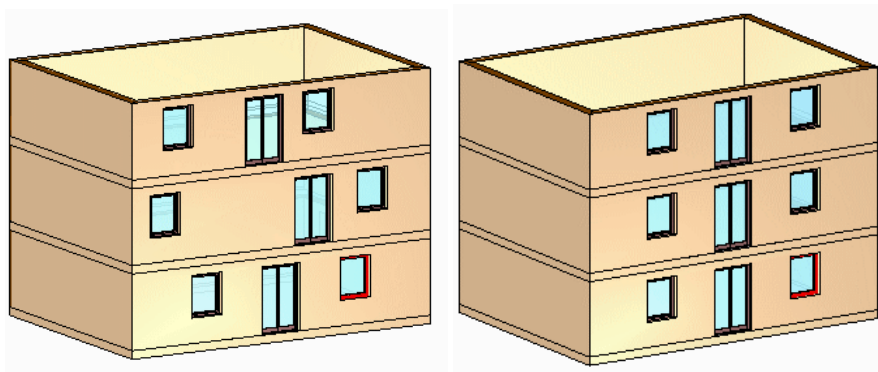
9.3.3.14. Doors and windows aligning in 3D

You can align doors and windows on the same façade but different floors in the 3D window.

The only requirement is that the walls on different floors (where you want to insert the doors/windows and make the alignment) must be identical. Also, the doors and windows must be placed on the same side of the walls.

This command is very useful when you just drop the doors/windows on the façade in 3D window. In that case, of course, the distances from the wall corners are not correct. It is enough to specify the correct doors/windows positions on one floor, and then you can easily align the doors/windows on the floors below/above.

- Activate a 3D view (axonometric, for example).
- Click with your right mouse button on the door/window to which you want to make the alignment.
- Select the *Align* command from the shortcut menu.
- Select the door/window you want to align.
- Repeat the command with each door/window by selecting the reference door/window first, and then the door/window you want to align.



9.3.4. Define custom door/window

If you cannot find any appropriate type of door/window among the objects of the directory, you can create your own door/window, as complex as you like.

The program offers you several ways of defining a door/window

❖ **Define by 2D hatches:**

Defines a new object of the directory on the basis of the front view and 2D symbol of a door/window of any form. Draw the front view of the door/window in 2D. After identifying by different hatches the surfaces in different planes, define the thickness of surfaces, and select their place. Save the object created this way in the given category of the Door or Window directory. For this method use the Building or **Toolbox - Accessories - Define custom door/window in 3D** command, and enable the **Define by 2D hatches** option. You will have to provide the 2D symbol.

❖ **Define by solid modeller:**

You can use solid modeller, and save the solid created this way in the appropriate category of the door or window directory.

To do so, use Building or Toolbox - Accessories - Define custom door/window from 3D model command, but this time disable the *Define by 2D hatches* option. When you use this command, it is your task to select the reference points.



There is a fast way of creating the door/window from the solid model. To do so, use Building or Toolbox - Door/Window - Simplified definition of custom door/window command. This way reference points are created automatically.

❖ **The Door Wizard**

Using the door wizard you can design complex door structures in a few steps. This tool is designed to offer simple and easy to use options and possibilities to create a new hinged door. It is possible only by setting the main properties such as the Handles, Materials (even photos of the original door), framing with profile, threshold with profile, additional object Accessories and Profile tool for decorating the door surface.

❖ **Edit in the layout of wall:**

You may often need an individual door/window that is not part of the directory, and is not needed anywhere else, which

means you do not want to overload the directory with it. With the **Building or Toolbox –  Curtain wall  Edit corner window** command you can create a corner window drawn in 2D on the layout of the wall, or a divided door/window of any form.

If the wall where you install the door/window is arched, the glass will also be arched.

• **Full curtain wall:**

You can transform the wall to the curtain wall using the *Wall shortcut menu - Full curtain wall* command see also 9.1.5.1. *Full curtain wall*.

9.3.5. Define custom door/window - Define by 2D hatches

With this command you can freely create as complex doors/windows as you wish, but it requires careful preparation.

Preparations:

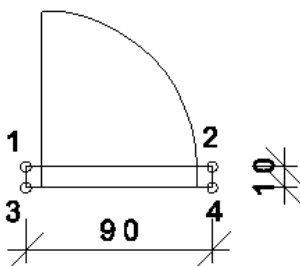
❖ **Prepare the floor plan symbol of the door/window.**❖ **Draw the front view of the door/window.**❖ **Assign the same hatch to surfaces in the same plane and with the same thickness.**

Using the **Building or Toolbox – Accessories - Define custom door/window in 3D** command:

❖ **Assign a thickness to the surfaces with the same hatch, and define the depth of position.**❖ **Define the contour that the door cuts from the wall in 3D.**

1. Preparing the 2D symbol of the door/window

With the help of the geometric objects (lines, arcs, etc.) draw the 2D symbol of the required door/window with the appropriate values. The program will use this symbol to put the door/window on the wall.



Defining a group:

Create a 2D group by using the **Tools menu - 2D group - Create** command.

Select the objects of the 2D symbol and define the reference points. This method requires four points, which will be the connection points between the wall and the door. **The order of defining the points is important.**

Define the points following the numbers in the picture.

Assign a name to the group in the appearing dialog box: door1, and save it to the appropriate category.

If you do not define any category, and the *User defined* category has not been created yet, press *OK* to create it, and save the group there.



You can use an already existing 2D symbol as well: Apply the Door/window without wall command to install an appropriate door/window, which has the 2D symbol you can use. Convert it into lined drawing by **Modify menu - Explode** command. Watch out for the hidden lines that also appear on the 2D drawing.

2. Creating front view for the door

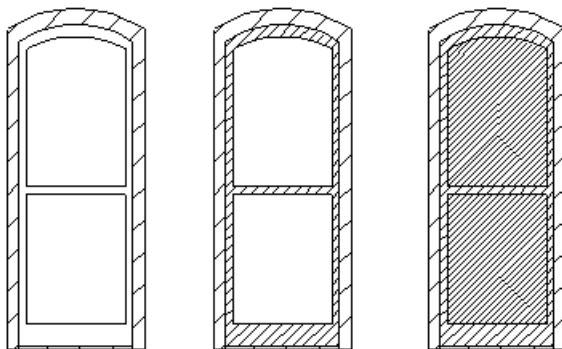
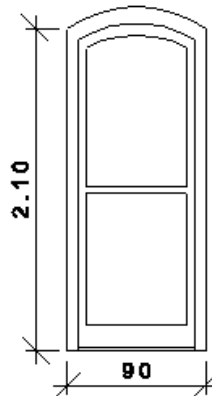
- Draw the front view of the door in 2D.
Use the Drawing tool of the Toolbox (line, arc, etc.).

Define the components:

The components of a door include the frame, leaves, threshold, glass, etc., which all have different depth values.

3. 2D hatch

Identify the different components of the door with different hatches (for instance with a different colour, pattern, direction, etc.). This means that the same type of hatch is assigned to surfaces in the same level and of the same thickness.



4 Using the Building or Toolbox - Accessories - Define custom door/window in 3D command

Select the command. In the appearing dialog box:

- Click the name of the 2D group.
- Enter the name of the new door.
- Enable the *Define by 2D hatches* option. **Ok**.
- Select the 2D hatches with the same properties, i.e. surfaces in the same plane and of the same thickness.

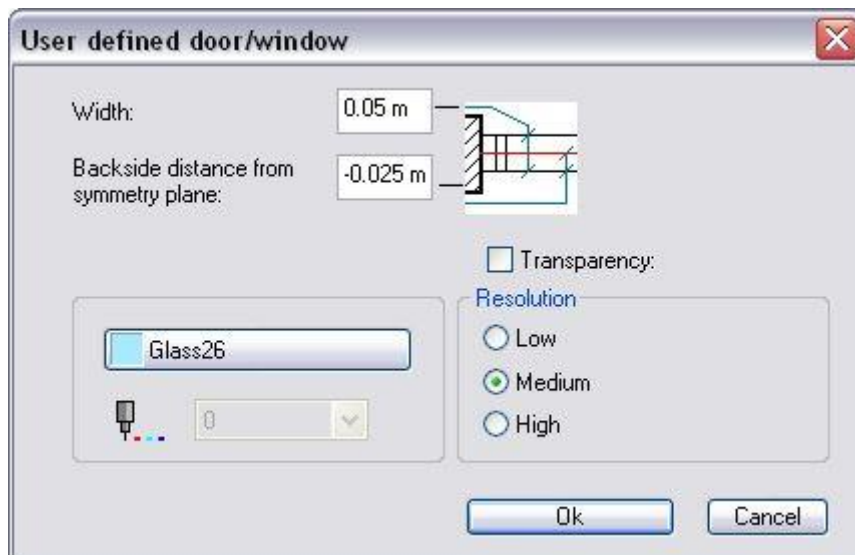
Enter Completes the selection.

Group entry (name & ID):
door1 (131)

New object name: door1

☒ Define by 2D hatches

A dialog box appears where you can define the 3D properties belonging to the selected parts of the door:



- Specify the width of the selected components.
- Enter the distance of the component measured backwards from the median plane. This way you can define the distance of the parts with different hatches from the median plane.
In this dialog box you can also modify the colour and material of the different parts of the door/window.
- If the material of the selected component is glass, activate the *Transparency* option.
Setting the resolution can be important in case you create an arched form in the door.
- Define resolution. It is important for arched objects.
- **Ok** Closes the dialog box.
- Select other hatches with the same properties in the front view of the door, and enter the required values in the dialog box.
- Go on selecting further hatches.
- **Enter** Completes the selection.

5. Defining the opening around the door

- Define the profile that is the contour of the front view of the door.
You can use the appearing *Profile definition* tool in Toolbox.

Options:

| | |
|--------------|---|
| ENTER | Select the ENTER option, if you wish to put the door/window in a rectangle-shaped opening. |
|--------------|---|

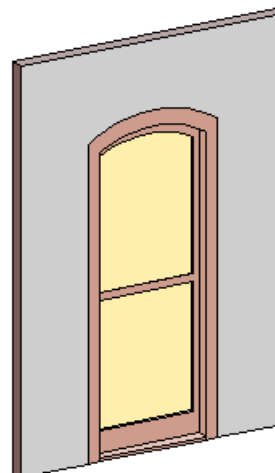
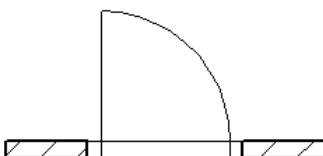


For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.

- Example: Select the **Polygon** command, and outline the contour of the front view of the door.
- Mark the reference point of the opening profile, by selecting the lower left corner of the front view of the door. This is also the first reference point of the door.

The program shows you the dimensions of the door, and asks if you would like to save the door you just created.

The program saves the new door in the given category of the Door directory.

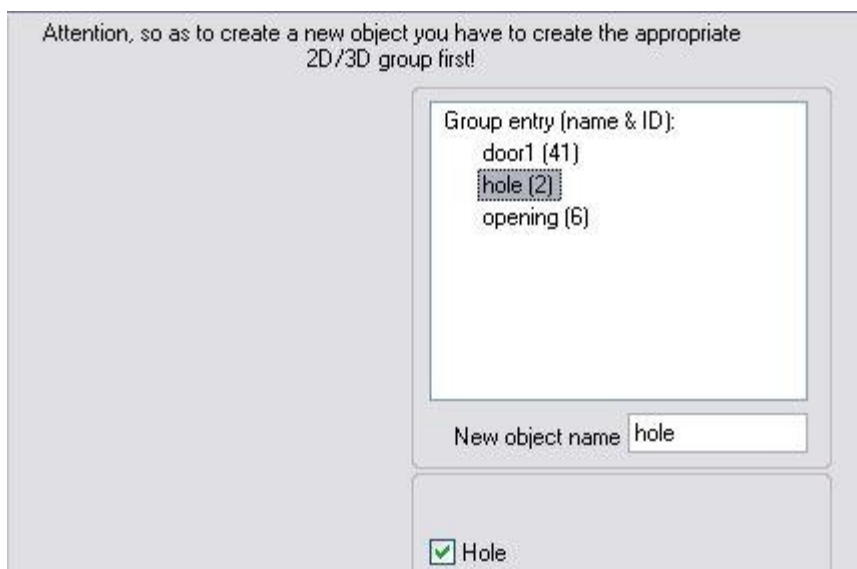
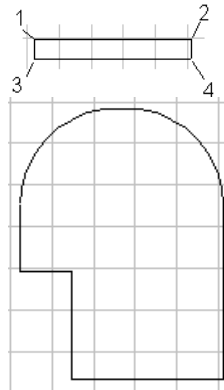


If you do not name any category, and the *User defined* category has not been created yet, press *OK* to create it and save the door there.

Create an opening

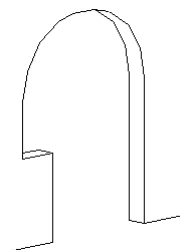
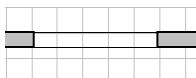
The method is the same as above:

- Draw the 2D form of the opening, and create the 2D group.
- Draw the front view of the opening in the 2D window.
- Apply the Building or Toolbox - Accessories - Define custom door/window in 3D command.
- Select the 2D group: *opening1*
- Enter the name of the new door: *opening1*.
- Select the *Openings* option in the dialog box.



- Define the profile that describes the contour of the front view of the opening around the door.
- Select the **Polygon** command in the menu, and outline the external contour of the shape of the opening.
- Select the reference point of the opening profile (lower left corner).
This is also the first reference point.

The program shows you the dimensions of the door, and asks if you would like to save the opening you just created to the required category of the Door/window directory.



9.3.6. Define custom door/window - from a 3D model

First you have to prepare a 3D solid model of the required door/window.

The complexity of 3D modelling allows you a great deal of freedom in creation. You can also define a door/window whose surface is not plain.

Preparations:

- ❖ Prepare the 3D model for the door/window.
- ❖ Create a 3D group from the model.
- ❖ Prepare the 2D symbol of the door/window using the **Building - Accessories** or **Toolbox - Door/Window - Define custom door/window from 3D model** command:
- ❖ Select the 2D and 3D groups you already prepared.
- ❖ Define the opening around the door.

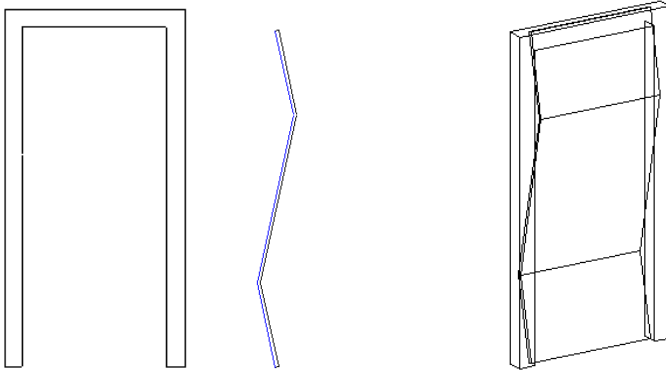
1. Create a model in 3D

Create the 3D model of the door/window with the help of the solid modeller.

For example:

In order to extrude the two profiles in the picture use the **Extruded solid** icon:

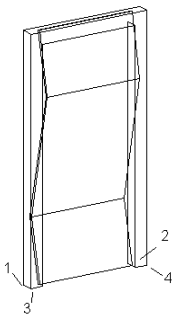
- ❖ for the front view of the frame of the door, and
- ❖ for the left side view of the decorated central part of the door.



2. Preparing the 2D symbol of the door/window

Prepare the 2D symbol as described in 9.3.4.1. *Define by 2D hatches.*

3. Creating the 3D group



- Create a group in 3D by the **3D menu - Group in 3D - Define object** command:
- Enter the name of the group: *newdoor1*.
- Select the solids constituting the new door.
- Define the reference points of the 3D group according to the picture.
If the reference points are the four corner points of the box enclosing the solid, it is enough to click the **ENTER** keyword.
-

When you create a 3D group, 2D symbols are generated automatically as the top-view of the 3D model. These are a usually not suitable door/window symbol, that is why you have to create your own symbol.

4. Using the Building or Toolbox - Door/Window Define custom door/window

- Select the 2D group in the dialog box which will be the 2D representation of the door: *newdoor1*.
- Select a 3D group: *newdoor1*.
- Enter the name of the door/window.
- **Ok** Closes the dialog box.

5. Creating the profile of the opening

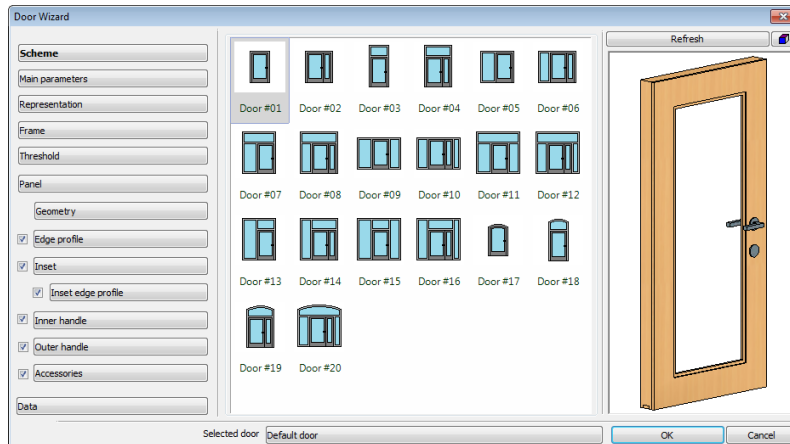
- Select a profile for the opening to be cut from wall.
Define the profile which is the contour of the front view of the door.
To do so, it is useful to copy the front view of the 3D model to the 2D window, and define this as profile.
If you select the **ENTER** keyword from the command line, the program automatically defines the rectangle enclosing the opening as profile.

The program shows you the dimensions of the door, and asks if you would like to save the new door. The program saves the new door in the required category within the *Door* directory.

The door/window dialog box shows the main dimensions of the new door/window: its height, width and thickness. All of these can be modified.

9.3.7. Door / Window wizard

ARCHLine.XP comes with a very detailed parametric library of doors and windows. Beyond these build-in doors and windows ARCHLine.XP offers custom door and window designer tool that guides you to design openings to your own specification.

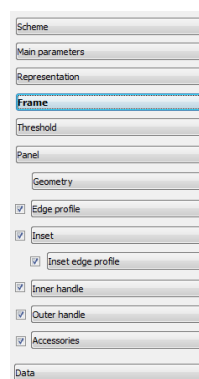


The door / window wizard is designed to offer simple and easy to use options to create a new hinged door or window. It is possible only by setting the main properties such as the Handles, Materials (even photos of the original opening), framing with profile, threshold with profile, additional object Accessories and Profile tool for decorating the door surface.

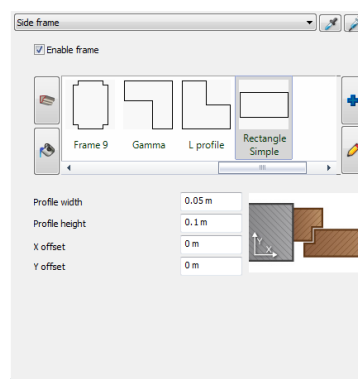
The new custom door and window can be saved in the appropriate library category to use it later on any project. Doors and windows can be drag and drop on place on wall either in 2D or 3D from their category within the Design Center. The wall openings automatically created on the fly. Clicking on a door or window and selecting the “Opening properties” command you can reopen the door and window wizard to edit the structure and redefine the current opening or create and save a new type in the library.

While drafting takes place in 2D, walls, doors windows and other objects include height data so a 3D model is actually being built in parallel. This makes it easy to produce elevations and sections and the entire design can also be viewed in an interactive 3D preview window.

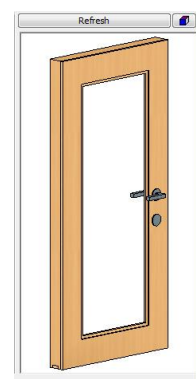
The structure of Door Wizard contains different parts: the left side Control bar, the middle Properties panel, the right side 3D preview.



Control bar

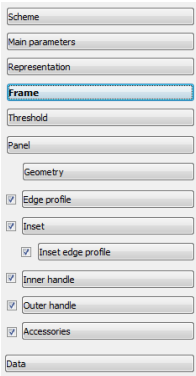


Properties



3D preview

9.3.7.1. How to use the Door / Window wizard



Open the Door Wizard and edit the properties. When a value is changed, you can build it in 3D by pressing the Refresh button at the top of the 3D Preview. When you finished with the settings, you can type the name of the new door at the left side of the Control bar pane and press the OK button to save the new door type and place it on a wall right away.

9.3.7.2. Control bar

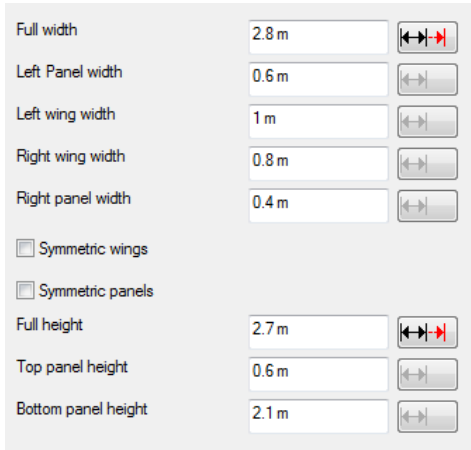
On the control bar you can navigate between pages of the Property panel. Some features like handles, accessories etc. can be entirely enabled or disabled by using the corresponding checkbox front on the control bar.

9.3.7.3. Scheme




On the Scheme page you can select an opening scheme. Any other settings on the opening wizard depend on this selection.

9.3.7.4. Main parameters



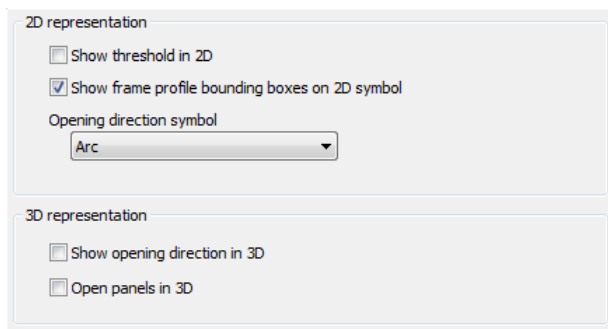
On the General page you can set the main sizes of the opening. Depending on the selected scheme you can see different values here.

Horizontal and vertical sizes are grouped into two different groups. You can mark a single parameter in each group as “stretched” by pressing the  button. Once a parameter is marked this way, this value will follow the changes while other parameters remain unchanged.

For example, if the left panel is marked as “stretched”, it will be compressed when we change the full width from 1.8m to 1.5m. The wing width remains unchanged.



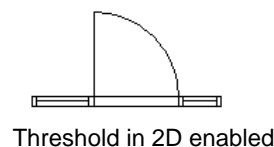
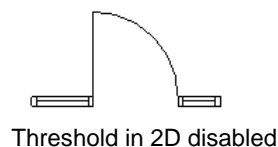
9.3.7.5. Representation



On the Representation page you can set some options related to the 2D and 3D representation of the opening.

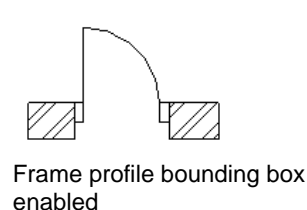
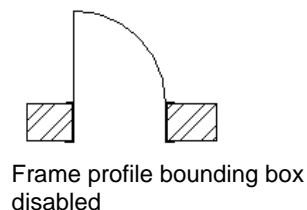
Show threshold in 2D

If enabled, a simple threshold symbol appears on the floor plan. (The 3D threshold can be adjusted on the Threshold page separately.)



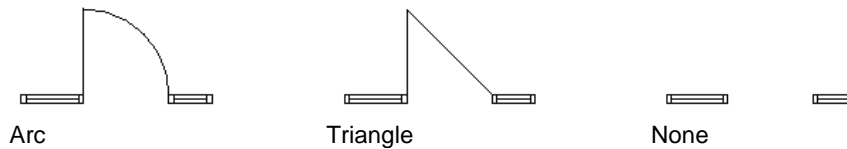
Show frame profile bounding box on 2D symbol

If enabled, the frame profile is represented as a rectangle on the floor plan instead of the real profile shape.



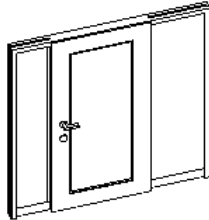
Opening direction symbol

You can choose one of the available symbols to represent the opening direction on the floor plan. The shape of the symbol depends also on the “Opening angle in 2D” setting of the Panel page.

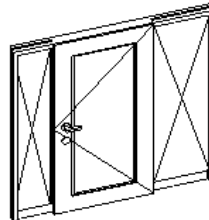


Show opening direction in 3D

If enabled, opening direction symbols appear on the 3D views.



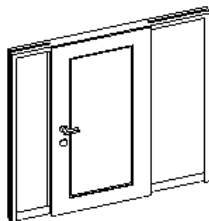
Show opening direction disabled



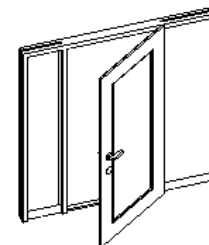
Show opening direction enabled

Open panels in 3D

If enabled, panels are represented as open on the 3D views according to the “Opening angle in 3D” setting of the Panel page.

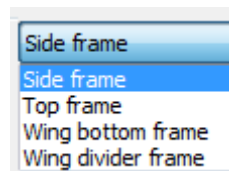
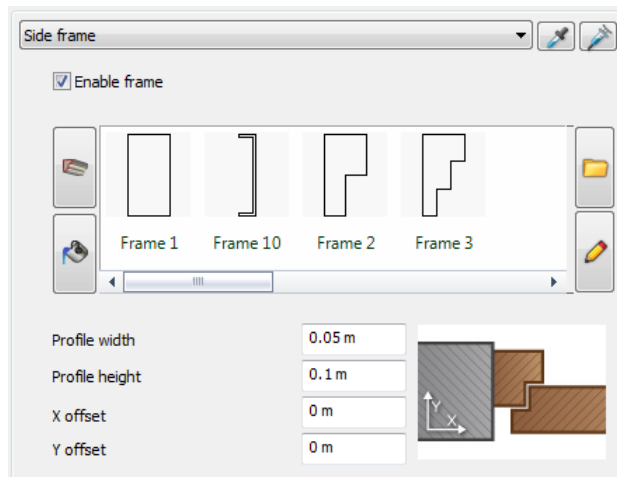


Open panels in 3D disabled









Open panels in 3D enabled

9.3.7.6. Frame



On the frame page you can edit different frame parts of the opening separately. On the top of the page you can see the available frame parts; the content of this list depends on the current scheme. All of the settings below concern the selected frame part only.

 and  buttons serve for copying and pasting frame data. For example, to make the top frame similar to the side frame, first select the side frame, press  button, select the top frame and then press  button.

By pressing  or  buttons you can switch between profile and material list.

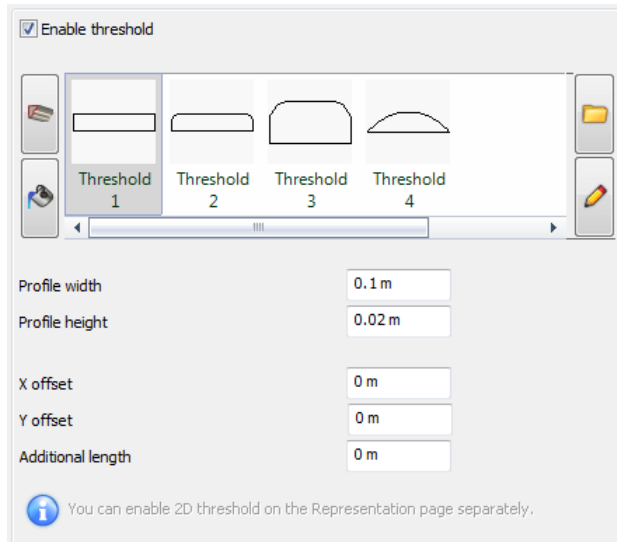
Width and Height

These values define the width and height of the chosen profile (size in the X and Y direction). These values override the corresponding profile settings. After modifying a value press the Refresh button to apply changes.



X and Y Offset

The offset value changes the position of the profile horizontally and vertically. X and Y directions are interpreted in the plane of the profile; see the related figure on the dialog. After modifying a value press the Refresh button to apply changes.

9.3.7.7. Threshold



On the threshold page you can assign a profile and a material to the threshold. .

By pressing  or  buttons you can switch between profile and material list.

Enable threshold

You can enable or disable the 3D threshold. The threshold lines on the 2D symbol can be enabled or disabled on the Representation page independently.

Width and Height

These values define the width and height of the chosen profile (size in the X and Y direction). These values override the corresponding profile settings. After modifying a value press the Refresh button to apply changes.

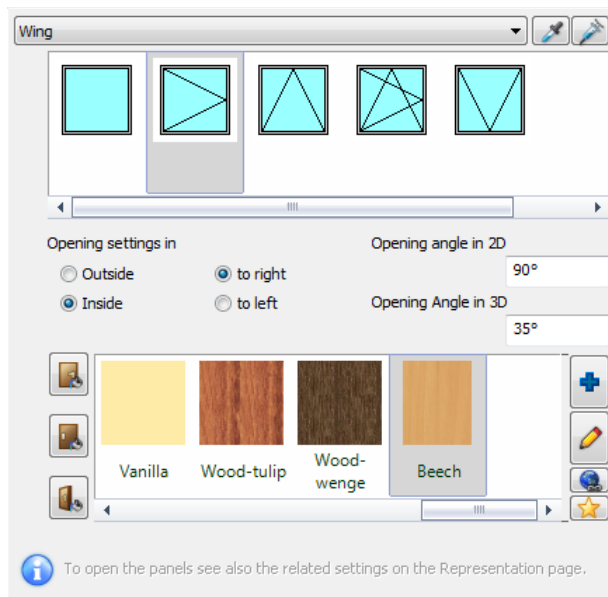
X and Y Offset

The offset value changes the position of the profile horizontally and vertically. X and Y directions are interpreted in the plane of the profile. After modifying a value press the Refresh button to apply changes.

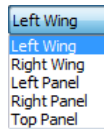
Additional Length

The Additional length extends the original length of the threshold. After modifying a value press the Refresh button to apply changes.

9.3.7.8. Panel





On the panel page you can edit different panels of the opening separately.



On the top of the page you can see the available panels; the content of this list depends on the current scheme. All the setting below is related to the selected panel only.



buttons serve for copying and pasting panel data. For example, to make the right wing similar to the left one, first select the right wing, press  button, select the left wing and then press  button.



Opening direction

You can define the opening direction by choosing one icon from the list and setting the in/out and left/right directions. To visualize this setting enable *Open panels in 3D* or *Show opening directions in 3D* on the Representation page.

Opening angle 2D and 3D

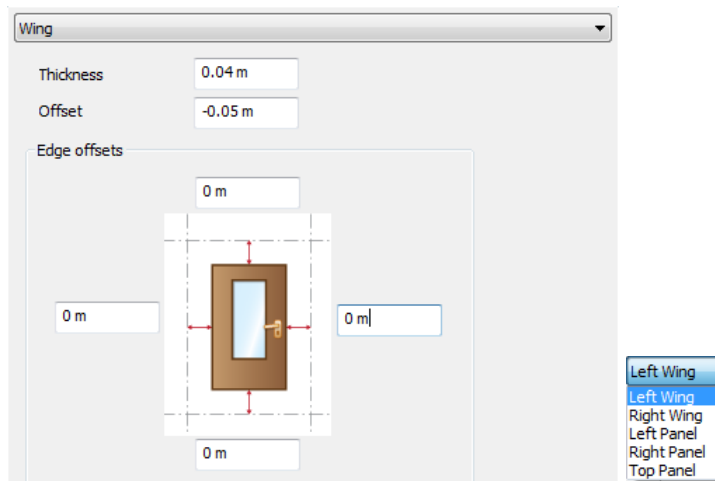
You can define the opening angle in the 3D window here. Note that if *Open panels in 3D* checkbox is not checked, the Opening angle 3D setting has no effect. After modifying a value press the Refresh button to apply changes.



By pressing ,  or  buttons you can set the front, back and edge materials of the door panel, respectively.

9.3.7.9. Geometry

On the geometry page you can find the detailed geometry settings of the panel.



On the geometry page you can edit different panels of the opening separately. On the top of the page you can see the available panels; the content of this list depends on the current scheme. All of the settings below concern the selected panel only.

Thickness

The thickness value defines the door panel thickness, without decorations and handles.

Offset

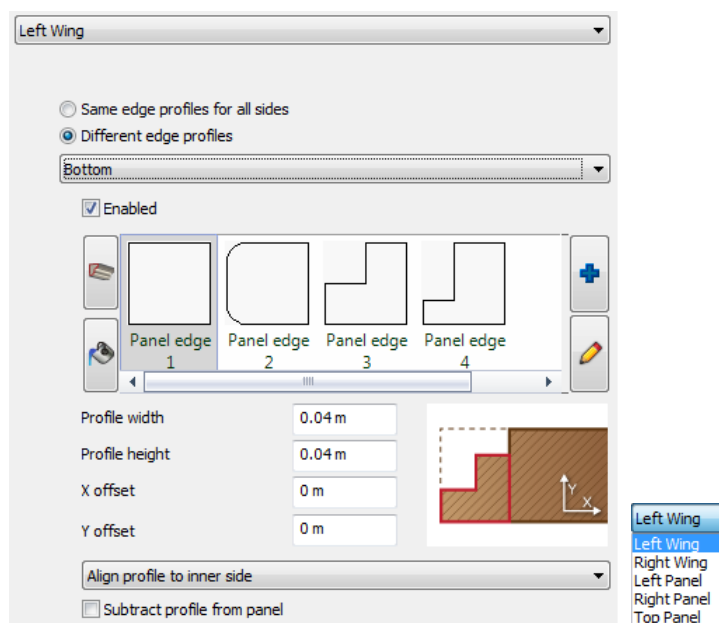
The Offset option is for setting up a distance between the door panel and the framing, if necessary. If the value is 0, then the door is perfectly aligned to the primary plane of the opening. If the value is different than 0 then the door panel will be shifted perpendicularly to the panel surface in a positive or negative direction face (forwards or backwards), depending on the sign of the value.

Edge offsets

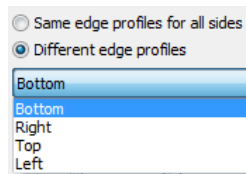
The Edge offset option is for setting up a distance between the door panel edges and the framing. If the value is 0, then the door is perfectly aligned to the reference line of the corresponding frame profile. If the value is different than 0 then the door panel will be reduced (positive value) or enlarged (negative value) at the selected edge.

9.3.7.10. Edge profile

On the Edge profile page you can customize the edges of a selected panel.



On the Edge profile page you can edit different panels of the opening separately. On the top of the page you can see the available panels; the content of this list depends on the current scheme. All of the settings below concern the selected panel only.





Once a panel is selected, you can customize the edges together or separately.

Enable

If you would like to customize the panel edge by a given profile, enable this checkbox.

Profile and materials



By pressing  or  buttons you can switch between profile and material list.

Width and Height









These values define the width and height of the chosen profile (size in the X and Y direction). These values override the corresponding profile settings. After modifying a value press the Refresh button to apply changes.

X and Y Offset

The offset value changes the position of the profile horizontally and vertically. X and Y directions are interpreted in the plane of the profile, see the related figure on the dialog. After modifying a value press the Refresh button to apply changes.

Align profile and Subtract profile

You can align the selected profile to the middle, to the front or back face of the panel or stretch it to the panel width. If you enable Subtract profile, the selected profile will be subtracted from the panel, otherwise the panel will be reduced by the edge profile width and the profile itself will be added to the panel. See the eight combinations in the table below:

| | Add profile | Subtract profile |
|--------------------------------|---|---|
| Stretch profile to panel width |  |  |
| Align profile to inner side |  |  |
| Align profile to middle |  |  |
| Align profile to outer side |  |  |

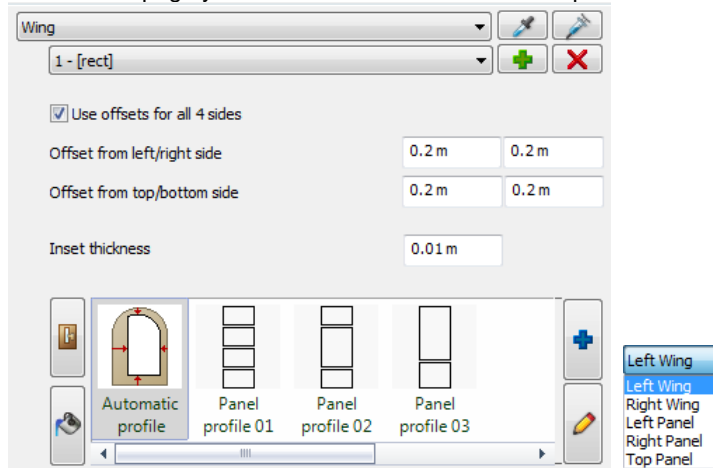
9.3.7.11. Define panel profile for doors/windows

Before creating holes or insets in a panel, you may need to add new panel profile to your existing panel profile library. You can do it with the *Building menu – Accessories – Define panel profile for doors/windows* command.

- Start the command and read the necessary steps of the procedure on the *Additional information* dialog. Click **Ok** to start the procedure.
- Use the *Profile definitions* commands to draw a closed chain (e.g. *Rectangle*). This will be the outline of the hole in the door panel.
- Once you have the hole outline, you can draw opened chains into it with the *Profile definitions* commands (e.g. *Polygon*). Press **Enter** to close the definitions.
- In the *Create new 2D group/object* dialog specify the name of the new panel profile and select *Opening panel frontal profiles* category.
- Click **Ok** to save the new panel profile in the library.

9.3.7.12. Inset

On the Inset page you can create holes or insets in a panel



On the inset page you can edit different panels of the opening separately. On the top of the page you can see the available panels; the content of this list depends on the current scheme. All of the settings below concern the selected panel only.

Once a panel is selected, you can add, remove inset profiles. All the setting below is relative to the selected profile only.



Use offsets for all 4 sides

If enabled, you can define the position and side of the selected inset profile by setting the distances between the panel and the inset, otherwise the midpoint coordinates and the sizes of the profile must be defined.

Use offsets for left/right/top/bottom side

If "Use offsets for all 4 sides" is enabled, here set the distances between the panel and the inset. In case of complex geometries, the offset is interpreted as the distance between the bounding boxes of the panel and the inset.

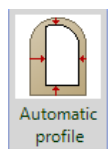
Inset width/height/X offset/Y offset



If "Use offsets for all 4 sides" is disabled, you can set here the midpoint coordinates and the sizes of the profile.

Inset thickness

The setting this value to zero results an empty hole in the panel.

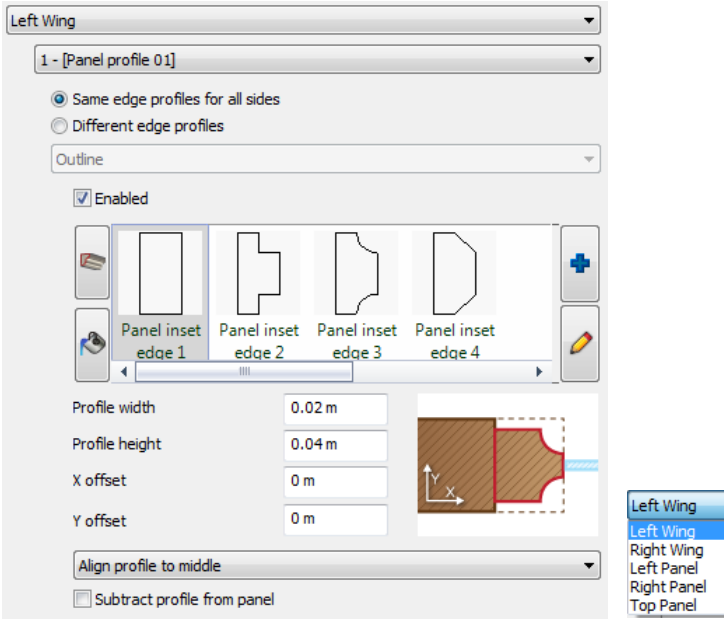
Profile and materials



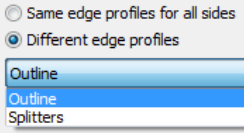
By pressing  or  you can switch between profile and material list. The first object in the profile list is a custom one: Automatic profile is created by shifting the sides of the original panel profile with the offset values of the 4 sides, separately.

9.3.7.13. Inset edge profile

On the Inset edge profile page you can customize the edges of a selected panel's insets.



On the top of the page you can see the available panels; the content of this list depends on the current scheme. All the setting below is related to the selected panel only.





On the top of the page you can see the available panels; the content of this list depends on the current scheme. All the setting below is relative to the selected panel only.

Once a panel is selected, you can select one of the inset profiles defined on the inset page. You can customize the edges of the selected inset profile together or the outline and splitters separately.

Enable

If you would like to customize the inset edge by a given profile, enable this checkbox.

Profile and materials

By pressing  or  you can switch between profile and material list.

Width and Height

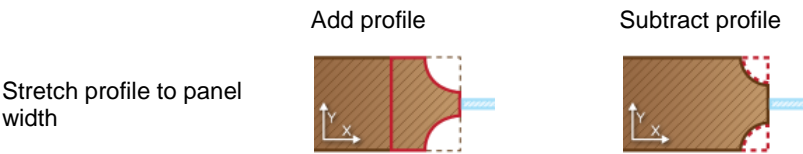
These values define the width and height of the chosen profile (size in the X and Y direction). These values override the corresponding profile settings. After modifying a value press the Refresh button to apply changes.

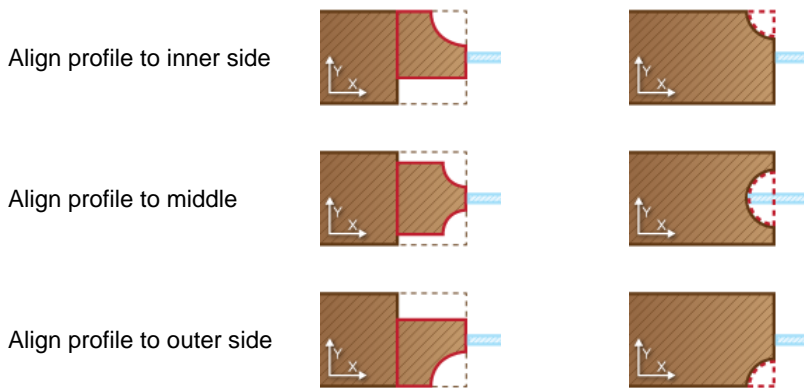
X and Y Offset

The offset value changes the position of the profile horizontally and vertically. X and Y directions are interpreted in the plane of the profile, see the related figure on the dialog. After modifying a value press the Refresh button to apply changes.

Align profile and Subtract profile

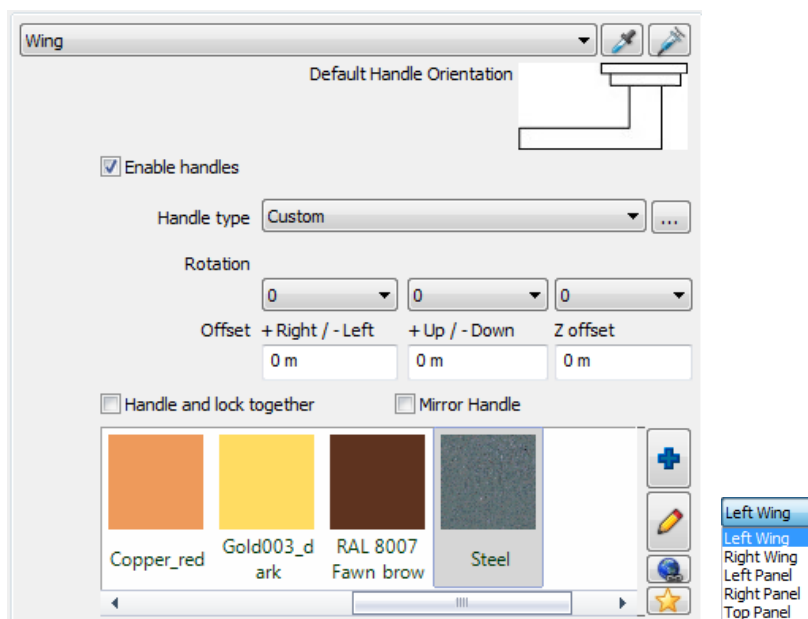
You can align the selected profile to the middle, to the front or back face of the panel or stretch it to the panel width. If you enable Subtract profile, the selected profile will be subtracted from the panel, otherwise the panel will be reduced by the edge profile width and the profile itself will be added to the panel. See the eight combinations in the table below:





9.3.7.14. Inner and outer handle

On the Inner handle page you find the geometry settings for the door handles and knobs.




On the top of the page you can see the available panels; the content of this list depends on the current scheme. All the setting below is related to the selected panel only.

Enable handle

The Has Handle option enables the handle and lock for the current door panel. Enable this option if you would like to use handles and locks.

Handle type

The list allows you to select a handle and also to choose any object you can access with the Design Center. Click on the combo box to open the dropdown list and choose Standard, Circle Shaped, Sphere Shaped or Custom. Each choice will define a different door handle with lock.

To define an object for the door handle, select Custom from the list, and click on the Browse button.  When you do so, the Insert objects dialog will appear, in which you can use the Object Selection button to browse a new object.

Rotation around X/Y Axis

You can rotate the selected handle by changing the values of the Rotation around X/Y/Z Axis. The default is 0, 0, 0 and the unit is degrees. Select the desired angle to rotate the handle by a specific angle.

X/Y/Z Offset

The X/Y/Z Offset values of the door Handle properties let you to define a free offset of the selected handles in every direction. The left bottom alignment point is the origin (0,0,0). The three values are the X, Y, and Z directions.

Handle and Lock Together

The Handle and Lock Together option will weld the handle and lock object into one object if Standard, Circle Shaped or Sphere Shaped handle was selected. If Custom handle is selected, the Handle and Lock Together option won't change anything.

Mirror handle

You can mirror the handle by this setting to position the handle correctly

Material

You can set the material of the handle here. This setting has no effect if a custom handle (an object) is selected.

9.3.7.15. Accessories

A screenshot of a software interface for configuring accessories. At the top, a dropdown menu is set to 'Left Wing'. Below this, there are two columns of input fields. The first column has labels A1, A2, A3, A4, and C, each followed by a text box containing '0 m'. The second column has labels B1, B2, B3, and B4, each followed by a text box containing '0.02 m'. At the bottom, there are two more input fields: 'Thickness' with '0.04 m' and 'Offset' with '0.025 m'.

On the Accessories page you can add accessories to the door and you can define the geometry settings of the accessories.

On the top of the page you can see the available panels; the content of this list depends on the current scheme. All the setting below is relative to the selected panel only.

A screenshot of a software interface for configuring a 'Wing' accessory. At the top, a dropdown menu is set to 'Wing'. Below it, another dropdown is set to '1 - [gomb]'. To the right of these are two icons: a blue pin and a red pin. Below the second dropdown are two buttons: a green plus sign and a red X. The main configuration area is divided into several sections. The 'Object' section has a 'Select object' button. The 'Rotation around' section has three dropdown menus, all set to '0'. Below this are three more dropdown menus: '+ Right / - Left' (set to '0.5 m'), '+ Up / - Down' (set to '0 m'), and 'Z offset' (set to '1.05 m'). The 'Position' section has a 3x3 grid of radio buttons, with the center one selected. To the right of the grid are two dropdown menus: 'Attached to' (set to 'Object') and 'Side' (set to 'Inside').

Accessories list

The Accessories list shows list of added objects and lets you select one to edit. If there is no object added yet, this list is not visible.

X Offset

Change the X Offset value to displace the current accessory to the left or right direction.

Y Offset

Change the Y Offset value to elevate the current accessory up or down.

Z Offset

Change the Z Offset value to displace the current accessory perpendicular to the door surface. 0 (zero) means that the object is on the surface.

Rotation around X/Y/Z Axis

Change the Rotation around X/Y/Z Axis values to rotate the current accessory. 0 (zero) is the default position. The values are the X/Y/Z rotation angles in this order.

Side

The Side list has two options to define the placement side for the actual accessory.

Object – Select Object

The Select Object button opens the Insert objects dialog. You can browse for an object to set it as an accessory object for the current door.

Positioning

The Accessories Positioning grid helps you to set the alignment point of the actual accessory. Tick the desired radio button to set the accessory position to one of the alignment points.

Add Object

Use the Add Object button to add a new accessory. By pressing the Add Object button, the Insert object dialog window will open, to let you browse any object. When an object is selected, you will return to the Door wizard Accessories page and you can set the properties of the accessory. The selected object name will be visible at the top of the page in the Accessories list with a numbering.

Remove Object

Use the Remove object to remove the current accessory object. Note that this operation cannot be undone. If you accidentally remove an accessory object, you might need to browse it again.

9.3.7.16. Data

The screenshot shows a form with the following fields:

- Name:** Door1
- Producer:** (empty field)
- Article number:** FT-34234
- Description:** Simple door
- U Value:** (empty field)

Name

Use the Name field on the Data page of the Door wizard to type a unique name for the newly created door.

Producer

Use the Producer field on the Data page of the Door wizard to define a producer.

Article number

Use the Article number field on the Data page of the Door wizard to type an article number or bar code.

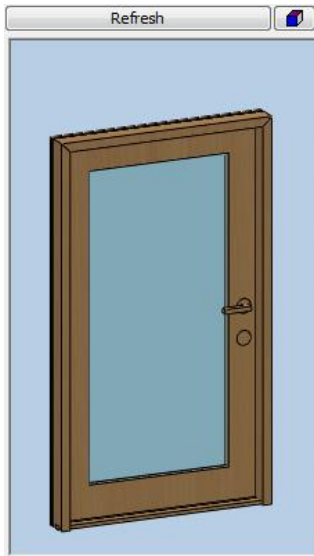
Description

Use the Description field on the Data page of the Door wizard to type a short description text.

U-Value

Use the U-value to define the door's U-value for possible energy calculations.

9.3.7.17. 3D Preview panel



On the right side of the Door wizard dialog you can find the 3D preview panel. Use this panel and its controllers to examine the changes during the design process in the wizard.

Refresh button

On the top of the 3D preview panel you can find the Refresh button. This can be used to refresh the 3D preview content after changing certain values in the Door Wizard. When you press the Refresh button, the software will update the door preview by using the current values.

Presentation settings button

The Representation settings button can be used to switch between Wireframe, Hidden lines and textured views. Click on the button to switch to the next view. When you reach the last view, click on it again to set the first visual style again. On slower machines, this button can be used to turn off the 3D preview also, by setting the “X” state on it.

3D Preview area

The 3D preview area is the largest part of the 3D preview panel on the Door wizard dialog. Click and hold your left mouse button and move your mouse to rotate the preview content. Use the scroll-wheel of the mouse to zoom in or out and pan the 3D preview content.

9.3.8. Corner window

Similarly to other ARCHLine.XP® objects, you can set the properties of corner window end curtain walls – together called **glass structure**. You can store these properties in sets. *Glass structures* are created with their actual properties.

- ❖ First specify the properties of glass structure.
For this use the *Building menu – Properties – Curtain wall* command.
- ❖ In case of full size curtain wall select the *Full curtain wall* command from the shortcut menu of wall.
or
- ❖ In case of curtain with custom size wall select the *Building menu - Curtain wall – Edit corner window* command.

Corner window

With this command you can create a corner window drawn in 2D on the layout of the wall, or a divided door/window of any complex form.

If the wall where you install the window is arched, the glass will also be arched.

Use this command when you create an individual window, which does not need to be saved in the directory.

Definition consists of two phases:

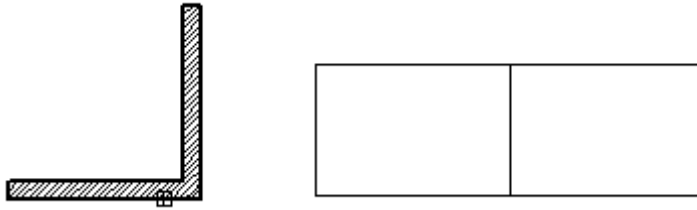
- ❖ defining the profile,
- ❖ setting the properties.

Defining the profile

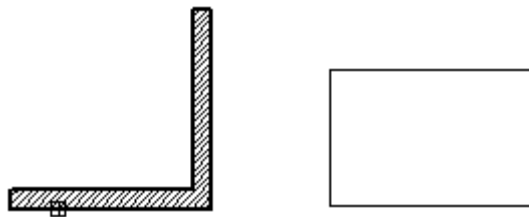
The real work is done on the front layout image of walls. In the course of drawing it is possible to:

- ❖ define a rectangle of almost the appropriate size. Values can be adjusted in the appearing dialog box.
- ❖ construct the window profile precisely.

- After selecting the **Building** or **Toolbox - Curtain wall**  **Edit corner window** icon, click the wall where you wish to place the window. If you create a corner window, click on the wall, from its midpoint in the direction of the required corner, as shown in the picture.
The program then lays out the front view of the selected wall and the other wall connected to it.



If you selected that part of the wall which is not connected to another wall, the layout image shows only this wall.




- Place down the layout image. The program asks whether or not to display the layout image. Choose the latter if you have already drawn the profile for the door/window, and now you would like to use it without, for instance, the corner edge hanging into the profile. In this case it is important that you put the reference point of the virtual visible layout to the appropriate point of the drawn profile.

Then follows the definition of the profile, for which you have two possibilities:

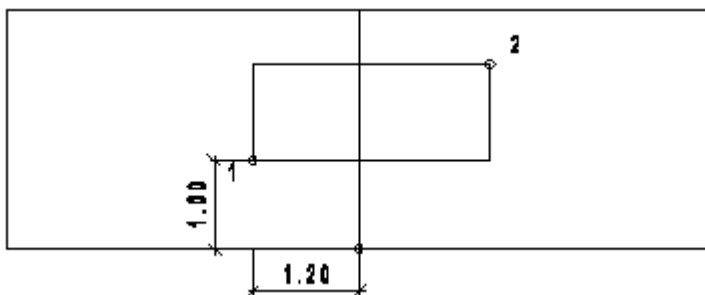
- ❖ defining the profile on a rough estimate
- ❖ defining the profile by drawing

Defining the profile on a rough estimate

- Select the **Rectangle HV** command from the *Toolbox - Profile definitions* tool.
- Define the lower left corner point of the rectangle. The starting point has to be at that point where the window will start.

Therefore, use the  **Relative distance** icon from the Reference toolbar. With the help of this, place the starting point to -1.2 m to the left and 1m up from the wall corner point. (You last clicked on the wall corner; therefore values are measured from there.)

- Define the upper right corner of the rectangle. An approximate value defined graphically is enough this time.



In the **Glass definition** dialog box appearing you can define the width and height of the rectangle, that is the width and height of the window, in the *Enclosing box length* and *Enclosing box height* field.

| Structure settings | |
|----------------------|---------|
| Enclosing box length | 2.035 m |
| Enclosing box height | 1.237 m |

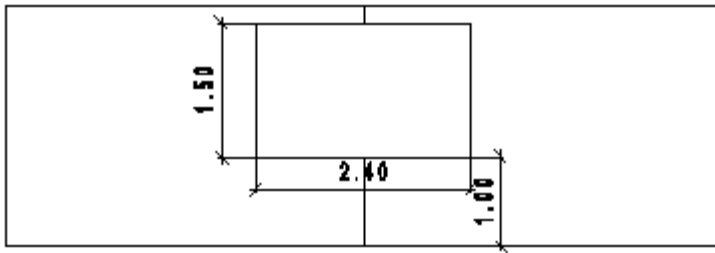
| Structure settings | |
|----------------------|-------|
| Enclosing box length | 2.4 m |
| Enclosing box height | 1.5 m |


Defining the profile by drawing

- If you would like to draw the profile precisely, place down the layout image of the wall.
- Ask for displaying the layout image.
- Press **Enter** to finish the **Edit window corner** command. The visible layout image remains in the drawing.
- Select the appropriate geometrical objects from the menu to create the required profile.

Example:

- With the help of the *Polyline tool - General Rectangle – BOXSIZES option*, place a rectangle sized 2.4 m x 1.5 m with its lower mid-reference point 1m high from the wall corner.
- Delete the edge of wall corner within the profile.
-



- Activate the  **Edit corner window** command again.
- Click the previous wall. The program lays out the image wall again.
- Place the layout image precisely on top of the previous one.
- The program asks whether or not to display the layout image. Select *No*. This is necessary so that corner edge does not hang into the window profile.
- Select the **Point of profile** command from the *Toolbox - Profile definitions* tool.
- Click the window profile. The program takes the whole rectangle for the profile.

Glass structures settings dialog box appears.

Setting the properties

Here you can find in the same dialog the glass structure definition and the properties of placing:

The first two boxes refer to the size of the entire opening, so width in this case means the total of the width of the windows located on two sides of the corner. If you defined the profile on a rough estimate, you have to enter the exact values now.

If you drew the profile precisely, the exact values appear here.

The next fields refer to the first window only, the one to the left from the corner.

Glass structure settings

Dist from wall line: 0 m

Parapet height: 0.5433 m

General

Color: [Black]

Line type: Simple Line

Line width: 0 mm

Priority: 8 - Bottom-mo

Dist. from wall corner: 8.03 m

Lining and architrave: [...]

Structure settings

Enclosing box length: 2.4 m

Enclosing box height: 1.5 m

Frame width around: 0.05 m

Frame depth: 0.1 m

Divider thickness: 0.05 m

Divider width: 0.005 m

Glass width: 0.006 m

No. of glasses in horizontal: 3

No. of glasses in vertical: 3

☐ Glass dimensions

Glass length: [...]

Cost variable: [Dropdown]

Set Ok Cancel

General parameters

- Here you can define the colour, line type, line width and priority of the glass structure and the distance from wall corner.

Structure settings

- Here you can define frame width, frame depth, (dividing) bar width and glass width.
- You can switch on the transparency.
- The corner column is optional.
- You can also determine the position of dividing bars:
 - ❖ outside of the glass,
 - ❖ inside the glass, or
 - ❖ in the middle, actually dividing the glass.

| Structure settings | |
|--|---------|
| Enclosing box length | 2.4 m |
| Enclosing box height | 1.5 m |
| Frame width around | 0.05 m |
| Frame depth | 0.1 m |
| Divider thickness | 0.05 m |
| Divider width | 0.005 m |
| Glass width | 0.006 m |
| No. of glasses in horizontal: | 3 |
| No. of glasses in vertical: | 3 |
| <input type="checkbox"/> Glass dimensions | |
| Glass length | ... |
| Glass height | ... |
| <input checked="" type="checkbox"/> Glass Transparency | |
| Divider place | Middle |
| <input checked="" type="checkbox"/> Corner column exists | |

Equal division

In case of divided glass you can determine the sectioning with the number of glasses horizontal and vertical. Then you will get glass faces in the same size.

Unequal division

If you modify the calculated horizontal and vertical values of the glass pieces, distances cannot be equally divided, which means that the last line or column will have the excess surface.

Furthermore:

The divisions can be set one by one in both horizontal and vertical directions.

- For this please click on the **Horizontal pattern** / **Vertical pattern** button.
- In the Pattern dialog you will see the glass plane sizes (width or height data) according to the previously defined number of glass planes. After clicking the **One by one** button the sizes will appear for each division.

| Number | Pattern |
|--------|---------|
| 1 | 1 m |
| 2 | 0.5 m |
| 3 | 1.5 m |

- **Modify:** The numbering sequence is left to right in horizontal direction, and bottom to top in vertical direction. Click on the dimensions to modify.
If the sum of the defined glass plane dimensions is greater than the full window size, the program removes the unnecessary rows from the table and corrects the dimension in the last row, if necessary.

If the sum of the defined glass plane dimensions is smaller than the window size, the program will add new rows to the table.

- Click **Insert** to increase the number of divisions. The insertion is always made above the selected row. If there is no row selected, the insertion will be made above the first row.
- You can delete a selected row by the **Delete** button.
- Using the **One by one** button you can let the program to recognize the **REPETITIONS** in the defined divisions. For example we can define two divisions for a 10 m long curtain wall: 1 m and 2 m. In that case the program assumes the repetition of this division pattern and adds the missing rows automatically.

| | |
|---|--------|
| 1 | 1 m |
| 2 | 2 m |
| 3 | 1 m |
| 4 | 2 m |
| 5 | 1 m |
| 6 | 2 m |
| 7 | 0.94 m |

Appearance settings

- You can assign different materials to the frame, glass, and dividing bars of the window.
- it is possible to switch off the frames so you can see only the glass plane edges.

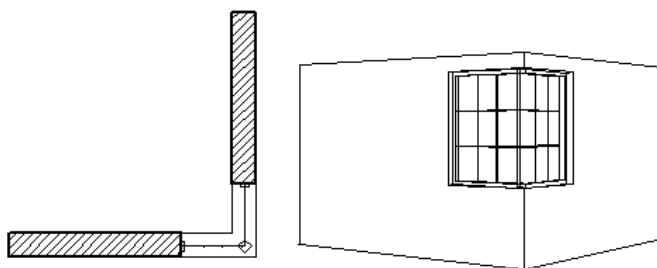


- **Ok** Close the dialog box.

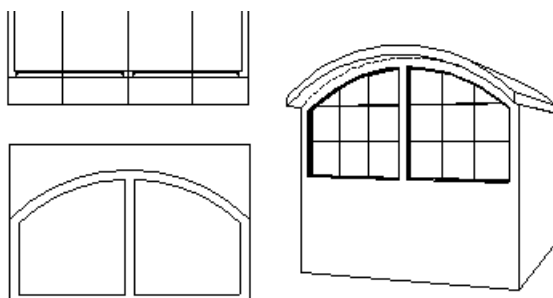
The corner window consists of two windows; therefore, after you closed the dialog box, another one appears, containing the properties of the second window, the one to the right from the corner.

The full size of the opening cannot be modified this time, but all other parameters still can.

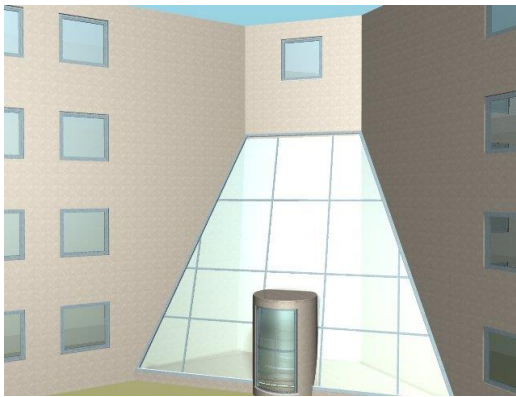
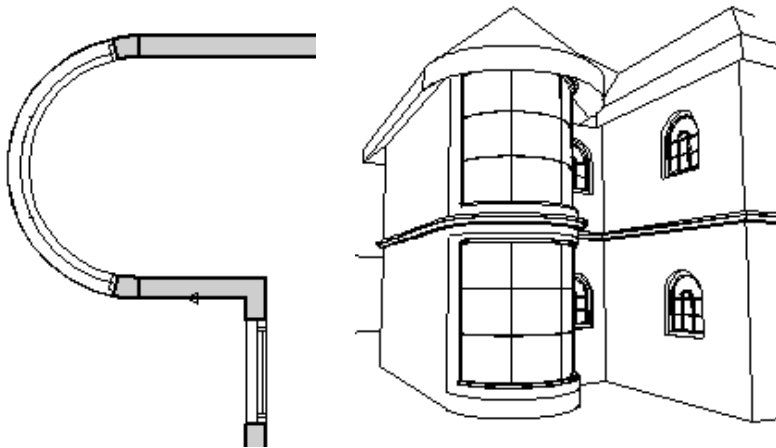
After closing this dialog box, the corner window will be generated.



Apart from creating corner windows, this method can also be used for normal windows placed on the wall the user defines him/herself. With regard to its really simple nature, we can recommend this method beside the 3D solid modeller and definition by 2D hatches.



You can use this technique for defining windows if you would like to place a window on an arched wall. Contrary to the other methods, the glass will also be arched this time, which means it follows the arch of the wall.



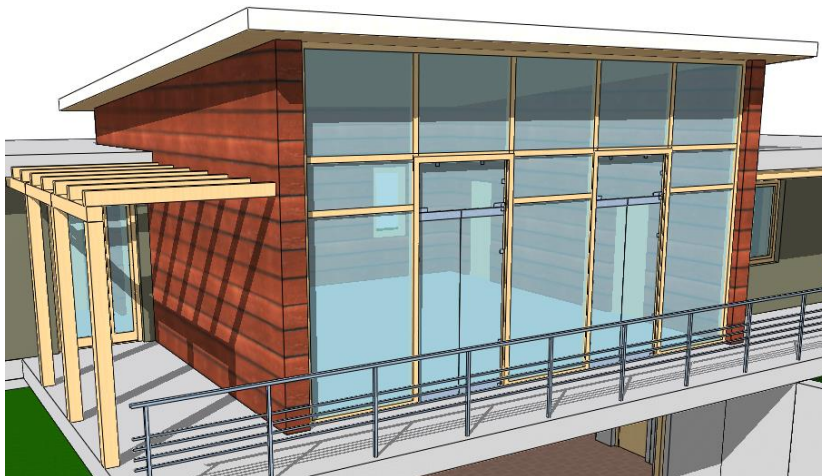
Unequal division oblique glass wall

Full curtain wall

Full Curtain walls can be created when you use the selected wall *Shortcut menu - Full Curtain wall* command. This command will convert the whole wall into a curtain wall. The glass definition of this curtain wall can be made in the Building menu - *Properties – Curtain wall: Glass structure settings* dialog.

9.3.9. Openings in the Curtain wall

You can easily prepare complex glazed structures, curtain walls. After preparing the main structure objects you can fit without restriction openings to the curtain wall fitting to the structure objects.

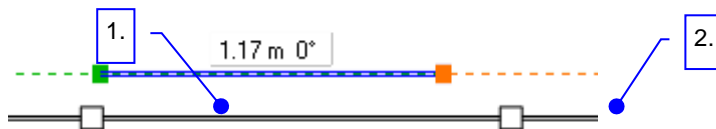


Use

First prepare the curtain wall, and set the position of the main structure objects: set the properties of *Number of glasses* and *Glass dimensions* (After selecting the object these properties can be found in the Property manager under the *Structure settings* headword or they can be found in the shortcut menu under the Properties menu point after clicking on the object with right mouse button).

| Glass structure settings | |
|--|---------|
| Dist from wall line: | 0.14 m |
| Parapet height: | 0 m |
| General | |
| Structure settings | |
| Enclosing box length | 5 m |
| Enclosing box height | 2.7 m |
| Frame width around | 0.05 m |
| Frame depth | 0.1 m |
| Divider thickness | 0.05 m |
| Divider width | 0.005 m |
| Glass width | 0.006 m |
| No. of glasses in horizontal: | 3 |
| No. of glasses in vertical: | 3 |
| Glass dimensions | |
| Glass length | ... |
| Glass height | ... |
| <input checked="" type="checkbox"/> Glass Transparency | |
| Divider place | Middle |
| <input checked="" type="checkbox"/> Corner column exists | |

After setting place the division ribs, you can also set the openings fitted to these ribs in the floor plane. Select from the Toolbox the **Door - Window by two points** command, then click on the proper points of the border ribs of the future opening.



If the external contour of the opening is modified as the result of fitting in the opening the reveal structure of the curtain wall follows these changes.

9.3.10. Converting object to door / window

Selected objects can be converted to door or window and saved into OLI libraries with the **Create door / window command** in the shortcut menu of objects.

For example, with this function it is possible to convert door or window objects imported from Google 3D warehouse to real doors or windows that can be placed into wall.

1. Step.

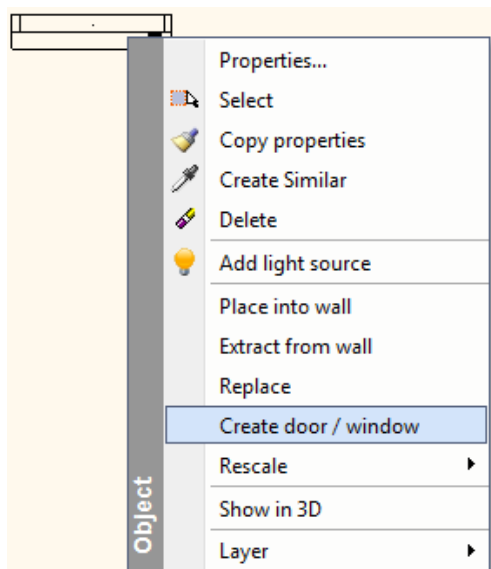
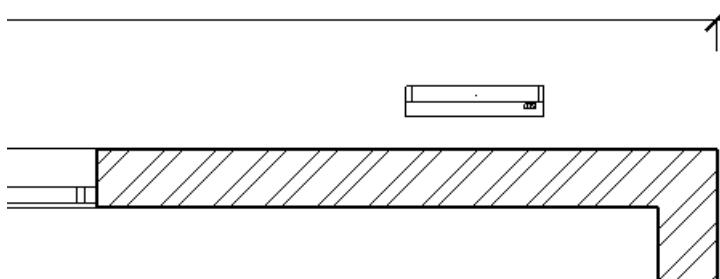
Import object from Google 3D warehouse.

Doors > Door

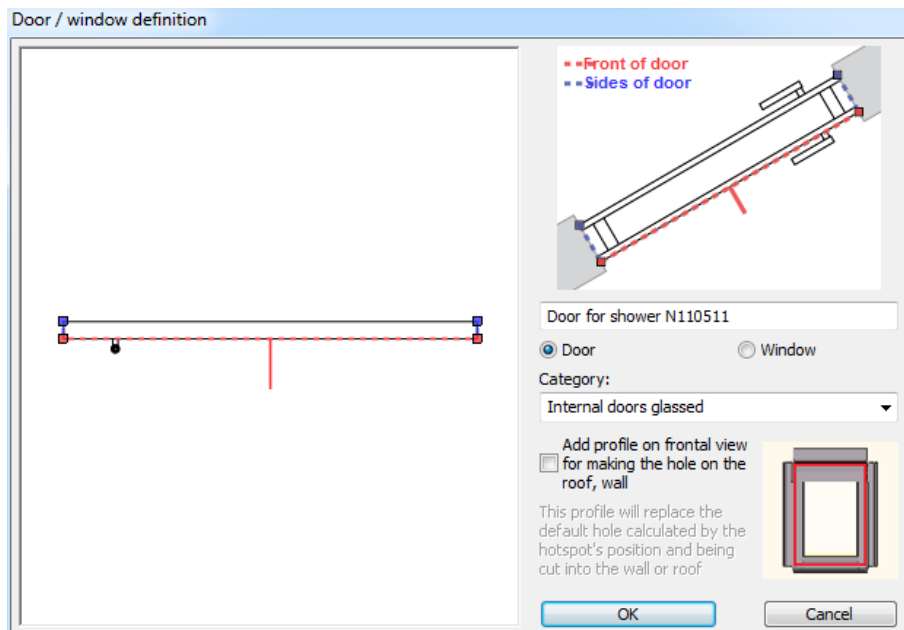
Door

**2. Step.**

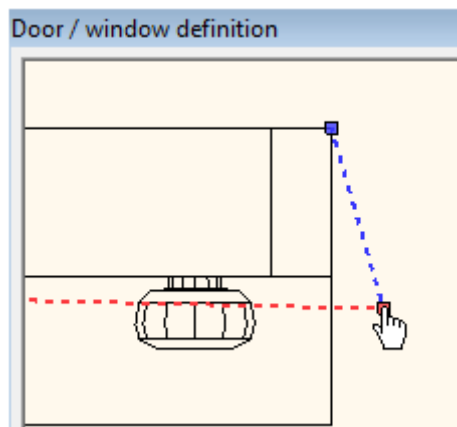
Place the object on the drawing then click with right mouse button on the object. Choose the **Create door / window** command.

**3. Step.**

Relocate the 4 hotspots of the door/window on the left side by drag & drop, if necessary, according to reference drawing on the right side.



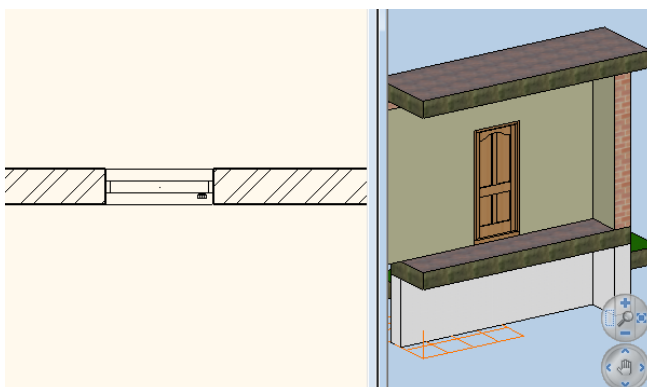
Use the mouse wheel to zoom the door or window shape and locate the hotspot precisely.



Choose the Door or Window category or type the type name and the new category name.

4. Step.

Select the door from the library and place it into a wall.



9.4. Slab

Introduction

Use the slab commands to create regular or irregular slabs, sloping slabs, and foundations and to cut slabs and also to modify slab properties.

You can create single layered slabs (single slabs) or layered slabs.

You can modify individual layers in the case of layered slabs. This way you can create standard structures complying with the detailed construction drawing and also elaborate wall to slab connections in the floor plan and in the 3D drawing.

You can create beams in the slab, and you can order the beams to slab layers.

If you give the cross section profile, you can place for example beam to the slab.

You can even create slab with wood beams.

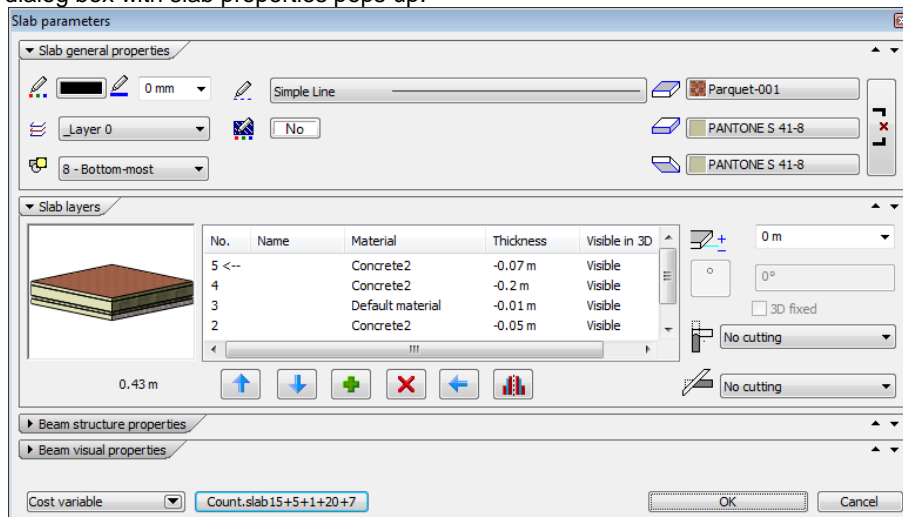
Modify slab profiles to create custom made slabs, like annular vaults, cross vaults, etc.

In ARCHLine.XP® you can define floor tiling and ceiling patterns. You can assign different materials with the proper size and direction to these patterns. You can display tiling in the floor plan, and in the case of the 3D drawing and the photorealistic display. You can make a list from the quantity of used floor tiling.

9.4.1. Slab properties

Before placing the slab, you have to define slab properties.

Right-click the **Toolbox Slab** tool to access these properties, or use the **Building menu-Properties - Slab** command. The dialog box with slab properties pops up.



General properties

Firstly, you can modify general slab properties, like colour, line width, layer and line type.



For the description see Chapter 3.2.1. *Specifying general properties.*

Sets

1 layered 30 r.c.

You can save your customized slab properties into sets and you can store sets in the environment. This way you can use the desired slab structure in any of your drawings. If you click on the button, the pre-defined slab sets will be displayed on the right side of the dialog box.

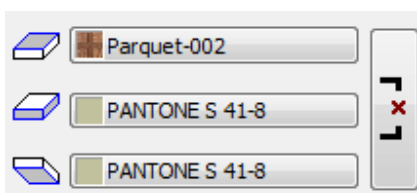


For the description see Chapter 3.2.3. *Using sets of properties.*

Slab material properties

Under general properties, you can set slab material and slab-to-slab height.

Enable the *Same materials* option to assign the same material to all 3 sides of the slab.



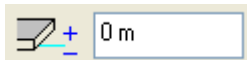
- material for top surface - floor
- material for side surface
- material for bottom surface – ceiling

If you click on the *Material* name, the **Material** dialog box will pop up.

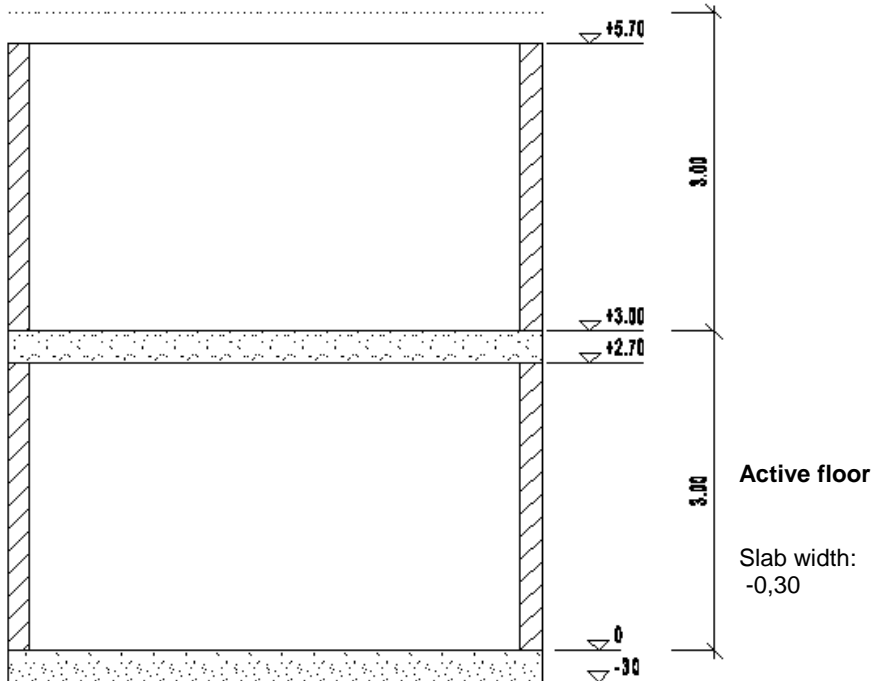
- Select material type.
- **OK** Ends selection.



For the description see Chapter 3.2.2. *Material properties*.



- Enter the relative height of the slab as compared to the active floor.



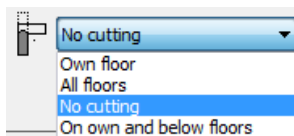
Angle of the sloped slab

In the case of sloped slabs you can modify slope angle in the **Slab properties** dialog box. This field is greyed (i.e. disabled) when defining general properties.

Slab cut

You can set automatic cutting of slabs by walls or by the roof.

- ❖ Cutting by walls
The slab cuts down wall sections over the slab. You can use any of the following options to cut walls:



- own floor,
- all floors,
- no cutting - the slab will not cut any wall
- the slab cuts walls on its own floor and below.

This method is very useful if you want to create an arched slab and you want to cut walls so as to fit this arched slab.



In the case of columns and other objects placed into the wall, slab cutting works only if you enable it in the object property dialog box. This means that you can cut any wall with a slab without cutting the chimney in the slab.

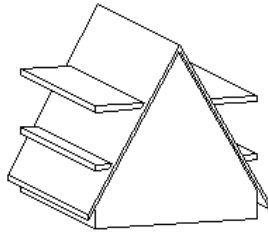
- ❖ Cutting by roof
You can cut slabs with roofs in the following ways:



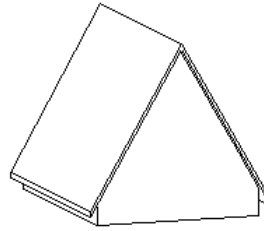
- the roof cuts the slab at each floor
- the roof does not cut the slab

If you draw an alpine-style building for instance, it is necessary to enable the cut all floors option:

No cutting:



Cutting by the floor:



You can see the result of these two cutting options if you enable the *Wall - slab - roof* cutting option in the *3D model* dialog box.

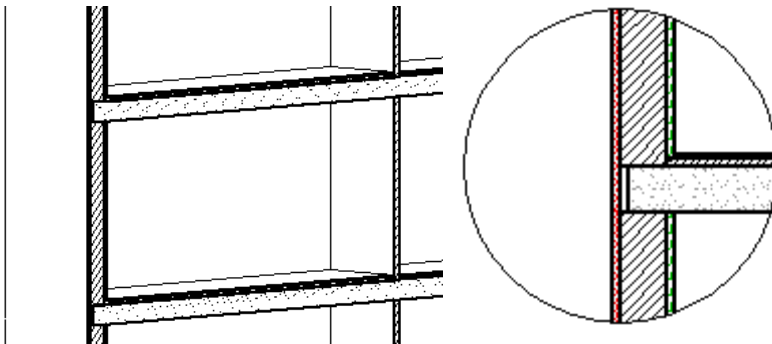


Build

9.4.1.1. Slab layers

If you click on *Slab Layers*, the **Slab layers** dialog box appears.

With this option, you can create multilayered slabs (15 layers maximum). You can select such slab structures from the pre-defined sets or you can create your own slab layer by layer. It is worth creating and saving your most often-used slab structures. You can display nodal points on cross sectional drawing with the elaborateness of a construction drawing. To achieve this, you should use layered walls.



Insert new button

You can add new layers to the slab with the **Insert new** button. The new layer added will always be topped onto the previous layer and will have the properties of that layer. Other layers remain intact. Layer 1 is the bottom-most one.

Delete button

Use the **Delete** button to delete any selected layer. Layers above the deleted one will shift one layer down.

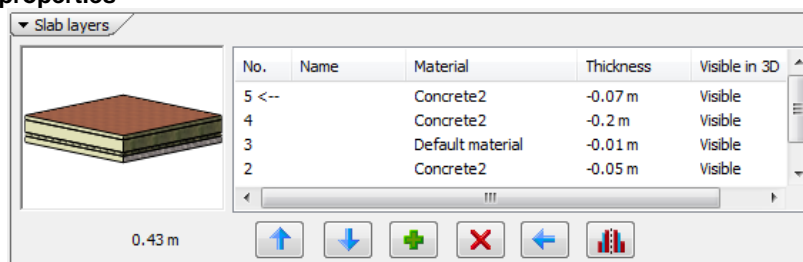
Displayed layer

In the list click on the layer you want to be displayed, and then click on the **Displayed layer** button. The *Arrow* will jump to the number of the desired layer, indicating that this is the displayed layer on the floor plan.

This is very useful if you want to edit slabs layer by layer, i.e. there are different layers with different geometry.

The layered slab editing commands are only valid for the displayed layer.

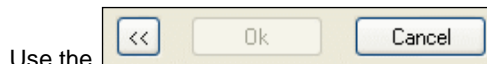
Layer properties



Click on the field to select the desired layer. Double-click this field to modify layer name, material and width.

If the layer width is negative, the layer should be measured downwards, and if layer width is positive, it should be measured upwards.

The dialog box will display the 3D image of the layered slab with its total width.



Use the **Arrow** button to return to the *Properties* dialog box.

Visibility of a layer can be set for each slab layers one-by-one in the slab layer settings dialog.

| No. | Name | Material | Thickness | Visible in 3D |
|-------|------|---------------------|-----------|-----------------------------------|
| 1 <-- | | Reinforced_concrete | -0.03 m | <div>Visible</div> <div>Off</div> |

9.4.1.2. Slab with beams

Slab properties

Similarly to the rafters in the roof, it is possible to define slab with beams. In the *Beam properties* dialog you can switch on the building up of beams and their representation in 2D.



Build up beams

By switching this option on the program builds up the beams. This will appear in the 3D model only when the **Slab beams** option is selected in the Build 3D model dialog.

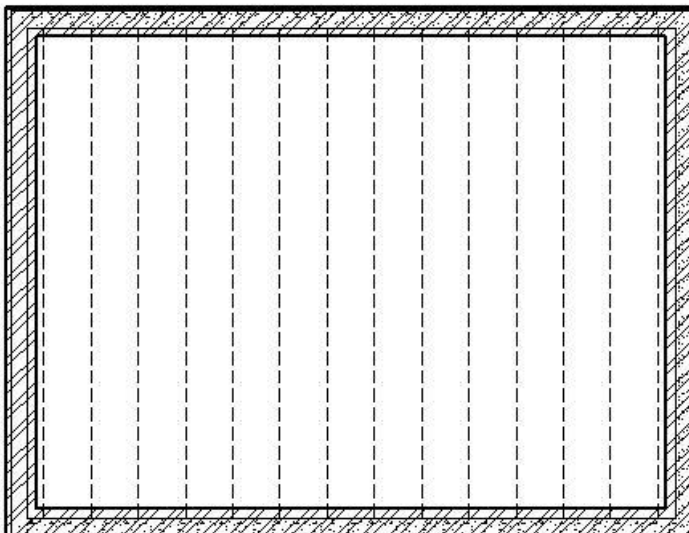
2D representation

This option allows you to see slab beams on the floor plan. Beams are connected a slab layer. You can specify this connection in the Layer of beams field.

Beams are visible on the floor plan (by switching on the 2D representation option) only when the layer to which the beams are connected is activated.

Beam representation with centreline

With this option, beams can be represented by their centrelines on the floor-plan.



Delete and rebuild all beams

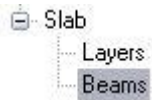
An existing slab with beams can be modified by the *Slab* shortcut menu - *Slab framing* commands. After you have carried out modifications with these commands, the original state can be reset by this option.

Colouring of slab

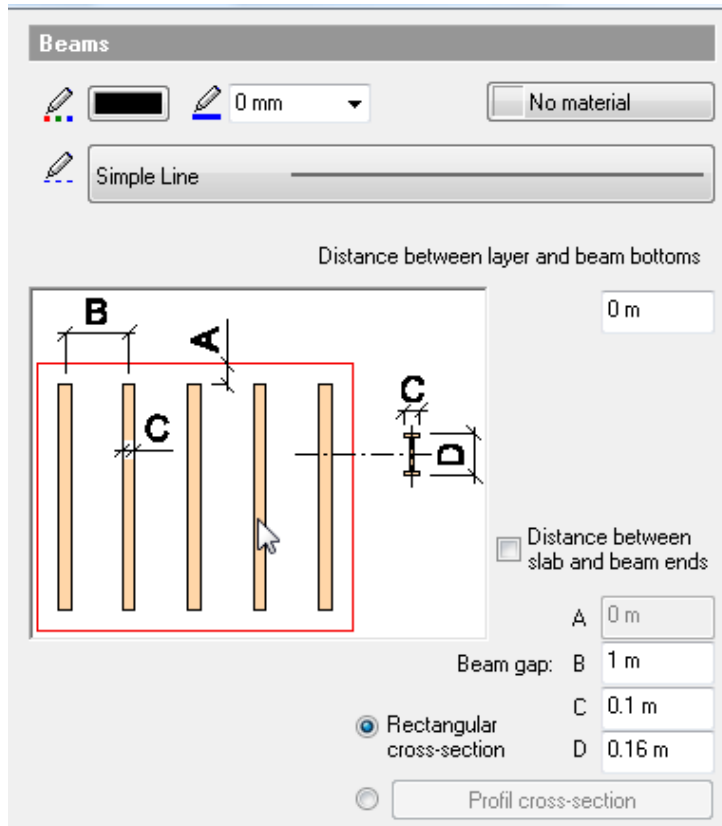
With the selection of a colour you can represent a slab with a solid hatch on the floor plan:



Beams properties

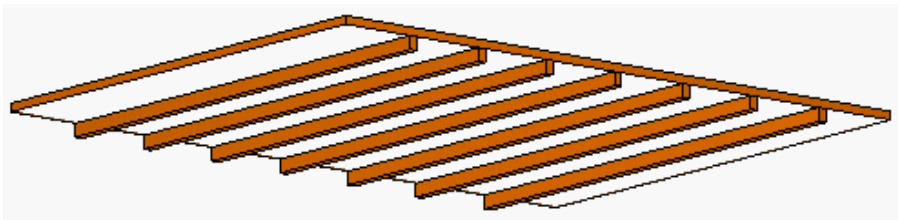


In the beams dialog you can specify the properties of beams.

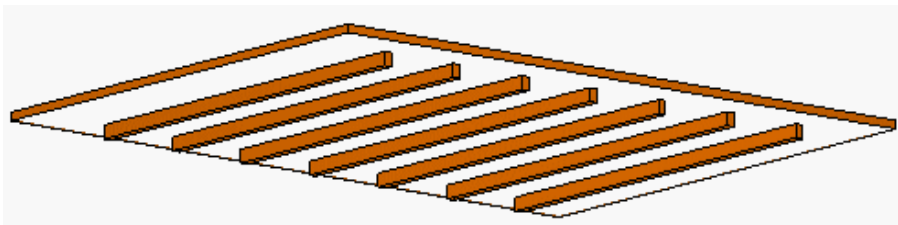


Distance between layer and beam bottoms

Here you can set the distance between the bottom surface of the beams and the bottom surface of the layer of beams. If you specify a negative distance, the beams will appear below the slab layer.

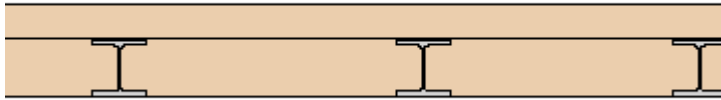


You can specify the **A** distance between slab and beam ends and the **B** beam gap (see the figure in the dialog).



Cross-section - C, D

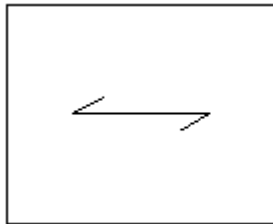
The cross-section profile of the beams is rectangle, which values can be set. Beside a rectangle cross section, you can choose any other profile as cross section from the profile library.



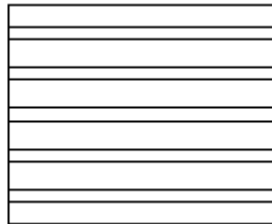
Creating slab with beams

Creating of slab with beams goes the same way as the creating of simple slab.

If the *2D representation* option is switched off or the displayed slab layer is different from the layer to which the slab beams had been connected in the properties dialog, beams and their direction are represented only with a symbol:

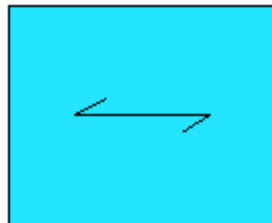
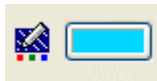


Switched off



Switched on

In the slab properties dialog you can specify a solid hatch for the slab representation on the floor plan.



Modify the slab beams


Slab beams can be modified by the *Slab framing* shortcut menu commands. These commands are similar to the *Roof framing* commands.

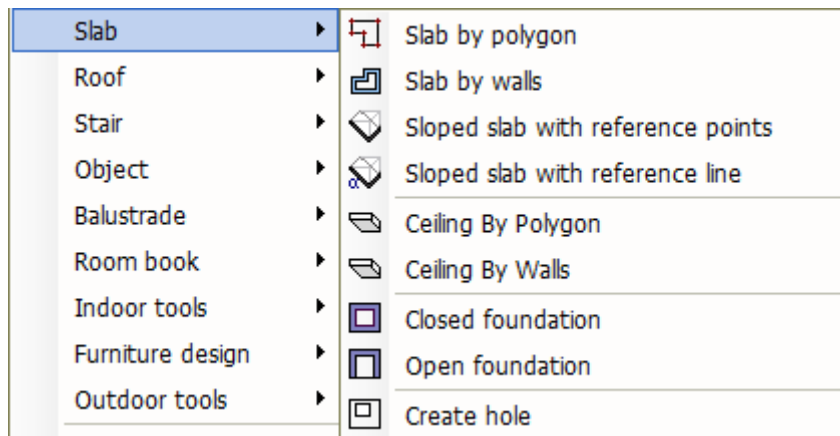


Modify direction

With this command you can modify the direction of the beams. Of course, this command deletes and rebuilds all beams, thus you will lose all of your modifications you made before.

9.4.2. Creating slabs

Click the **Toolbox – Building** -  **Slab** tool to access these commands, or use the **Building menu- Slab menu** commands.



You can create the following types of slabs: general slab/ceiling, foundation and sloped slab.



Ceiling is a slab where the **Height is attached to floor elevation** option is switched on automatically so it will be placed at the height of the active floor.

9.4.2.1. Creating slab / ceiling with selection

You can define slabs with their contour lines.
There are many options to define the contour:

- ❖ The area defined by the walls defines the slab.
- ❖ Subcommands can be used to define contours in a more complex way. There are many options to define contours. For example you can offset slab at a defined distance related to the contour. This is very useful if the slab overhangs walls or fails to reach the outer isolating wall layer in the case of multilayered walls.

Areas defined by walls

- Select walls one by one or select the building by the selection rectangle. The slab will be created along the outer contour.
- **Enter** Ends selection.

Using subcommands

- Instead of selecting walls, select one of the available subcommands and follow the instructions.

Shifting slab contours

- Before selecting walls, click **Parallely shifted...** subcommand.
- Select **Type the value...** from the appearing distance setting options.
- Specify the distance of shifting. If the slab is smaller than the contour defined by the walls, give shifting distance as a negative value.
- Select walls and then close the command by pressing **Enter**.

9.4.2.2. Creating slab / ceiling with polygon

You can define the slab contour with polylines.

Defining polygons

- Create the closed contour of the slab profile by defining the corner points of the slab. You can apply arced slab edges if you want. Use the command line options:

Options:

| | |
|------------------|--|
| TANGENT | The connection is tangential. |
| ARC | The next object is an arc. |
| SELOBJECT | The selected object will be a part of the contour. |
| SMOOTH | Continue in tangential direction. |
| SPLINE | Continue with spline. |



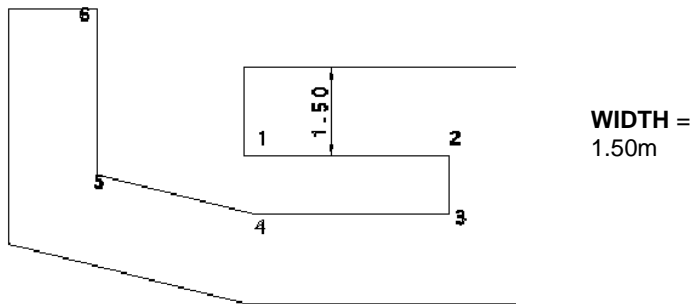
See Chapter 11.3. *Polyline*.

Further options

You can use any of the following options to define slab contours with polylines:

Options:

| | |
|---------------|---|
| CIRCLE | The limiting polygon is a circle. |
| SHIFT | Enlarges or reduces the limiting polygon with a defined distance. |
| WIDTH | The limiting polygon is a polyline with a given line width. |

**9.4.2.3. Creating closed foundations**

With this command you can create closed foundations. Foundation height and elevation will be defined by the values set in the *Slab properties* dialog box.

- First define the width of the foundation in the dialog box popping up.
- Define the closed contour of the foundation.

Options:

| | |
|------------------|--|
| CIRCLE | The closed contour will be a circle |
| DIAMETER | Specify the internal diameter of the circle shaped foundation. Use the LIKE option to pick up the diameter of an existing circle or arc. |
| RADIUS | Specify the internal radius value of the circle shaped foundation Use the LIKE option to pick up the radius of an existing circle or arc. |
| CPOINT | Specify the centre point of the circle shaped foundation |
| P3 | Specify the internal contour of the circle shaped foundation with three points |
| AXIS | Specify the two end points of the internal diameter of the circle shaped foundation. |
| SELOBJECT | Select an object to draw the foundation along its contour. |

Options not mentioned above shall be those referred to in line drawing.

- **Enter** Ends the command and closes the contour by connecting the last defined point with the first one.

9.4.2.4. Creating open foundations

This command is similar to the one for creating closed foundations, with the only difference that the foundation cannot be closed within itself.

- In the dialog box popping up enter the width of the foundation.
- Specify the open contour of the foundation.

Options:

| | |
|------------------|--|
| SELOBJECT | Select an object to draw the foundation along its contour. |
|------------------|--|

Options not mentioned above shall be those referred to in line drawing.

- **Enter** Completes the command.

9.4.2.5. Sloped slab with reference points

With this command you can create sloped slabs by defining three reference points.

- Select the walls along which you want to create the sloped slab.
- Before selecting the walls select the **SHIFT** keyword from the prompt if you want to place the slab to a given distance from the contour defined by the walls. Specify the distance for the shifting. If the slab is smaller than the contour defined by the walls, use a negative value to specify the distance for shifting.

- Use the **POPMENU** keyword and specify slab profile in the *Profile definition* menu if you want to use a profile other than that of the wall contours.
 - Select a bottom point of the slab to specify its height. If you want to specify an upper point of the slab, use the keyword **UPPER**.
 - Specify height value or use the keyword **LIKE** to select an existing slab, wall, object or roof and select any point of that to read its height. Click on the **UPPER** or **BELOW** to define the height of the selected point in the top or bottom point of the selected object. The program will display height value in a dialog box; you can accept or refuse this value:
 - Specify the height for two other reference points.
- Enter** Completes the command.



For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.

9.4.2.6. Creating sloped slabs with reference lines

With this command you can create a sloped slab by defining a reference line and the angle of the sloped slab.

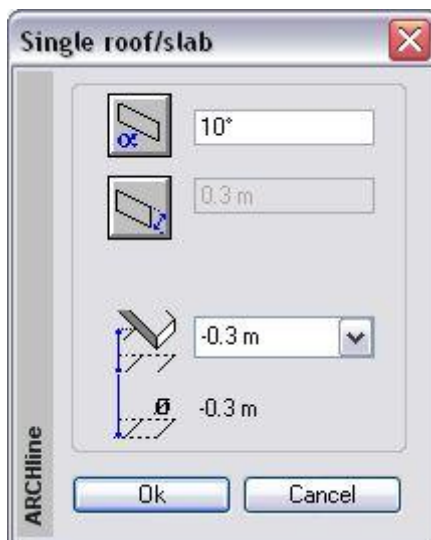
- Select the walls along which you want to create the sloped slab.
- Before selecting the walls select the **SHIFT** keyword from the prompt if you want to place the slab to a given distance from the contour defined by the walls. Specify the distance for the shifting. If the slab is smaller than the contour defined by the walls, use a negative value to specify the distance for shifting.
- Use the **POPMENU** keyword and in the *Profile definition* menu specify slab profile if you want to use a profile other than that of the wall contours.



For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.

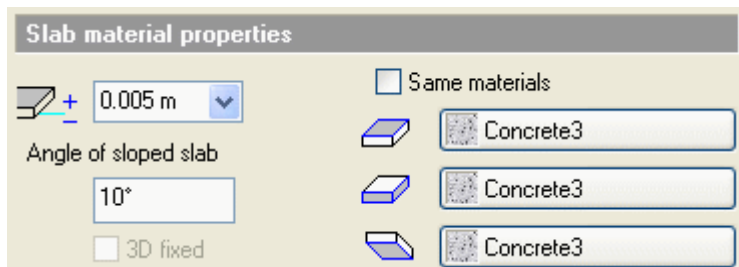
- After defining the slab profile, specify the reference line with two points. These will have the same height. An arrow perpendicular to the reference line represents the sloping direction. If the direction is not acceptable, prior to the definition of the second point, use the ENTER command to return to the definition of the first point. A dialog box will pop up where you can enter the height of the reference line and the angle.

Ok Completes the command.



9.4.2.7. Angle of the sloped slab

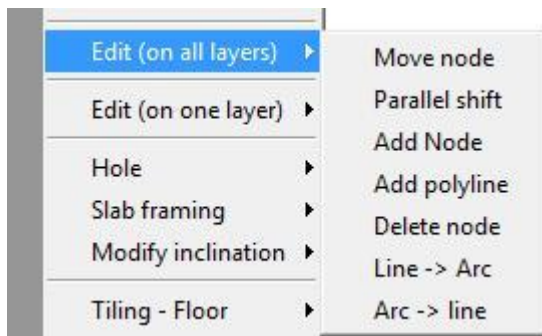
The angle of sloped slab can be modified in the *Slab properties* dialog afterwards.



9.4.3. Editing commands for whole slabs

With this command you can edit the corner points and edges of the entire slab. In the case of layered slabs, editing will affect each layer.

You can access editing commands from the *Shortcut menu*:



Move node

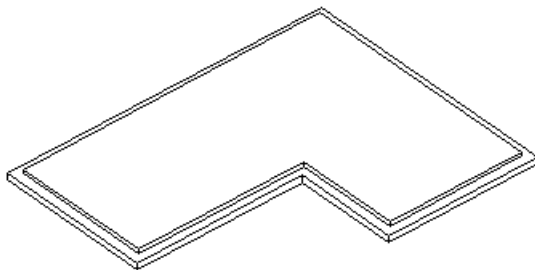
Click on any corner point of the slab to change its position.



Parallel shifting (offset)

With this command you can offset one side of the slab or enlarge or reduce the entire contour of the slab.

- Select the slab side you want to offset.
 - Specify the new position for the slab side. You can also specify the offset by entering its value; to do so, move the mouse pointer in the desired direction and enter the value;
or
 - Select the **ALL** option of the prompt to move each side of the slab contour together.
- Enter** Completes the command.



Inserting nodes

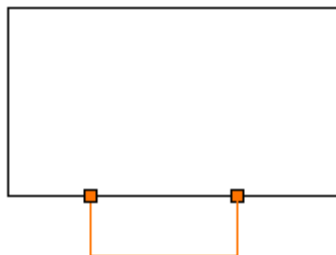
Click on any side of the slab to insert a new node.

| | |
|-----------------|--|
| SPOLYGON | If you select the SPOLYGON keyword, this will activate the Add polyline command |
|-----------------|--|



Adding polylines

Click on any side of the slab to add multiple nodes by a polyline to the slab.



Deleting nodes

This command deletes any selected corner point of the slab.



Converting lines to arcs

This command performs the following conversions:

The command converts linear slab sides to arced ones; you can also modify the radius of the arch in the case of an arced slab.

- Select the slab side to be converted.
- Specify a point. The arced slab will intersect this point. Select one of the following options:

OPTIONS:

| | |
|------------------|-------------------------------------|
| DIAMETER | Enter diameter value. |
| RADIUS | Enter radius value. |
| PERIMETER | Enter perimeter value (arc length). |
| ARC | Enter chord value for the arc. |



Converting arcs to lines

Use this command to convert arced slab sides to linear ones.

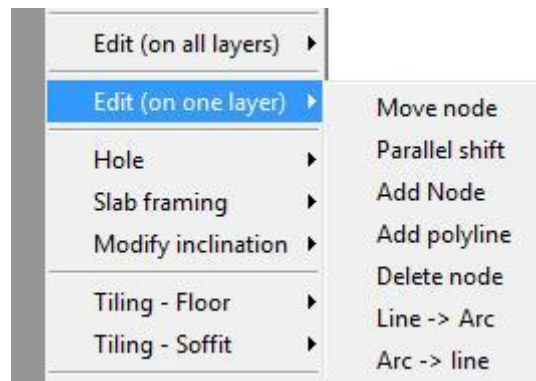
- Select any arced slab side to be converted.

9.4.4. Editing commands for slab layers

With these commands you can edit the corner points and edges of the displayed (i.e. active) layers of slabs. Select the displayed layer in the *Slab properties - Layers* dialog box. An arrow marks the displayed layer.

| No. | Name | Material | Thickness |
|-------|------|------------------|-----------|
| 3 | | Ceramic2 | -0.07 m |
| 2 | | Concrete | -0.3 m |
| 1 <-- | | Default material | -0.01 m |

You can access editing commands from the *Shortcut menu*:

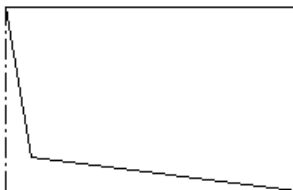


The operation of this command corresponds to those described in chapter 9.4.3. *Editing commands for whole slabs*.



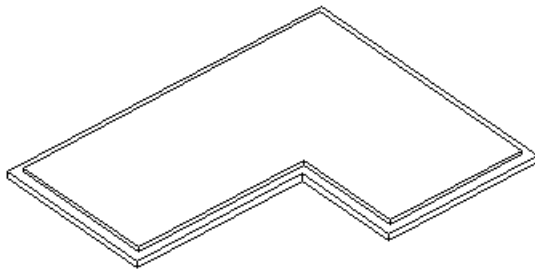
Moving nodes

Click on any corner point of the active slab layer to modify its position



Parallel shifting (Offset)

With this command you can offset one side of the active slab layer or enlarge or reduce the entire contour of the slab.



Inserting nodes

Click on any side of the active slab layer to insert a new node to that layer.



Adding polylines

Click on any side of the active slab layer to add multiple nodes by a polyline to the slab.



Deleting nodes

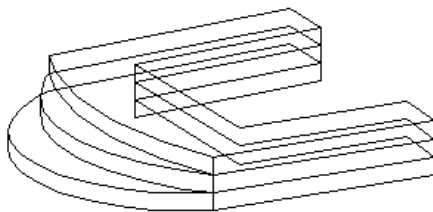
This command deletes any selected corner point of the active slab layer.



Converting lines to arcs

This command performs the following conversions:

The command converts linear slab sides to arced ones; if the selected side of the slab is arced, you can also modify the radius of the arch.



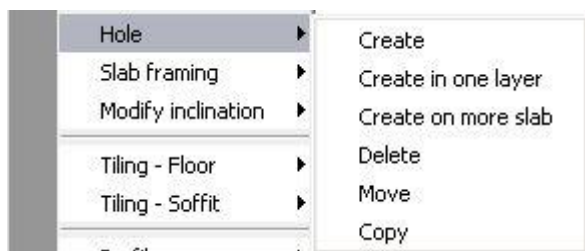
Converting arcs to lines

Use this command to convert arced slab sides to linear ones.

- Select any arced slab side to be converted.

9.4.5. Creating and editing slab holes

You can access these commands from the *Shortcut menu*:



9.4.5.1. Creating slab holes

In most cases you need slab holes when editing stairways and chimneys. Slab holes always comprise parts of slabs, you can specify their form without any restriction and you can edit them afterwards.

You can access the command from the Toolbox, the *Building menu* and the *Shortcut menu*.

Creating slab holes over stairs

You can create slab holes for stairs with the **STAIR** keyword of the command. You can select the stairs under the slab and then the hole will be created automatically for the actual stairs. In this case the profile will not be displayed as the top view of the stairs; therefore it is preferable not to use this function for stair spaces created with galleries.

The program will calculate the contour as follows:

- ❖ The width of the hole is defined by the width of stairs.
- ❖ For the depth the program will find the particular stair with a distance to the bottom of the slab equalling the free height set. This aims at allowing an adult to walk up the stairs in an upright position.

You can set the “Free height above stair” value in the dialog box *File menu - Options - Stair standard*:

| | |
|---|-------|
| <input checked="" type="checkbox"/> Free height above stair | 2.1 m |
|---|-------|

- Select a slab you want to open.
- Specify the slab hole profile by the *Profile definition* tool in the Toolbox. Draw the profile with the option selected, or
- Select the keyword **STAIR** from the prompt.
- This command will automatically create the hole in the slab for the actual stairs under this slab. If there are no stairs under this slab (the program warns you about it), select the keyword **BELOW**. Use this keyword to select the stairs of the next floor downwards.

Enter Completes the command.



For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.



If you select stairs, the stairs must be under the slab.

9.4.5.2. Creating slab holes in multiple slabs

It is often the case that there are slabs covering the entire floor of a building and there are different layered slabs in each room. This means that there are several slabs on each other.

In this case you have to create a slab hole in the reinforced concrete slab and also in the layered slab.

This command offers a very simple solution to this problem. You can create slab holes on multiple slabs. To do so, select the slabs for the slab holes. Enter.



The operation of this command corresponds to those described in Chapter 9.4.5.1. *Creating slab holes*.

9.4.5.3. Creating slab holes in layered slabs

This command creates slab holes in the active slab layer.

Slab holes always comprise parts of slabs, you can specify their form without any restriction and you can edit them afterwards.



The operation of this command corresponds to those described in Chapter 9.4.5.1. *Creating slab holes*.

9.4.5.4. Deleting slab holes

With this icon you can delete existing slab holes.

- In order to delete, select the contour of the slab hole.
- Enter** Exits the command.

9.4.5.5. Moving slab holes

With this command you can move existing slab holes.

- To move, select the contour of the existing slab hole.
 - Specify the reference point of the slab hole for moving.
 - Specify the new position of the slab hole.
- Enter** Completes the command.

9.4.5.6. Copying slab holes

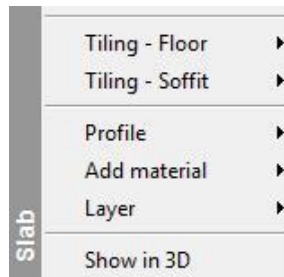
You can copy slab holes within particular slabs.

- After selecting the command, specify the reference point of the slab hole, or select the keyword **REPEAT** if you want to create multiple copies, and then enter the number of copies. **Ok**.
- Specify the position of the new slab hole. **Enter**.

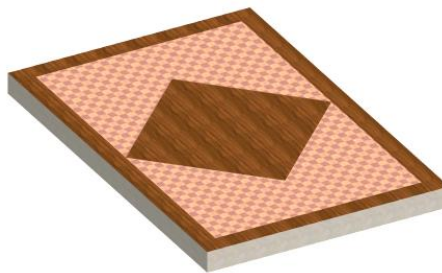
9.4.6. Decoration

With this command you can specify tiling for the floor and the side of slabs and also patterns for the ceiling. You can assign different materials with the proper size and direction to each pattern. You can display tiling in the floor plan, and in the case of the 3D drawing and the photorealistic display, you can use tiling with materials. In the case of multiple layered slabs, the tiling will be created on the active layer.

You can access the commands in the *Shortcut menu*



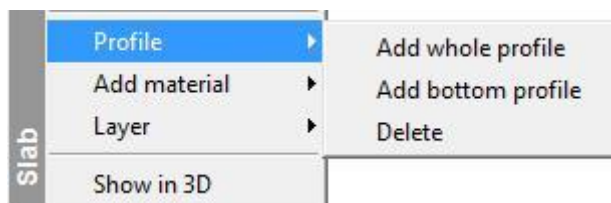
For a detailed description of this command see chapter 15.1. *Tiling*.



9.4.7. Modifying slab profiles

Use the following commands to modify the whole (i.e. entire) and bottom slab profiles and to delete them.

You can access the commands in the *Shortcut menu*:



9.4.7.1. Total slab profile

If you want to create special slab structures (like arched slabs), you have to modify the front view profile of the slab. With this command you can create closed profiles. You can place the profile on either side of the slab, and you can cut the profile from several sides. The program cross-sections these profiles, so you can easily create sophisticated structures like cross vaults. You can modify the profile in the floor plan and in 3D if you want.

Modifying slab profiles on the floor plan:

- Select one side of the slab to be modified in the floor plan. The program lays out its front view. (If you have modified a slab profile earlier, the program will use dotted lines to display the actual front view.)
- Place the laid out image. Use the **NEXT** keyword to change the reference point of the image laid out.
- Specify a closed profile to represent the frontal shape of the slab using the *Profile definition* tool in the Toolbox:



For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.

-

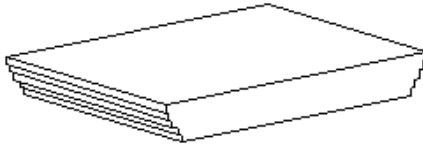
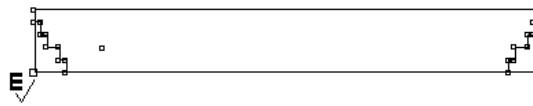
If you want to use a pre-defined profile of the profile library, click the *Select from list* command.



Use the  **Object tool-**  **Closed profile** command to create library profiles.

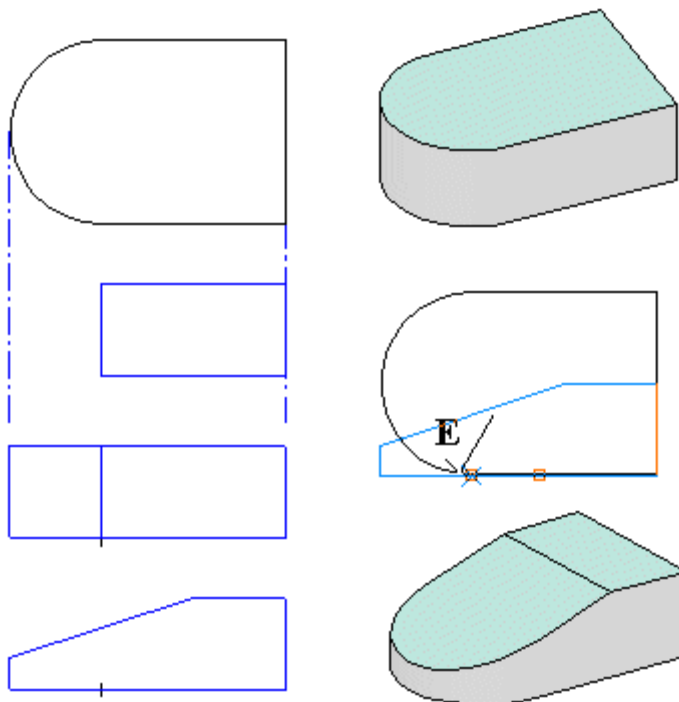
- If the *View menu - Automatic refresh* option is enabled, you can see the result in the 3D view.

Reference
point



Example

You can cut a profile onto a slab having an arced side connected to the cut side. In this case you have to complete the automatically laid out slab side so that the profile will contain the entire projection. Otherwise the Bool operation will cut the arced side of the slab.



9.4.7.2. Bottom open profile

In the case of the previous command (*Add whole profile*) you had to define a new, full profile of the slab. When creating an open profile, you define a section (which can comprise arcs and lines too). The program connects this open profile with the lower part of the slab and then cuts this profile out of the slab.

If the profile selected is a closed one, the program automatically deletes one side of it to create an open profile.



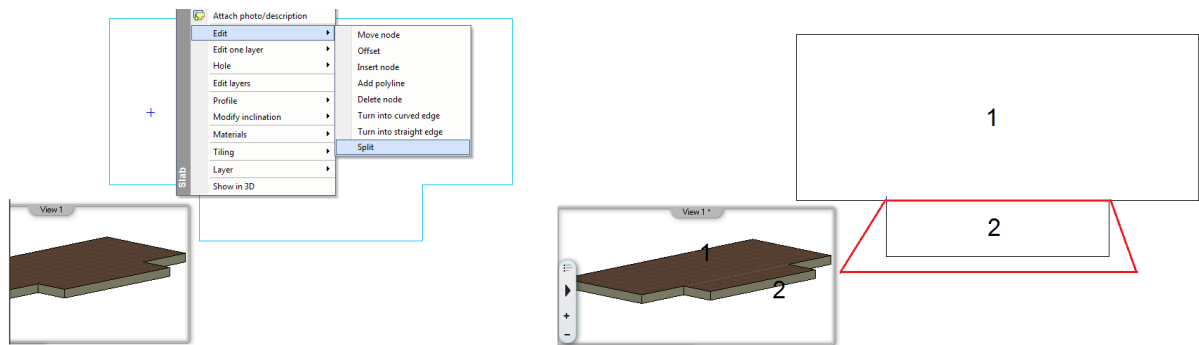
9.4.7.3. Deleting slab profiles

Deletes the profile assigned to the slab.

- Select any slab on the floor plan to delete the profile assigned to it.
Enter Completes the command.

9.4.8. Split the slab

The command splits a slab into two slabs. All properties will be copied to the separated slabs as layer, geometry, materials etc.



9.4.9. Assign materials

When defining slab properties, you can define the material of the top and bottom surface and also the side surface of the slab. When you define the material of the side surface, you can apply the same material on each side of the slab. If the building has got walls of different colour, you may have to define a slab colour corresponding to that of the wall. To do so, you have to use the command *Assign material*, by which you can assign new materials to the selected slab or to particular layers of that slab.

In the example below you can see that in the case of walls of different colours we changed one side of the slab to correspond to the colour of the wall and to share the same texture.

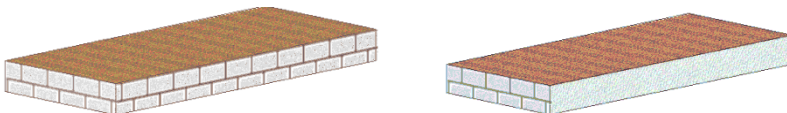
Options for assigning materials:

You can access commands in the *Shortcut menu*:



On one side

- Select the slab to whose side you want to assign material.
- Select the desired material in the dialog box. **OK**.
-



On one side of a layer

- Select the desired slab having the side with the displayed layer you want to assign the new material to.
- Select the material from the dialog box popping up. **OK**.

Deleting on one side

- Select the slab on whose side you want to delete the material.
Enter Completes the command.

Deleting on one layer of a side

- Select the slab having the displayed layer with the material you want to delete.
Enter Completes the command.

9.5. Room book

Introduction

A room book is a planning tool for architects. It is a database that collects general information about building and the rooms of the building.

In ARCHLine.XP® the room book enables collecting very detailed information about rooms in a building. The architect can specify the floor finish individually for each room and the wall finish for each wall.

Room book is an efficient planning tool because it makes a building project more comprehensive for the client, for the architect and for the building contractor as well.

Inside a room it is possible to define detailed facing materials for walls, ceilings and floors along with the connected material and labour costs. Layers with negligible thickness but high costs like scouring or smoothing can be also defined. With a help of *room book* the program automatically recognizes the inner border surfaces of a room and matches the defined covering layers of walls, ceilings and floors to the room dimensions. All these can be represented in 3D so the internal surfaces of various rooms will get realistic facing materials, which have special importance in interior architecture. *Room book* functionality includes predefined room templates. Room templates make available to easily change or give the same internal covering layers to similar rooms. In room templates even user defined settings can be saved. *Room book* follows the modifications made on the project.

Detailed cost estimations can be created on the covering layers and rooms.

| | A | B | C | D | E | F | G | H |
|----|-------------------------------|--------|----------------|----------------|----------------|----------|---------|------------|
| 1 | Name | Total | Side | Ceiling | Parquet | Pedestal | Price | Cost |
| 2 | | | m ² | m ² | m ² | m | | |
| 3 | Plaster | 167,04 | 167,04 | | | | 0,60 € | 100,22 € |
| 4 | Inner finishing plaster | 232,24 | 167,04 | 65,2 | | | 0,10 € | 23,22 € |
| 5 | Knot | 217,06 | 167,04 | 50,02 | | | 0,10 € | 21,71 € |
| 6 | Disperzit | 57,93 | 40,88 | 17,06 | | | 1,40 € | 81,10 € |
| 7 | Hera | 34,58 | 34,58 | | | | 1,20 € | 41,50 € |
| 8 | Wallpaper | 30,94 | 30,94 | | | | 4,00 € | 123,76 € |
| 9 | Mosaic tiles | 22,56 | 22,56 | | | | 5,00 € | 112,80 € |
| 10 | Textile wallpaper | 54,72 | 38,08 | 16,64 | | | 4,30 € | 235,30 € |
| 11 | Skirting 01 | 0,37 | | | | 0,37 | 0,30 € | 0,11 € |
| 12 | Skirting | 0,92 | | | | 0,92 | 0,25 € | 0,23 € |
| 13 | Fitted carpet skirting | 1,16 | | | | 1,16 | 0,43 € | 0,50 € |
| 14 | Ceiling plasterwork | 50,02 | | 50,02 | | | 0,60 € | 30,01 € |
| 15 | Internal painting | 10,52 | | 10,52 | | | 1,60 € | 16,83 € |
| 16 | Air / Frame | 15,18 | | 15,18 | | | 0,00 € | 0,00 € |
| 17 | RIGIPS plasterboard suspended | 15,18 | | 15,18 | | | 9,00 € | 136,62 € |
| 18 | Wash proof painting | 5,8 | | 5,8 | | | 3,30 € | 19,14 € |
| 19 | AUSTROTHERM AT-N100 | 65,2 | | | 65,2 | | 6,00 € | 391,20 € |
| 20 | Upper concrete | 65,2 | | | 65,2 | | 2,00 € | 130,40 € |
| 21 | Parquet 02 | 17,06 | | | 17,06 | | 5,60 € | 95,54 € |
| 22 | Cement mortar pillow | 16,32 | | | 16,32 | | 0,80 € | 13,06 € |
| 23 | Granite floor tile | 10,52 | | | 10,52 | | 6,00 € | 63,12 € |
| 24 | Carpet floor 03 | 31,82 | | | 31,82 | | 5,60 € | 178,19 € |
| 25 | Marble floor tile | 5,8 | | | 5,8 | | 14,00 € | 81,20 € |
| 26 | | | | | | | | 1 895,76 € |

Norms

It is very important to ensure that the format and data of room stamps satisfy the requirements of various norms. In addition to the difference between various norm requirements architects have to cope with a lot of calculations that would be time consuming with the use of conventional methods. With a help of *Room book* these calculations are made automatically which improves the architects' work efficiency a lot. With certain limitations it is also possible to alter from the standard formats, which gives more flexibility to the user.

Bordering surfaces

Room book is not only for creating standard room stamps which include the area, volume and other geometry parameters information but makes available the determination of real covering materials on side walls, slabs (on floors and ceilings) and roofs on the border surfaces inside a room. This means that all the inner covering information about bearing and partitioning walls, slabs (floors and ceilings) and roofs can be provided for a room, including plasters, coating materials, footings etc. The coverings of border surfaces of a room will determine 3D representation of a room inside. Additionally, basic data are provided for various cost estimations. These border surfaces may consist of more covering layers so the modelling of different work phases is also possible. This way *Room book* will tell the information if the wall is wallpapered, painted or tiled, or if the floor is covered by carpet or parquet.

Room book makes difference between 4 basic surfaces inside a room:

- ❖ sidewalls,
- ❖ footing,
- ❖ floor,
- ❖ ceiling.

Cost estimation


Since *Room book* includes geometry information (area, perimeter, volume etc.) of the room, materials and properties (thickness, layers, costs etc.) of the inside coverings (floor, wall, ceiling, footing), it makes cost estimations available. These estimations may include both material and labour costs. Lists can be created about the calculations in a required Excel format.

As it is clear from the above, Room book is a complex object including a lot of data. Its properties can be specified in **Room wizard** dialog. The data are categorized and the left side gives information about the required inputs. At the bottom left of the dialog there is a preview of the actual Room book that is being prepared.


Room book types

The room book has two types:

Room book inside a wall

If the room is bounded by walls we suggest you to use the  *Room book inside a wall* command. Clicking inside the room bounded by walls the room book is created. The room book is associated to the walls. This means the room book follows the modification of the walls automatically or after the refreshing.


Room book inside a free polygon



We suggest you to use  *Room book inside a free polygon* command if the rooms haven't got side walls, e.g.: balconies or rooms that have different functionalities but are not separated by walls or other border surfaces. In this case the room book is created by the user defined polygon.

You can modify its boundary and the room book calculation follows the modifications. Of course this type of the room book is not associated to the walls, therefore does not follow the wall modifications.


The room book tooltip signs the type of the room book.

9.5.1. Room book inside a wall and Room book wizard

If the room is bounded by walls we suggest you to use the  *Room book inside a wall* command. Clicking inside the room bounded by walls the room book is created. The room book is associated to the walls. This means the room book follows the modification of the walls automatically or after the refreshing.

- Select the  Room book tool -  Room book inside a wall command with the left button of the mouse.
- Click inside the room bounded by single walls,
The **Room book wizard** dialog appears. This is the place where you can define the data you would like to visualize on the room stamp.

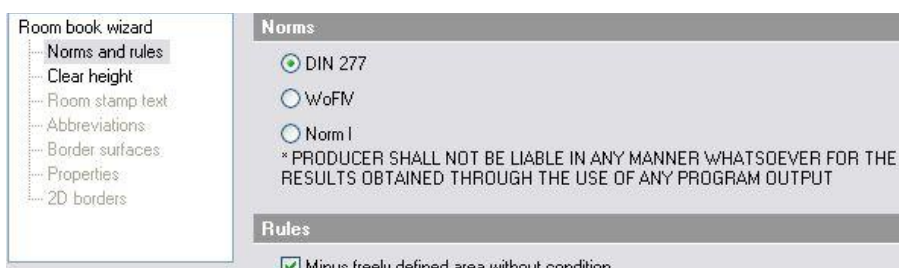


You can also set the Room book properties before the placement. Click  **Room book** tool with the right button of the mouse, or use the *Building menu - Properties - Room book* command.

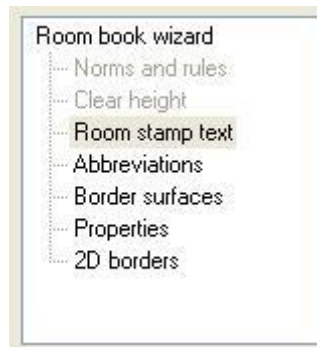
First we describe how the **Room book wizard** works in general, independently from the geometrical parameter inputs. It will help us in the area calculations of rooms defined by free polygon contours, too.

When you place a room book you have to give the settings in the sub dialogs that can be found on the left side of the main dialog. The order of definition is arbitrary; it depends only on the optional area definitions you would like to take into consideration. These options can be found in the *Norms and rules* dialog. This is the place where other graphical information is needed from the drawing. (E.g.: freely defined areas have to be added or the transparent doors are also considered, etc.) In these cases you must enter the data of **Room book wizard** in more steps.

- First fill in the data of **Norms and rules** and **Clear height** sub-dialogs. If you select at least one option among the optional rules to which you have to define an input, the other dialogs (*Room stamp text*, *Abbreviations*, *Border surfaces*, *Properties*) become gray until you give all input necessary for applying the rules. Gray dialogs will be unavailable (see the gray colour text below because of the **Minus freely defined area without condition** option).



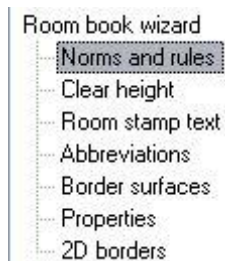
- Click Ok to leave the dialog temporarily and give the necessary information from the drawing (in our example you have to define a freely defined area that should be subtracted from the room area).
- After giving the necessary optional inputs the **Room book wizard** appears again and you can go on defining the room book in the *Room stamp text*, *Abbreviations*, *Border surfaces*, *Properties* and *2D borders* sub-dialogs in an arbitrary order. When you get back after the inputs have been defined, the *Norms and rules* and the *Clear height* sub-dialogs are going to be gray.



- OK** Close the room book wizard.
- Insert the room book on the plan.
- Insert also the flat name if the Flat option is switched on in the Room stamp text dialog.

The room book tooltip signs the type of the room book:
Room book inside a wall

9.5.1.1. Norms and rules



Click *Norms and rules* to specify the norms and rules that have to be considered for creating a room stamp.

Norms

Three norms are available:

- ❖ **DIN 277**
- ❖ WoFIV (Wohnungsfläche Verordnung)
- ❖ Norm I

In each norm (depending on the norm) you can specify rules that should be considered in room book calculations. The norm defines which parameters have to be considered to create the area calculations. We are not going into details concerning the norms here. Based on the selected norm optional areas can be considered when the room stamp is calculated. These are as follows:

DIN 277 auxiliary rules

Minus freely defined area without condition

With this option you can specify areas that should be subtracted in room area calculation.

Plus freely defined area without condition

With this option the user-specified areas should be added to the room area calculation.

If the stair has more than three steps

For stairs with more than three steps you can specify if the stair area that goes below 2 m or the whole stair area should be subtracted in room area calculation.



At Din 277 auxiliary rule you don't have to consider the area under the door in calculation.

WoFIV auxiliary rules

Minus freely defined area without condition

With this option you can specify areas that should be subtracted in room area calculation.

Plus freely defined area without condition

With this option the user-specified areas should be added to the room area calculation.

If the stair has more than three steps

For stairs with more than three steps you can specify if the stair area that goes below 2 m or the whole stair area should be subtracted in room area calculation.

Include area under doors

With this option room area under doors should be also considered, too.

Norm I auxiliary rules**Minus freely defined area without condition**

With this option you can specify areas that should be subtracted in room area calculation.

Plus freely defined area without condition

With this option the user-specified areas should be added to the room area calculation.

Minus stair area under height

It doesn't consider the stair area under height. You can determine this with the value on the right side. This rule considers all stairs inside the room.

Plus niche area if >

With this option niche areas will be added in the room area calculation if the recess of the niche is bigger than the value given in the input field.



This rule applied to such niches that have been created by **objects** using *Insert into wall* and *Make only hole in the wall* options.

Transparent doors

This option has importance in transparent area calculation. If you check this option the program will ask you to select doors with transparent parts (doors with windows).

Minus columns area if >

With this option only column area bigger than the value given in the input field will be calculated in the room area.

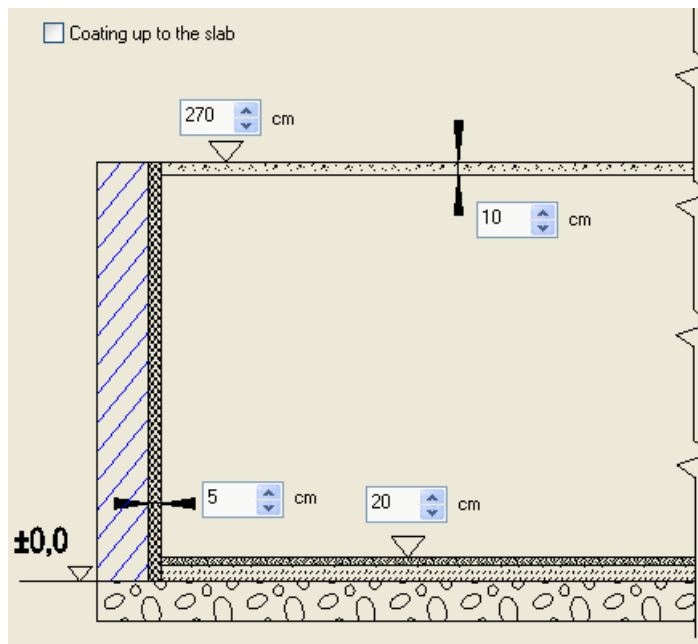
Norm I other options**Automatic search for columns**

With this option all columns inside the room will be identified automatically and their areas will be considered in room area calculations according to the other settings. (Otherwise you have to select each column you would like to include in room area calculations manually.)

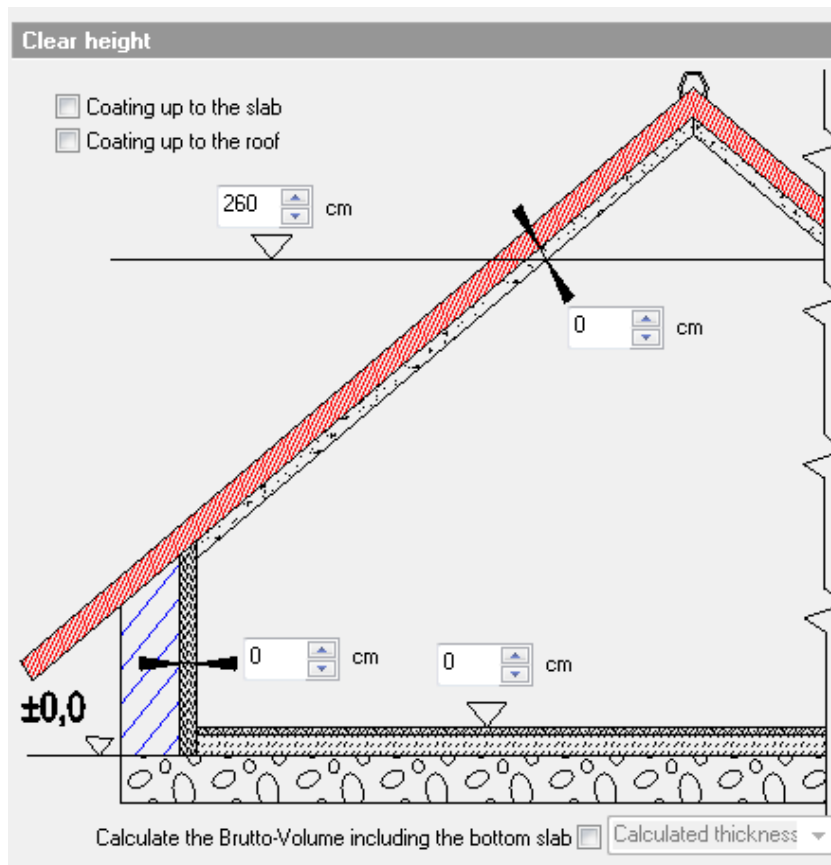
9.5.1.2. Clear height

The usage of the *Clear height* dialog depends on what you want to specify within the room. You can either define the inner wainscotings in details, using the border surfaces or simply the total thickness of wainscotings should be defined. In the last case switch on the *Disable room border surface templates* option in the *Border surfaces* dialog.

However, you can use the *Clear height* dialog to define the total thickness of wainscotings. This wainscoting thickness will be taken into consideration in the area and volume calculations.



In case of building in attic the following figure appears in the dialog:



By turning on the *Disable room border surface templates* option the input fields for wainscoting thickness appear. These wainscotings will not appear in 3D representation but the thickness values will be taken into consideration in the area and volume calculations according to the selected norm. In this case 3 thickness parameters can be defined:

- ❖ Thickness of the wainscoting of the floor (in the example above it is 20 cm).
- ❖ Thickness of the wainscoting of the wall (in the example above it is 5 cm).
- ❖ Thickness of the wainscoting of the ceiling (in the example above it is 10 cm).

By turning off the *Disable room border surface templates* option the 3D model representation includes the wainscoting layers according to the settings made in the *Border surfaces* dialog. The wainscoting layer thickness will be taken into consideration in the area and volume calculations.



It is a general rule that surfaces under the level of Room height will be covered by the wainscotings.

Room height

Room height means the height of the room without wainscotings and this is the basis of the clear height calculation. The room height can be defined one of the followings:

- ❖ an input value,
- other room bordering architecture objects:
- ❖ the bottom face of slab,
- ❖ the highest point of the roof inside.

Input value

Room height means the height where the wainscoting of the ceiling starts from downwards (in the example above it is 270 cm). (This way suspended ceilings can be created.) In case of building in the attic the top plane of the ceiling will be placed on this height. Above that height the roof will not be covered inside.

Coating up to the slab

The room height will be defined by the bottom face of the slab above the room. The requested wainscotings start from this height and go downward.

Coating up to the roof

In this case the room height will be defined by the highest point of the roof inside. This means that the whole roof will be covered inside.

9.5.1.3. Room stamp text



Click *Room stamp text* to specify the room stamp data you want to place on the 2D drawing.

Depending on the norms you can check the following data:

DIN 277 norms

Room kind parameters

- ❖ *Room name*. Select a name from a roll down list or submit another one. (The list is loaded on the basis of DIN277.* file of the *Support* directory.)
- ❖ *Room code*. Select a standard code from the roll down list.
- ❖ *Flat*. You can decide to which flat the room should belong, and whether to place the flat name in the room stamp or not.
- ❖ *Undercutting type*. Select a standard type from the four different types of the combo box.

Room parameters

- ❖ *Gross area*. Automatically calculated by the program or specified by the user.
- ❖ *DIN 277 area*. Automatically calculated according to DIN 277 standards or specified by the user. To calculate the net area, the program uses the 1.90 inner height according to the norms
- ❖ *WoFIV area*. Automatically calculated according to DIN 277 standards or specified by the user.
- ❖ *Illumination area*. Automatically calculated by the program or specified by the user. Net value includes only the surface of the transparent materials. Gross value includes the area of frames and dividers of openings, too.
- ❖ *Perimeter*. Automatically calculated by the program or specified by the user.
- ❖ *Height*. Equal with the ceiling height given in the *Clear height* sub dialog or specified by the user.

Other parameters

- ❖ *Hatch*. The background colour of the room on the 2D drawing can be specified here.
- ❖ *Room number*. Any numbering or text can be specified here.
- ❖ *Floor level*. The floor level can be specified here independently from the values given in the *Clear height* sub dialog.
- ❖ *Slab level*. The slab level can be specified here independently from the values given in the *Clear height* sub dialog.
- ❖ *Floor material*. Select a floor material from the roll down list or specify another one.
- ❖ *Wall material*. Select a wall material from the roll down list or specify another one.
- ❖ *Ceiling material*. Select a slab material from the roll down list or specify another one.

WoFIV norms

Room kind parameters

- ❖ *Room name*. Select a name from a roll down list or submit another one.
- ❖ *Flat*. With this option you can select a name from a roll down list or specify another one. After placing a room stamp you can place this string separately on the 2D drawing.
- ❖ *Room kind*. Select a standard type from the roll down list.

Room parameters

- ❖ *Gross area*. Automatically calculated by the program or specified by the user.
- ❖ *DIN 277 area*. Automatically calculated according to DIN 277 standards or specified by the user.
- ❖ *WoFIV area*. Automatically calculated according to DIN 277 standards or specified by the user.
- ❖ *Illumination area*. Automatically calculated by the program or specified by the user. Net value includes only the surface of the transparent materials. Gross value includes the area of frames and dividers of openings, too.
- ❖ *Perimeter*. Automatically calculated by the program or specified by the user.
- ❖ *Height*. Equal with the ceiling height given in the *Clear height* sub dialog or specified by the user.
- ❖ *Area factor*. Depending on the type of room you may have to apply a factor for the official area calculations. Select a factor from the roll down list. Room areas will be multiplied by the area factor.

Other parameters

The same as for DIN 277.

Norm I norms

Room kind parameters

- ❖ *Room name*. Select a name from a roll down list or submit another one.
- ❖ *Room code*. Select a standard code from the roll down list.
- ❖ *Flat*. With this option you can select a name from a roll down list or specify another one. After placing a room stamp you can place this string separately on the 2D drawing.

Room parameters

- ❖ *A - Net area*. Automatically calculated by the program or specified by the user.
- ❖ *Volume*. Automatically calculated by the program or specified by the user.
- ❖ *Illumination area*. Automatically calculated by the program or specified by the user. Net value includes only the surface of the transparent materials. Gross value includes the area of frames and dividers of openings, too. Calculation results depend from the settings under *Light transmission of openings*.
- ❖ *Ratio (Area)*. The ratio between illumination area and room area.
- ❖ *1/A*. With this option the *Ratio (Area)* is given in 1/A form, where A is an integer.
- ❖ *Perimeter*. Automatically calculated by the program or specified by the user.
- ❖ *Height*. Equal with the ceiling height given in the *Clear height* sub dialog or specified by the user.

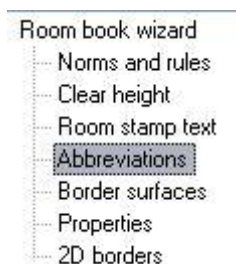
Other parameters

The same as for DIN 277.

Illumination area calculation

- ❖ *Openings*. Select an opening to set its light transmission parameters. On the right side the drawing of the selected opening appear in a small window so that it could ease the identification. The first number of the field is an identification that is also a part of the gray header of the Tooltip, and identifies all objects of the drawing.
- ❖ *A - Net area*. Transparent area of the opening calculated by the program according to the subsequent settings.
- ❖ *Under slab*. With this option you can specify a ratio. Net area will be calculated using this multiplier. Generally it is used for openings that are partially hidden from light (for example openings under balcony).
- ❖ *Ratio (Area)*. This is the multiplier the program will use if the *Under slab* option is checked.
- ❖ *Considered part under 60cm*. In case of doors glass surfaces below the height of 60 cm are considered in illumination area calculations.

9.5.1.4. Abbreviations



Click *Abbreviations* to specify the abbreviations assigned to the room stamp text data.

You can specify the abbreviations for each room stamp text data. The abbreviations and room stamp text data will appear together on the room stamp:

| Abbreviations | |
|-------------------|------------------------------|
| Gross area | GA: <input type="text"/> |
| DIN277 Area | DIN277: <input type="text"/> |
| WoFM Area | WoFM: <input type="text"/> |
| Illumination area | IA: <input type="text"/> |
| Perimeter | P: <input type="text"/> |
| Height | H: <input type="text"/> |
| Floor level | FL: <input type="text"/> |
| Slab level | SL: <input type="text"/> |
| Floor material | FM: <input type="text"/> |
| Wall material | WM: <input type="text"/> |
| Ceiling material | CM: <input type="text"/> |

9.5.1.5. Border surfaces

Room book wizard

- Norms and rules
- Clear height
- Room stamp text
- Abbreviations
- Border surfaces**
- Properties
- 2D borders

Click *Border surfaces* to specify the finishing (covering materials, work phases) of the room border surfaces.

Room border surface templates

- Kitchen
- Room with susp. ceiling
- Bath room
- Sleeping room
- Garage
- Living room

Here you can specify the covering materials and the connected work phases of room border surfaces. These are real layers with thickness and other properties that can be represented by 3D generation. On the right side you can select from the **room border surface templates** that have already been prepared.

- Switch off the *Disable room border surface templates*, and then the names become active.

Room book wizard - Define set

| Room book wizard | Room border surface templates |
|------------------------|-------------------------------|
| Norms and rules | |
| Clear height | |
| Room stamp text | |
| Abbreviations | |
| Border surfaces | Bath room |
| Properties | Garage |
| 2D borders | Kitchen |
| | Living room |
| | Room with susp. ceiling |
| | Sleeping room |

These are the templates which can apply covering materials and work phases to the given border surfaces according to the materials of the room border surfaces (wall, slab, roof). It means that when the wall is created we define the material of it (brick wall, glass wall, steel structure, etc), and we create rules within the templates. These rules define the covering materials of the given room border surfaces (floors, walls and ceilings). The program creates these layers automatically

based on the settings of the templates. (They can be visualized in 3D and they are also a part of the cost calculation list.) These Room border surface templates can either be modified or new can be created according to your own needs.

Do not forget that the modification of these Room border surface templates modifies all the room stamps of this kind that have already been placed.

E.g.: If you have selected the Flat/WC room border surface type for the toilettes of the building and you change the covering material to a more expensive one in this Flat/WC room border surface type, the covering will be modified in all rooms of the building that uses this room border surface type. The advantage of this function is that these kinds of modifications can easily be compared to each other; therefore cost calculations can be made quickly.

If there is a type you would like to use, select it from the list. If you cannot find the room border surface template you like, create your own as it is defined below, or modify the existing types, or just have a look at their contents. The usage of the following dialog defined below is offered only for advanced users:

Double clicking on the selected room border surface template the **Conditional material surfaces** dialog appears.

On the left side of the dialog you can find the template names in a directory structure, on the right side the conditional material surface settings can be seen:

| Code | Thickness | Description | Factor | Material |
|--------|-----------|-----------------------|--------|------------|
| WA2-1 | 0.015 m | Plaster | 1 | Plaster1 |
| WA3-2 | 0.01 m | SAN-A 100% Wallpaper | 1 | Wallpaper2 |
| WA2-13 | 0 m | Plastering work phase | 0 | |
| WA3-22 | 0 m | Hang wallpaper | 0 | |

| Code | Width | Description | Base height | Material |
|------|-------|--------------|-------------|-------------|
| WA12 | 0.1 m | Tile footing | 0.01 m | indien_sanc |

| Code | Thickness | Description | Factor | Material |
|-------|-----------|--------------|--------|----------|
| FU-43 | 0.025 m | Plasterboard | 1 | Stucco2 |

| Code | Thickness | Description | Factor | Material |
|----------|-----------|-----------------------|--------|-------------|
| HF1 | 0 m | Floor heating | 0 | |
| Floor-02 | 0.002 m | Felt Z21 | 1 | Textil-lace |
| P04 | 0.025 m | Parquet F03 laminated | 1 | Wood66 |

If room border surface materials are known in the rooms, room border surface templates determine the subsequent finishing materials and the connected work phases. The program searches for room border surface materials on the room border: on floor, wall plane and ceiling. Depending on the found material the program assigns subsequent covering (finishing) materials and work phases to each border surface.

The program searches for the room border surfaces first: the floor border surface must be slab, the wall plane border surface must be either wall or column, and ceiling border surface must be slab or roof. After that the finishing (covering materials and work phases) will be created for each border surface depending on the Room book wizard - Border surfaces settings.



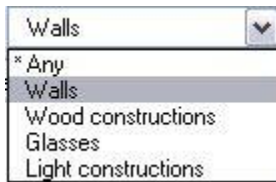
The files for **room border surface templates** can be found in the installation directory in *Support\AttrsetsEng\RoomTemplates* folder. These files are in XML format.

Conditional material assignments to the **wall plane**, **footing**, **ceiling** and **floor** can be specified for each selected template on the right side of **Conditional material surfaces** dialog.

Conditional material surface settings for floors, wall planes, ceilings and footings

Material and work phase assignments to wall planes, ceilings and roofs go the same way.

- First select a material category from the combo box. A '*' before the category name denotes that some assignment already exists to that category:





Each room border surface material belongs to a material category. Depending on the material category of a room border surface you can define the finishing (covering materials, work phases) of the surface in table rows, going inside towards the inner part of the room.



Material assignments to the material categories (except with the category named Any) can be found in the installation directory in *Support\RoombookEng.mc* file. This file has XML format. Material names in the categories refer to the material names found in *.mtr* material description files (by default these *.mtr* files can be found in the installation dir in the *Materials* folder. Click **Edit material categories** to modify these categories. See the details later in this chapter.

If the surface material of a bordering architecture object (wall, slab, column,) is not found in any material category then the Any category will be considered for that surface.

- Click  to assign a new description code to a material category. A description code can be either a covering material or a work phase. Description codes can be selected in the **Select code name** dialog. See the details later in **Handling of description codes**.
- **Code, thickness, description, factor** and **material** fields can be specified in one row. By clicking on the *code* field you will get back to **Select description code** dialog. **Thickness, factor** and **material** fields are freely editable in this dialog. The *Factor* field is a multiplier for the cost calculations. The *Material* field shows the name of the material that is used when this layer is visualized in 3D.
- Click  to delete an existing layer. Select the row first: click in the *thickness, description* or *factor* fields to do so.

Conditional material surface settings for footings

Conditional material surface settings for footings works similarly to the conditional material surface settings for wall planes, floors and ceilings. The difference is that instead of thickness and factor there are width and base height fields. The value given in base height field determines the bottom height of the footing. The value given in the width field determines the strip width of the footing. This way more decoration strips can be created. Footings are different from the other border surfaces. Footings have no material thickness so they will appear in 3D visualization as decoration stripes.

Handling of room border surface templates

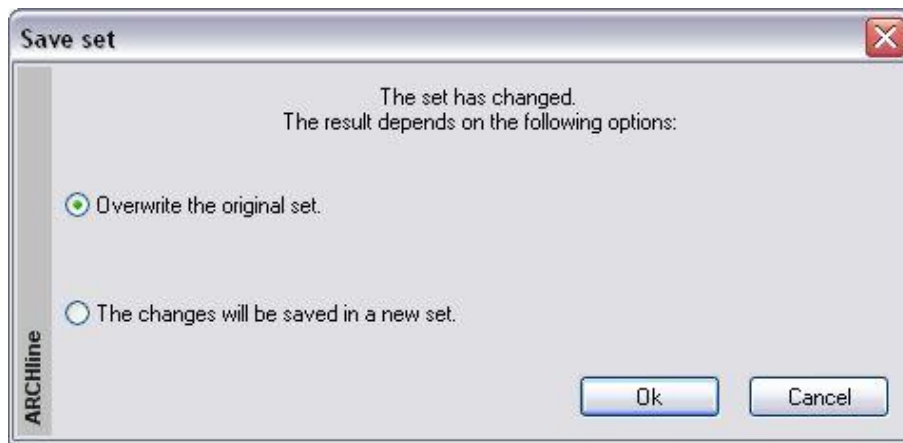
With the buttons on the bottom-left of the **Conditional material surfaces** dialog room border surface templates can be handled similarly to the sets:

- Click **New** to create new template.



With the example above you can create a Living Room template in the Exclusive Flat directory.

- Click **Delete** to remove a selected template.
- Click **Activate** to make the template active.
- Click **Modify** to save the modifications you made in the active template. The modifications will be saved in your project file. If you open a new project you will not see these modifications.
- Click **Rename** to rename an existing template.
- If you have modified any templates and try to leave the dialog the following message appears:



- Choose **Overwrite the original set** if you want to overwrite the original template. By choosing **The changes will be saved in a new set** you can save the modified template with another name or get back to the dialog.

You can save the created room border surface templates into sets, then the sets to template files. So you can use the new preferences in the new project too.



See 3.2.3. *Using sets of properties* and 4.6. *Managing templates* chapters.

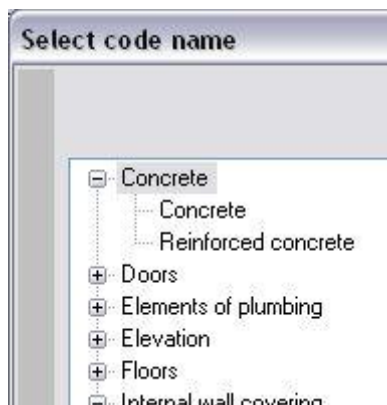


Don't confuse room border surface template with Template file!

Handling of description codes

In the **Conditional material surfaces** dialog you can assign description codes to material categories. These description codes are handled in a separate file. You can manage these names in **Select code name** dialog. By default the *Support/RoomMatEng.rbm* file that can be found in the installation directory is loaded. However, you can load any other file with *.rbm* extension and similar format by clicking on **Load external code file**.

On the left side you can select the required main group and sub group:



The entries belonging to a sub group can be found on the right side of the dialog. These are codes of covering materials and work phases needed for finishing the room border surfaces that can be assigned to material categories of each border surface and footing. You cannot modify the original entries. New main groups, groups and entries can be created/deleted/renamed right mouse click or double click. An entry consists of code, description, material and price fields. Entries can be modified by double clicking.

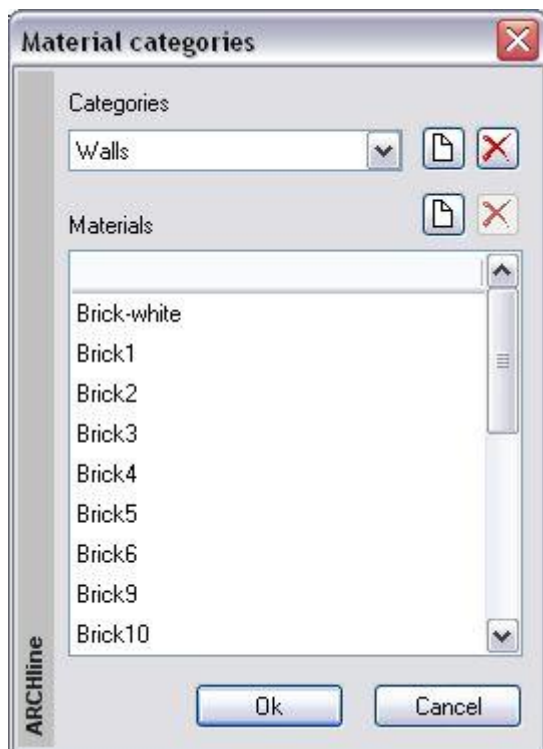
| Code | Description | Material (repr) | Price |
|------|-------------|-----------------|-------|
| C 4 | | Concrete3 | 0 |
| C 6 | | Concrete3 | 0 |
| C 8 | | Concrete3 | 0 |
| C 10 | | Concrete3 | 0 |
| C 12 | | Concrete3 | 0 |



Click Ok to get back to Conditional material surfaces.

The selected description code will be assigned to the actual material category and room border surface. Click Cancel to close the dialog without any modification.

Edit material categories

- Click **Edit material categories** in the **Conditional material surfaces** dialog to modify the existing material categories.



- Click  to add a new category or add a new material to the selected category.
- Click  to delete the selected category or delete the selected material from the selected category.
- Select the **Save to global environment** option and Click **Ok** to overwrite the content of your *RoombookEng.mc* file in the *Support* directory of program installation dir. In that case you will see these material categories when you create a new project file. Without this option the changes will be saved only in your project file.

Embedded wainscotings option

Depending on countries there are different requirements against the modelling of room book wainscotings.

In some countries it is preferred to start from clean walls and cover these walls with wainscoting layers:

In other countries it is preferred to take wainscotings into consideration the as part of the walls:

In that case the wainscotings start from the inner wall surface and go to the outside direction. As a result, wainscoting thickness will not increase the wall thickness in the 3D model. The same is applied on other room bordering objects like slabs, roofs etc.

- In the *File menu - Options - Room book* dialog box select **Embedded wainscotings** option if you want to handle wainscotings as part of room bordering architecture objects.

☒ Embedded wainscotings (ON: Inside wall, OFF: inside the room)



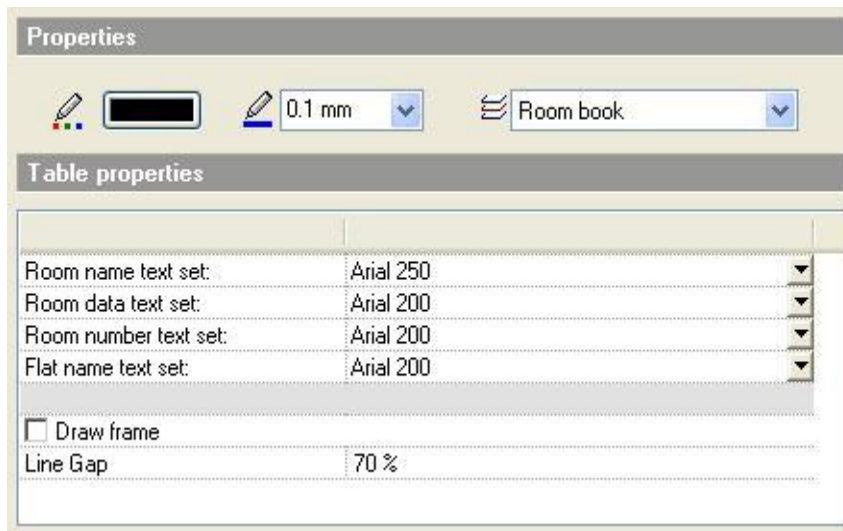
Also, you can create wainscotings for the outer walls by the **Calculate room book outside the building** room book command. However, we do not recommend using this option because of the incorrect wainscoting connections in the wall corners.

9.5.1.6. Properties



Click *Properties* to specify the visualization settings of room stamp.

Room stamp data are organized in a table. On the top of the dialog you can specify the borderline type, borderline colour, border line thickness, priority and layer properties.





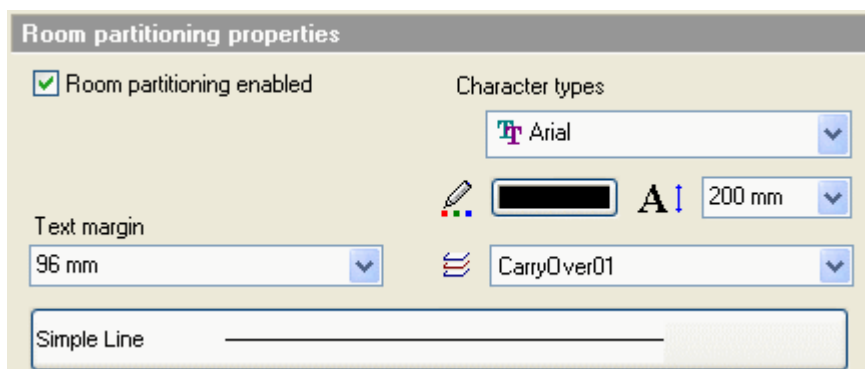
In the *Room book wizard* dialog the table text parameters of room name, room data, room number and flat name can be selected from text sets.

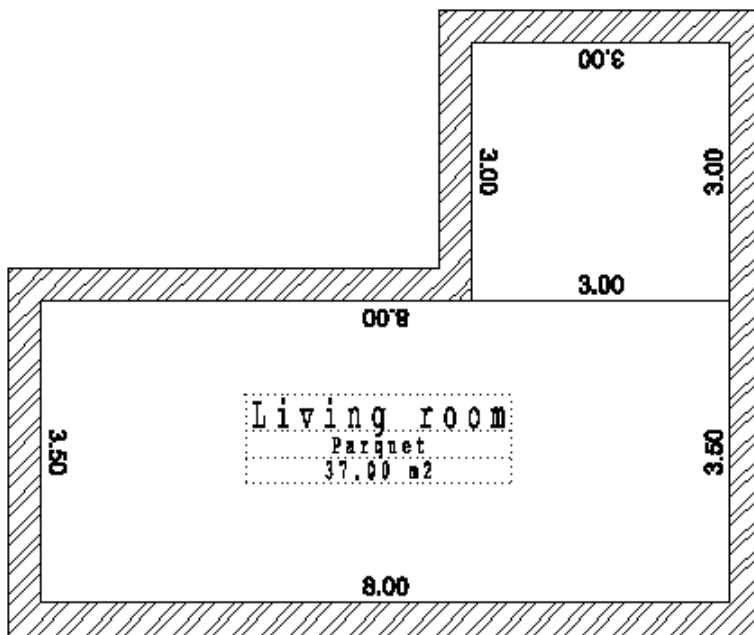
You have to determine the features of text sets in advance in the *Text Properties* dialog box, or you have to create the proper set. So when you give the table properties of the room book, you just have to select the proper text set. You can also determine the line gap.

With the **Draw frame** option the room stamp text will be bordered.

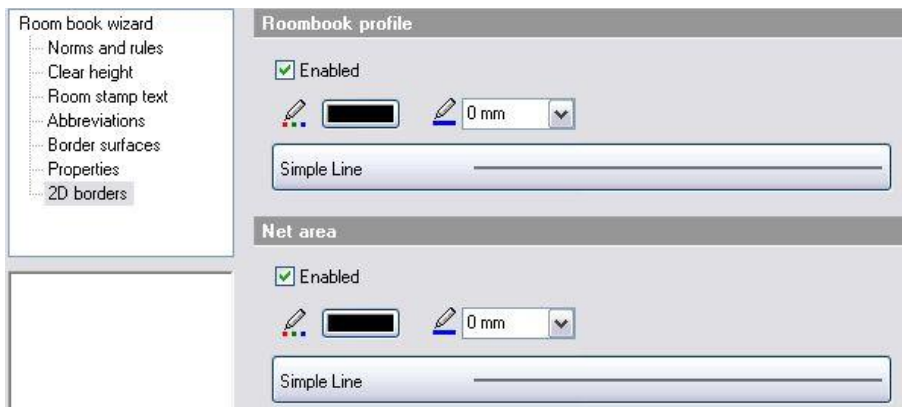
Room partitioning properties

On the bottom of the dialog you can switch on the *Room partitioning enabled* option. With this option the room will be partitioned into triangles, rectangles and circle pieces and the program automatically creates the dimensioning (side lengths) of these partitions. It works like  *Room book tool* -  *Room partitioning and dimensioning* command on the left side. The only difference is that the details of area calculations will not be placed.) If you create room partitioning and the *Room partitioning enabled* option is switched on, you can specify the properties of the partitioning objects: the font type and height of the text used for the length dimensions, line type for the partitioning lines, colour and layer for the text and lines.



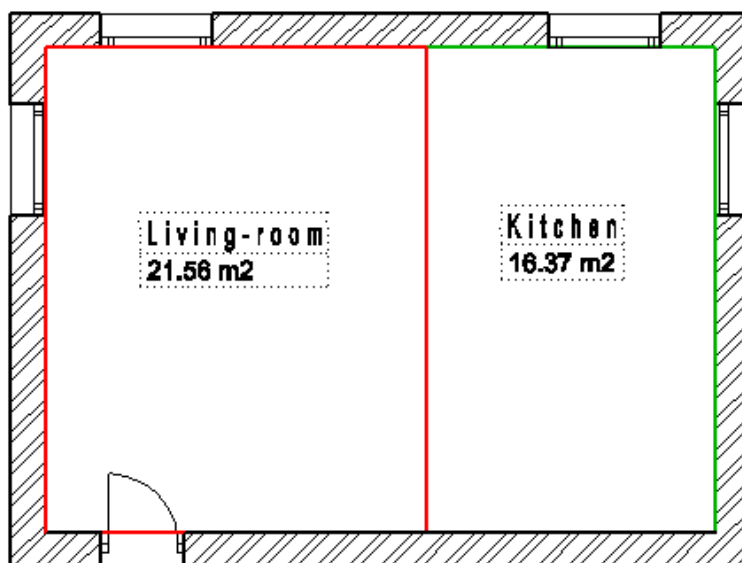


9.5.1.7. 2D borders



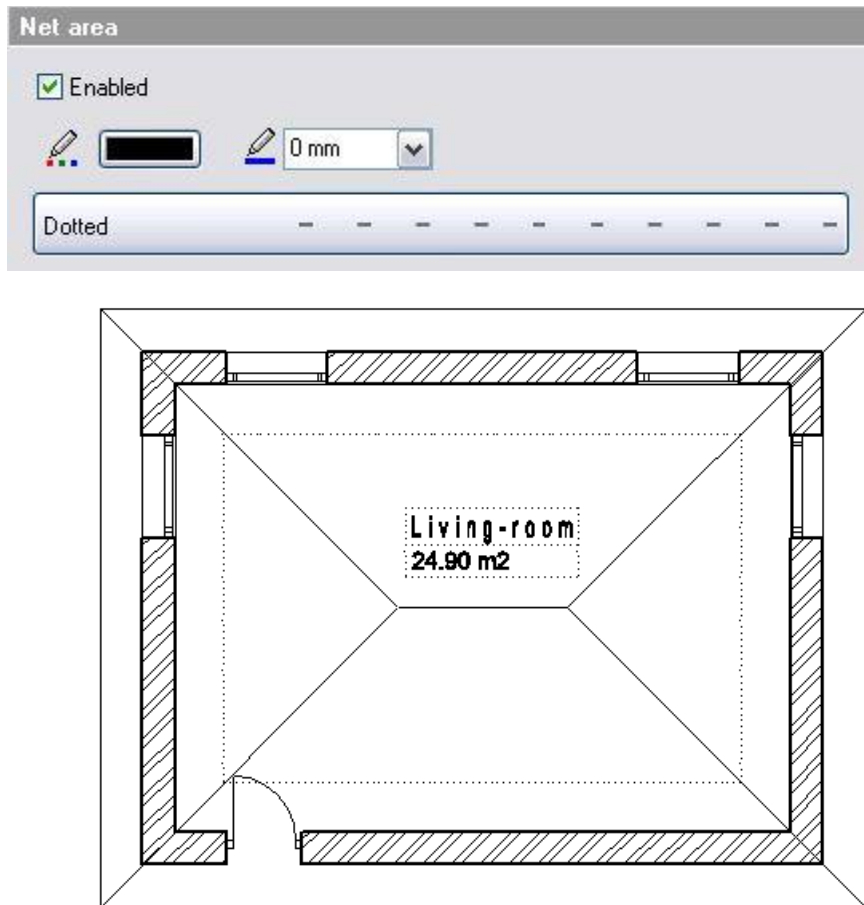
Room book profile

By turning this option on the room stamp will include the room boundary, too. If you created this room book with free polygon, this boundary can be modified. In the following example there are two room stamps with room book profile in one room.



Representing the net area

Using the options in the *Room book wizard* dialogs it is possible to represent the real room boundary and the contour lines of the net area belonging to height of 1.9 m height. Also, the properties of these lines can be set here:
For example on the floor plan of a building in the attic different line properties can be used for the room boundary and the net area contour.



At calculating of net area the program takes the default 1.9 m, in *File menu - Options - Room book dialog box*, for basis.

9.5.1.8. Room Book Custom Stamp

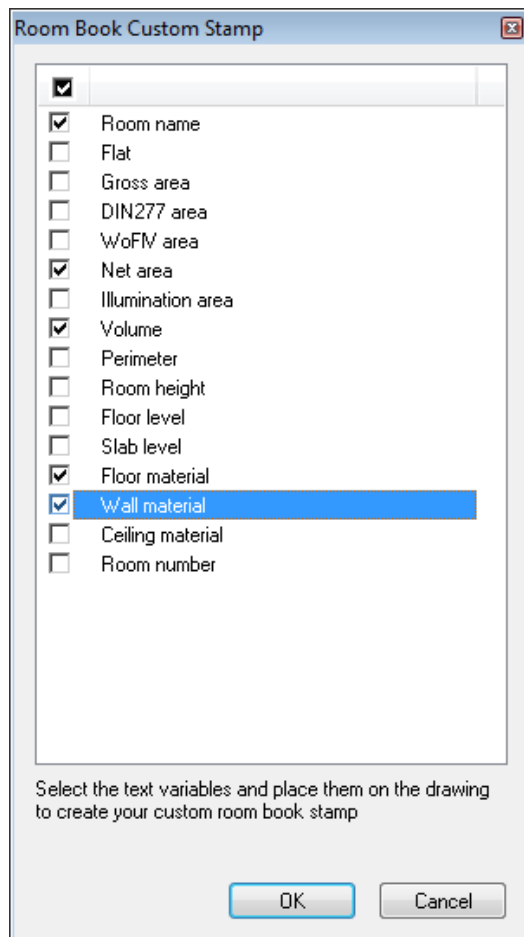
Instead of using the rigid form and look of room stamp defined on **Room stamp text** and **Abbreviations** pages, you can create and use your own style of room book stamp with a better look and free text layout.

Creating a new room stamp template

- Create a room stamp on the floor plan using drafting elements like lines, texts and hatches. This will be the skeleton of your customized room book stamp.

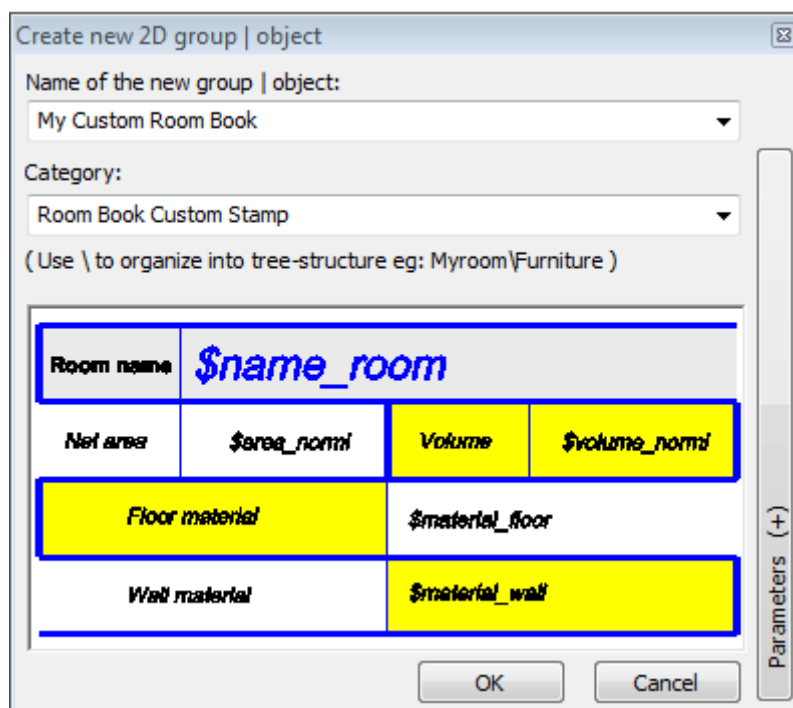
| | | | |
|----------------|--|--------|--|
| Room name | | | |
| Net area | | Volume | |
| Floor material | | | |
| Wall material | | | |

- Use the **Building menu – Room book – Customize – Add parameter** command to insert room book data variables into the skeleton.
- Select variables you would like to insert into the skeleton in the **Room Book Custom Stamp** dialog and then place variables in the appropriate order into the skeleton. After that you can still change the text format of the variables, if necessary.



| | | | |
|----------------|--------------|------------------|----------------|
| Room name | \$name_room | | |
| Net area | \$area_norml | Volume | \$volume_norml |
| Floor material | | \$material_floor | |
| Wall material | | \$material_wall | |

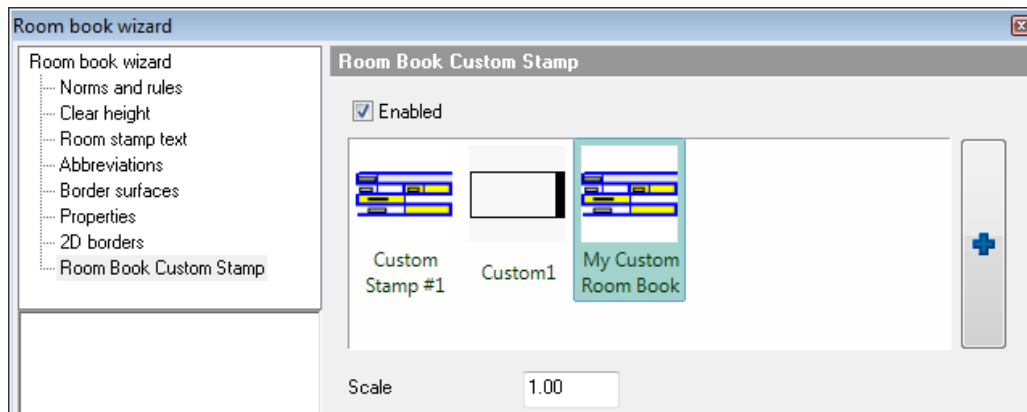
- Use the **Building menu – Room book – Customize – Create Stamp** command to create and save the final form of your customized room book stamp.
- Select room book stamp elements you created before with rectangle selection.
- Specify the reference points you can use when you will place your customized room book stamp.
- Specify the name of your custom room book stamp to save it into your group library.



Using a predefined custom room book stamp

As soon as you created and saved your custom room book stamp into the Room Book Custom Stamp category, you can use it for placing a room book stamp.

- Click *Room Book Custom Stamp* in Room book wizard.
- Make the Room Book Custom Stamp enabled and select a predefined room book custom stamp.



- Be sure that you enabled the necessary variables on *Room stamp text* page.
- Enter a different scale factor if you want to make your room stamp larger or smaller.
- Click **Ok** to close *Room book wizard* dialog and place your customized room book stamp with the actual data.

9.5.1.9. Connection between room book sets and room border surface templates

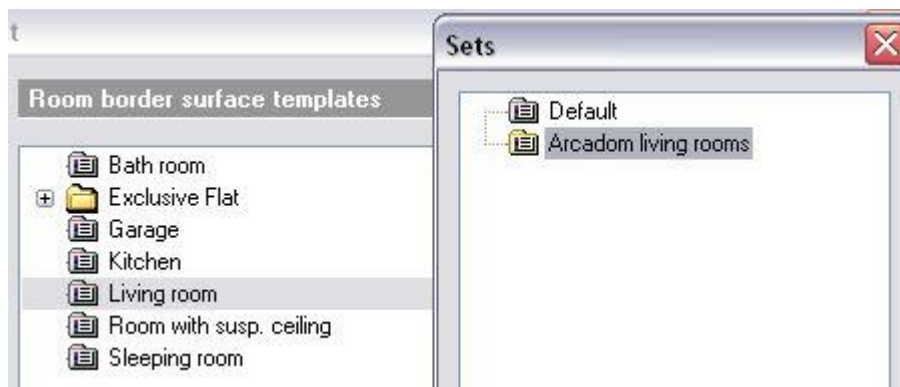
Similarly to other sets of architectural objects it is possible to manage room book sets, too. Click **Sets** in the **Room book wizard - define set** dialog to manage room book sets. **Sets** dialog will appear on the right side. You can manage sets as usual using the buttons on the bottom of the dialog.

For a given room book set the following room book settings are stored:









- ❖ Norms and rules.
- ❖ Clear height.
- ❖ Room stamp text.
- ❖ Abbreviations.
- ❖ Border surfaces: only the name of the room border surface template.
- ❖ Properties.

The room border surface template settings (conditional material surface settings - description codes) don't get saved in a room book set. Only the name of the used template is stored in the set. This means that a modification in a room border surface template will modify all the room books which use this template.

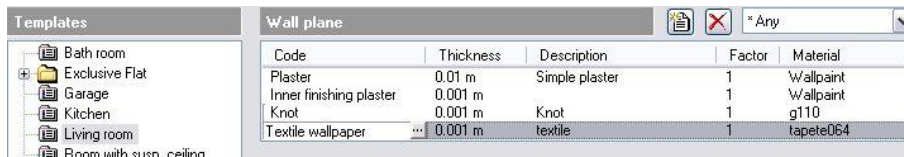
Let's create a set with the name *Arcadom living rooms*, for example. *Arcadom living rooms* set uses the *Living room* template.



The conditional material surface settings of wall plane in *Living room* template are the followings:

| | | | | | | |
|---|--|-------------------------|-----------|---|--------|-----------|
| Templates | | Wall plane | |   * Any | | |
| <div> Bath room</div> <div> Exclusive Flat</div> <div> Garage</div> <div> Kitchen</div> <div> Living room</div> <div> Room with susp. ceiling</div> | | Code | Thickness | Description | Factor | Material |
| | | Plaster | 0.01 m | Simple plaster | 1 | Wallpaint |
| | | Inner finishing plaster | 0.001 m | | 1 | Wallpaint |
| | | Knot | 0.001 m | Knot | 1 | g110 |
| | | Disperzit | 0.001 m | Internal painting | 1 | Stucco2 |
| | | | | | | |

Let's modify the *Living room* template so that the last layer (emulsion paint called Disperzit) is replaced by wallpaper.




- Click on **OK** and select the *Overwrite the original set* option.

From now on if you create room books by *Arcadom living rooms* set or update your existing room books based on *Arcadom living rooms* set then the last layer of these room books will be set automatically to wallpaper without changing the settings of *Arcadom living room* set.

9.5.2. Serial placing of more room books

By this command you can quickly create room books in different rooms in sequence. In this case the program will use the activated room book set and there is no way of applying rules that require input (for example manual selections of freely defined areas are not possible).

- If You click right on the  Room book tool, in the appearing Room book wizard dialog select the proper room book set (or set the preferences), which You would like to use by room book placing. **Ok**
- Point inside a room bounded by single walls.
- Place the room stamp.
- Repeat the above steps for other rooms, too.

9.5.3. Room book inside a free polygon

Using the command the room book is created by the user defined polygon.

You can modify its boundary and the room book calculation follows the modifications.

! Of course this type of the room book is not associated to the walls, therefore does not follow the wall modifications.

This command does not consider the surrounding walls, slabs or roofs; only a right prism with a polygon base will be created.

We suggest you to use  *Room book inside a free polygon* command in the next cases:

- ❖ To create separate room books to rooms that have different functionalities but are not separated by walls or other border surfaces.
- ❖ This command is also very handy if you have areas you want to include in the room stamp calculations but these areas haven't got side walls and roofs like balconies. In this case it is enough to define the coverings for the floor only so other coverings will not appear in 3D.
- Define a closed chain. Use the keywords if necessary.
- Define the height of the room.
- In the **Room book wizard** dialog specify the room book parameters and close the dialog.
- Place the room stamp on the drawing.

The tooltip signs the type of the inserted room book:



Room book inside a free polygon

•

9.5.4. Modify the boundary of the room book

With this command you can modify the contour of an existing room book.

- Select the room stamp of the room book you want to modify.
- Modify the profile of the room contour using the profile editing tools.
- According to the changes made in the contour the room book will be updated.

 The command is valid for the room books, which were created by the  *Calculate room book inside a free polygon* command.

9.5.5. Calculate room book outside a building

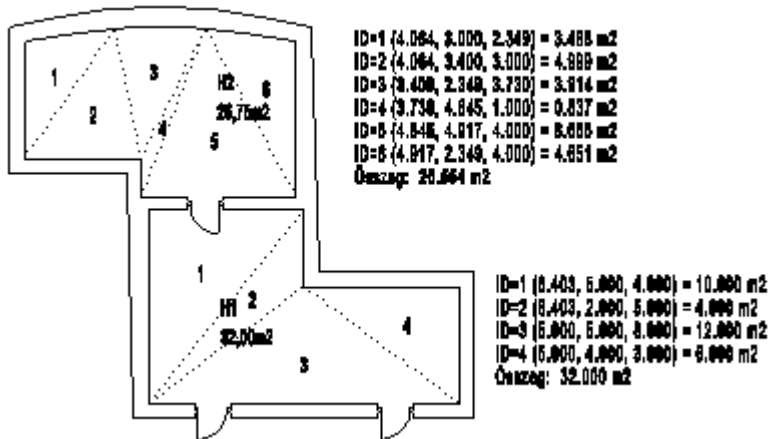
With this command you can place room stamps where room stamp data calculations (area and volume calculations) are applied on the outer contour of the bordering walls / buildings. Conditional material surface settings do not work here.

- Select the outer walls of the building or define the outer contour using the **POLYGON** keyword.
- In the **Room book wizard** dialog specify the room book parameters and close the dialog.
- Place the room stamp.

9.5.6. Diagonal measuring

By this command rooms bounded by walls can be divided into triangles using the diagonal measuring method. The program divides the room into triangles and creates a list, including the area of each triangle and sum of the triangle areas. This method is used as a verifying procedure for area dimensioning.

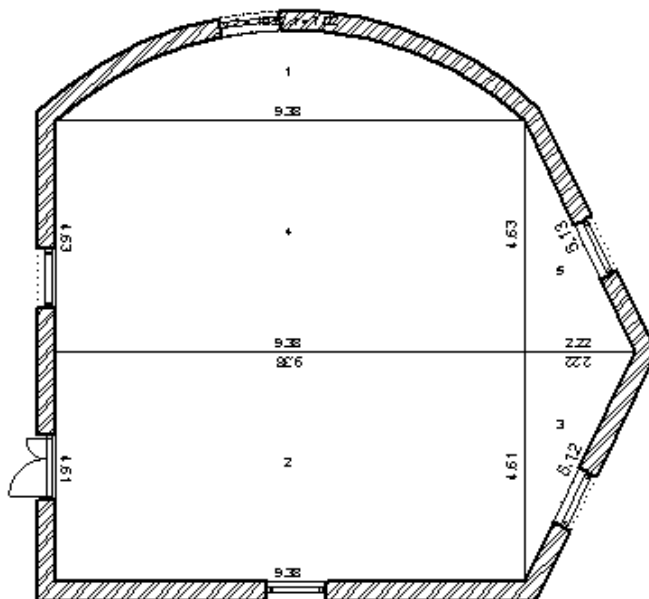
This method can be used even for arched walls. In this case we have to define the resolution of the arc.



9.5.7. Room partitioning and dimensioning

This command can be found in *Room book* tool. With the help of it the area of a room can be divided into rectangles. The program assigns numbers to the partitioning and shows the main dimensions in the selected rooms, and it is possible to place expressions verifying the results.

- Click inside a room to create its division into rectangles.
- The program automatically divides the room, numbers the parts and writes the parameters.



- Place the verifying expressions with the mouse wherever you want. These expressions show in details the area calculations of the area parts and it calculates the total area.

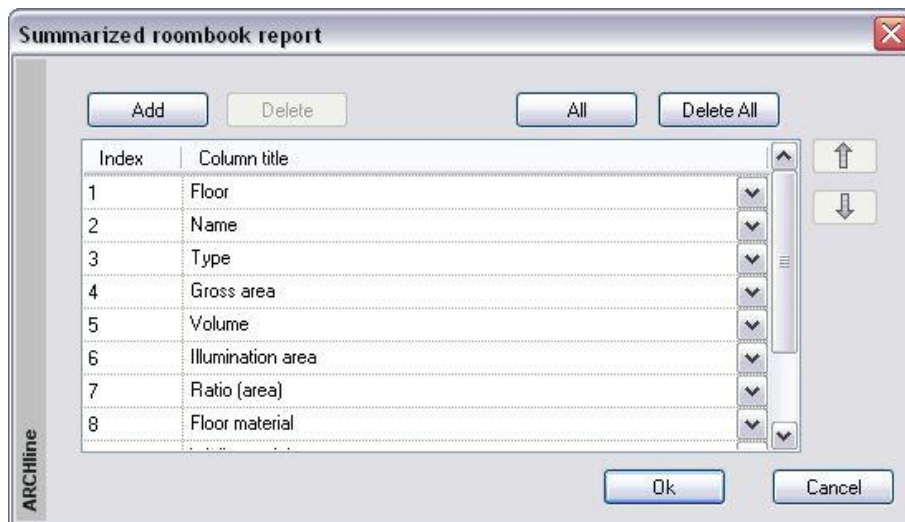
ID: 1, $0.5 \times [6.86 \times 10.30 - 9.36 \times (6.86 - 1.84)] = 11.85 \text{ m}^2$
 ID: 2, $9.36 \times 0.11 / 2 = 0.51 \text{ m}^2$
 ID: 3, $\text{square root}(9.02 \times (9.02 - 8.73) \times (9.02 - 4.06) \times (9.02 - 5.25)) = 6.99 \text{ m}^2$
 ID: 4, $9.62 \times 8.73 = 84.02 \text{ m}^2$
 ID: 5, $0.61 \times 9.36 = 5.72 \text{ m}^2$
 ID: 6, $0.26 \times 0.61 / 2 = 0.08 \text{ m}^2$
 Summa: 109.17 m²

Room partitioning with rectangles as a possibility can also be selected at the bottom of **Room book wizard - Properties** dialog when you put the room book on the drawing, but the expressions verifying the area calculations cannot be placed in this case.

9.5.8. Summarize flats

A table summary can be created about flats and rooms with room stamps based on the current floor or the whole building. You can customize the tables as follows.

The *Summarized room book report* dialog appears. Here you can compose your table for the report. Each row in the dialog represents a column in the report.



- Use the *Add* button to add a new column to your report. The new object will appear in the last row.
- Click *All* to add all options in a default order to the report.
- Select an index and click *Delete* to delete a column from the report.
- Click *Delete all* button if you want to delete all columns and start the composing again.
- Use the arrow buttons to move the selected object up and down.
- Click on a column title to select another title from the roll down list. In the roll down list you can see all options available.
- Click **Ok** to finish the composing of the table and then
- Select the option *Current floor* or *All floors* to create the table based on the current floor or the whole building.
- Insert the table on the drawing.

For the composing of the table we suggest the following methods:


- ❖ First use the *Add* button to add all columns you need in the appropriate order, then delete the unnecessary ones.
- ❖ Use the *Add* button to create as many columns as you want to see in the table, and then do the column title assignment in each row.

The alphabetical ordering in the table is made first by floors, and then by flats.

The table structure is saved into the Support/RoomBookStamp.xml file so next time the program will remember to the previously defined table structure.



Empty columns are automatically detected by the program and will not appear in the table you place on the drawing.

The  *Refresh all* command refreshes all the room books which were created by the *Room book inside a wall* command on the drawing and the related summary table of all room books.

The automatic refreshment will be executed on the first placed summary table on the drawing. The automatic refreshment is only an option. You can cancel the refreshment. In that case the table will be deleted.



Info apartments

The command lists the used area of the rooms and sums them based on the apartment and floors in .rtf format (e.g. Word).

CALCULATION OF USED AREA

office_building_2007_05.pro

Date: 2008/08/11

| Level | Room Name | Length | Width | Brutto Area | Sub. 2% | Netto Area |
|-------|------------------|--------|-------|-------------|---------|---------------|
| Lakás | 17 premises | | | | | |
| | 0 Szoba | | | 11.90 | 0.00 | 11.90 |
| | 0 Fürdő | | | 3.95 | 0.00 | 3.95 |
| | 0 Szoba | | | 8.94 | 0.00 | 8.94 |
| | 0 Előszoba | | | 8.54 | 0.00 | 8.54 |
| | 0 HTH | | | 2.02 | 0.00 | 2.02 |
| | 0 Fürdő | | | 3.25 | 0.00 | 3.25 |
| | 0 Kamra | | | 2.44 | 0.00 | 2.44 |
| | 0 Konyha | | | 5.76 | 0.00 | 5.76 |
| | 0 Nappali-Etkező | | | 22.77 | 0.00 | 22.77 |
| | 0 Előszoba | | | 7.16 | 0.00 | 7.16 |
| | | | | | | 76.73 |
| | 0 Kamra | | | 2.77 | 0.00 | 2.77 |
| | 0 Fürdő | | | 7.44 | 0.00 | 7.44 |
| | 0 Konyha | | | 7.23 | 0.00 | 7.23 |
| | 0 Nappali-Etkező | | | 31.79 | 0.00 | 31.79 |
| | 0 WC | | | 1.45 | 0.00 | 1.45 |
| | 0 Szoba | | | 9.53 | 0.00 | 9.53 |
| | 0 Szoba | | | 13.71 | 0.00 | 13.71 |
| | | | | | | 73.92 |
| | Used area | | | | | 150.65 |
| | Total used area | | | | | 150.65 |



Info rooms

The command prepares a detailed list about the rooms in .rtf format (e.g. Word):

ARCHline^{XP}

ROOM INFORMATION

c:\archlinexp2008_draw\presentation_project\office_building\office_building_2007_05.pro

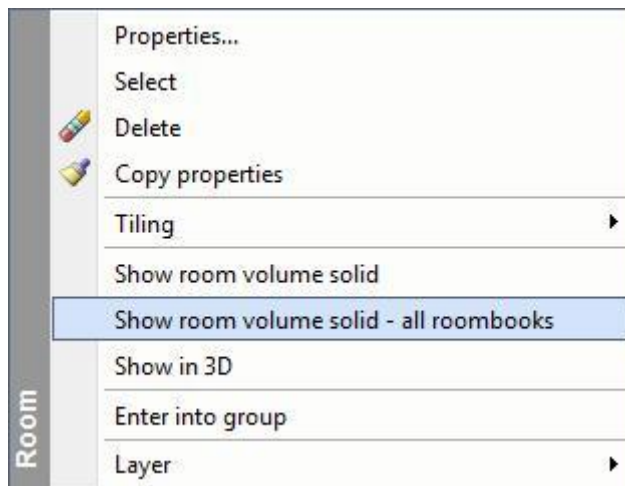
Date: 2008/08/11

Előszoba


| | | |
|--------------------------|--|----------------------|
| Room area | 1.71*2.88 3.87*0.92 2.93*0.02 | 8.54 m ² |
| Perimeter | 2.88 + 1.23 + 0.93 + 0.92 + 3.87 + 3.82 + 1.71 | 15.37 m |
| Windows area (0 Windows) | | |
| Doors area (4 Doors) | 1.54 + 1.54 + 2.29 + 1.79 | 7.17 m ² |
| Walls surface | 4.21 + 3.13 + 0.00 + 2.34 + 7.57 + 7.94 + 4.36 | 29.54 m ² |
| Volume | | 22.76 m ³ |
| Note | | |

9.5.9. Show Room volume solid

The command: Show room volume solid – all room books. Generates the 3D volume of room book.



9.5.10. Refresh all room book

The command  Refresh, refresh all the room books which were created by the *Room book inside a wall* command on the drawing and the related summary table of all room books.

Refreshing room book

When you made changes on existing rooms that have room stamp data and these data are not valid because of the changes, by this command you can update all room stamp data automatically.

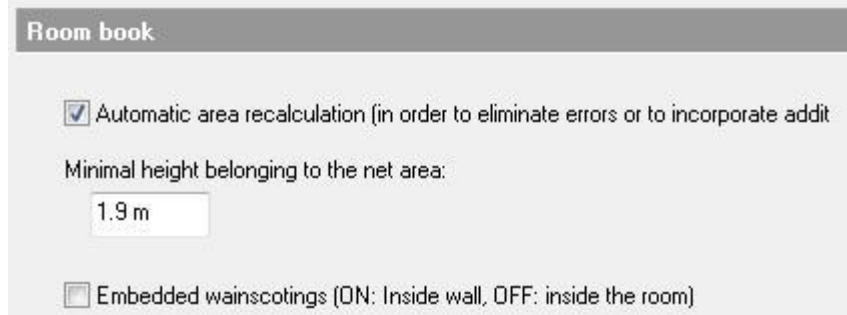
Refreshing summary table

If the summary table exists on the plan, before closing the *Refresh* command the *Summarized room book report* dialog appears and you can refresh the first instance of the Summarized room-book table placed on the drawing.

Attention: Closing the dialog with Cancel button the first instance will be deleted from the drawing!

Automatic area recalculation

If you switch on the *Automatic area recalculation* option in the *File menu- Preferences – General – Room book dialog*, the room books which were created by the *Room book inside a wall* command follow the area modification.

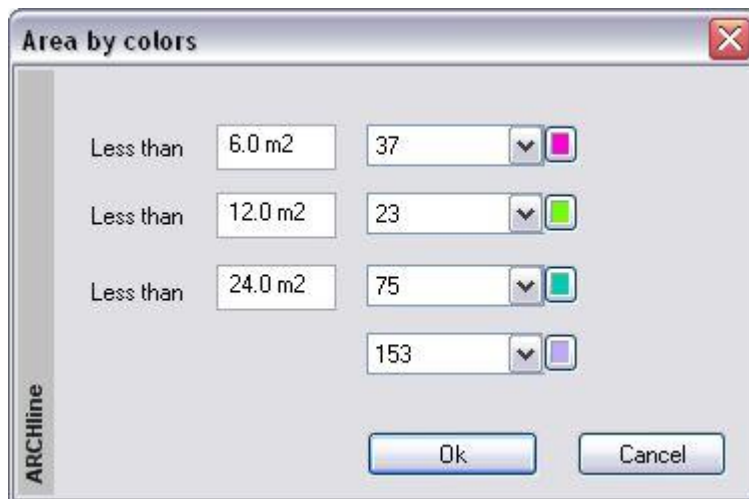


The refreshing might take a long time, therefore we suggest you to switch off the option and use the *Refresh* command.

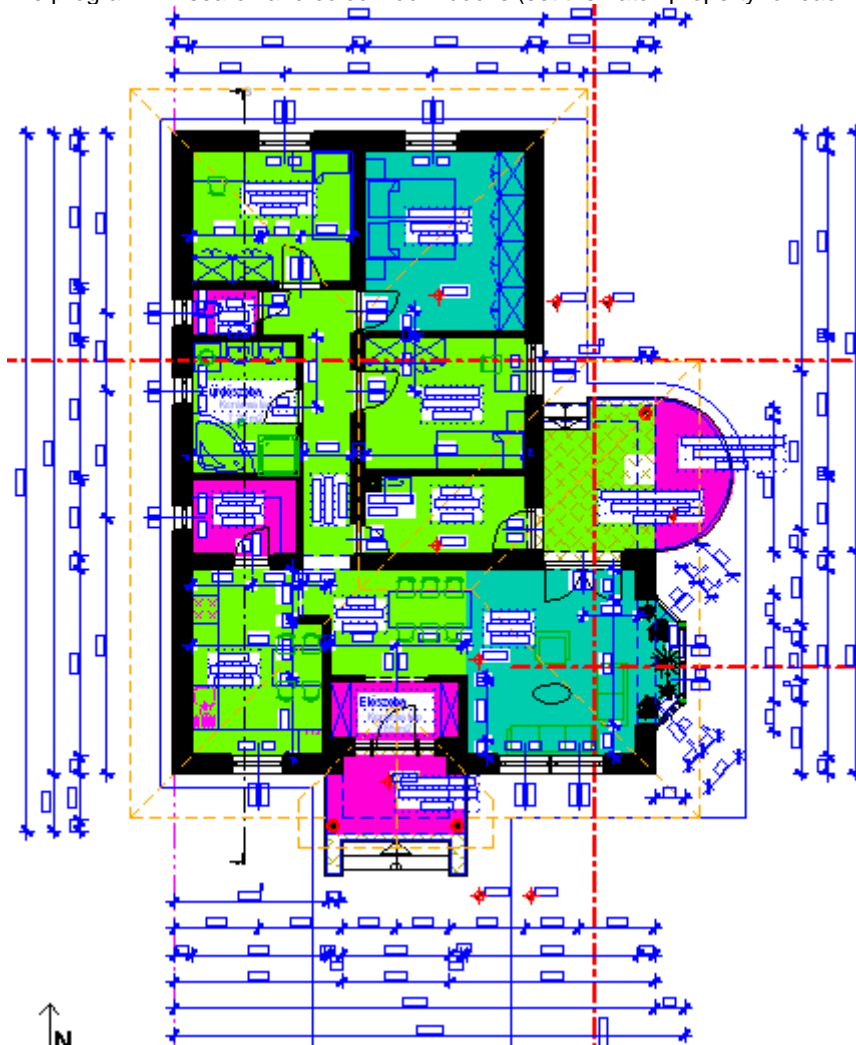
9.5.11. Colouring rooms by area

The use of *Colouring rooms by area* command is a fast way of colouring room books with different colours, according to their gross area.

- After creating room books Click  *Colouring rooms by area* icon.
- In the appearing dialog set the area categories, then assign colours to the area categories.



- Click **Ok** to execute the command.
- The program will search and colour room books (set the hatch property for each room book) according to the settings.



To cancel the colouring switch off the *Hatch* option room by room in the *Room book wizard – Room stamp* text dialog.

9.6. Stair

Introduction

The stair is one of the most complex architecture objects, especially in case of irregular stairs. It is easy to handle this complexity with *ARCHLine.XP®* functionalities which provide different possibilities of creating stairs. In case of new projects it is very handy to use *predefined* stair types first. Later the program enables to change the stair geometry as you like. This way the creation of irregular stair geometry can start with a *predefined* stair which gives freedom to the architect. The method of *stair by threads* can be used for special stair geometry or for stairs with given dimensions in a surveyed building.

Stair ergonomics

It gives help in design, in case of stairs chosen from the stair folder, if you look after continuously during the design, that ergonomics requirements specified in standards be realized. The *ARCHLine.XP®* signs the stepping over limits according to the DIN standard with red colour to the user.

It doesn't forbid the creating of the stair, if it doesn't come up to ergonomics requirements.

Cutting out slabs above stair

The program enables to cut out slabs above stair. The program recognizes the slab(s) above the selected stair and cuts them out by command. The cutting width is determined by the stair width. The cutting length is determined by the free height defined by the user among the stair standards: the program searches for the stair step where the level difference between the bottom of the slab and the stair step reaches the free height. This way a man who is not taller than the given free height can go up to the stair.

9.6.1. Stair standards

If you monitor continuously the ergonomic requirements defined by standards in case of stairs selected from the stair library, it can help you in the drawing of stairs. For this give possibility the **File -Preferences - Stair standard** dialog box.



See the description in the chapter 3.1.5. *Setting stair standard*.

9.6.2. Stair properties

The general stair properties have to be defined before placing a stair. These properties are available through either the



Stair tool by right mouse click, or in the **Building -Properties - Stair** menu.

Any change in the settings will be applied to the stairs constructed afterwards.

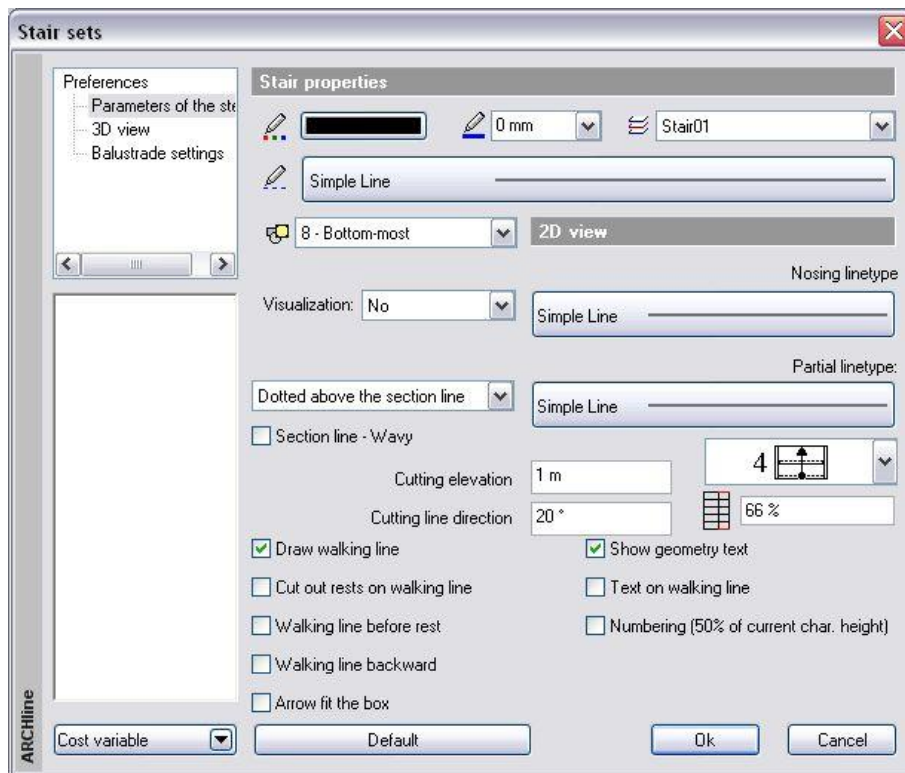
9.6.2.1. Stair Parameters

Preferences

Parameters of the steps

3D view

Click Stair *parameters* on the left side. 2D view properties will appear:



Stair properties

General 2D view settings can be made here: colour, width, layer, line type, priority.



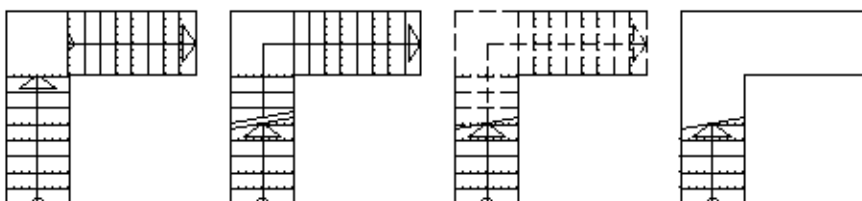
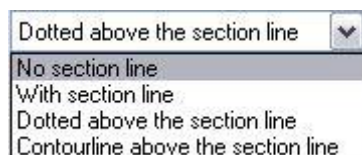
For detailed description of *Stair properties* see chapter 3.2.1 on *Specifying general properties*, for Internal variables see chapter 3.2.4. on *Assigning cost variables*, for *Sets* see chapter 3.2.3. on *Using sets of properties*.

2D view

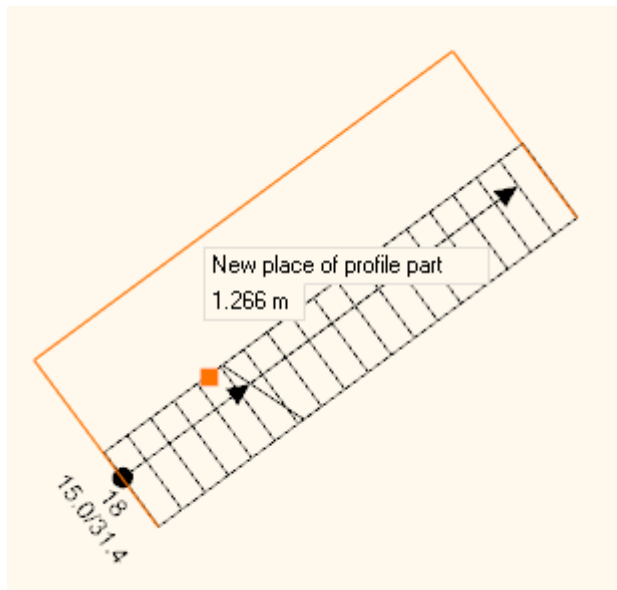
- ❖ You can specify the **Nosing line type** and its visualization. You can select from three visualization options: without nosing line, with nosing line along the stair and with nosing line up to the section line.



- ❖ The visualization of cutting line is optional: the cutting elevation and the cutting line direction can be set. **Partial line type** and its visualization can be set, too.



Right clicking on the stair symbol and choosing Edit one side / Offset lets you handle one side of a stair as a single unit, instead of edit it thread-by-thread or node-by-node.

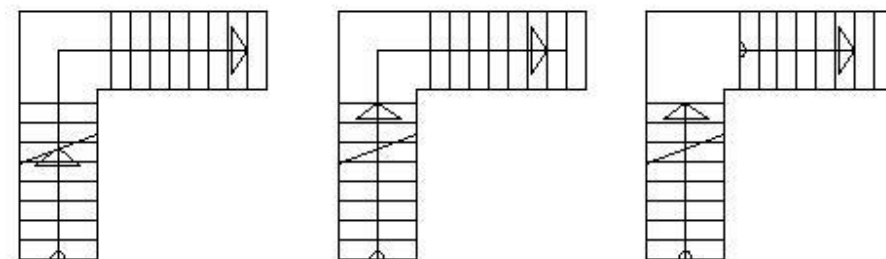


Cut out rest of walking line

Using this option, the program cuts the rest section from the walking line.

Walking line before rest

Using this option, the arrow of the walking line goes through the section line and stops before the rest.



OFF ON

ON

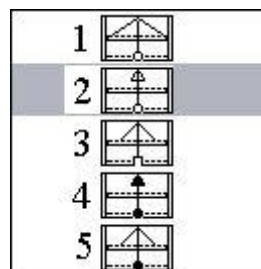
On the last graphic the *Cut out rest of walking line* option is switch on.

Arrow fit the box

The visualization mode of the walking line can be selected from a drop-down list. Different arrow types and the arrow fit the box option are available.

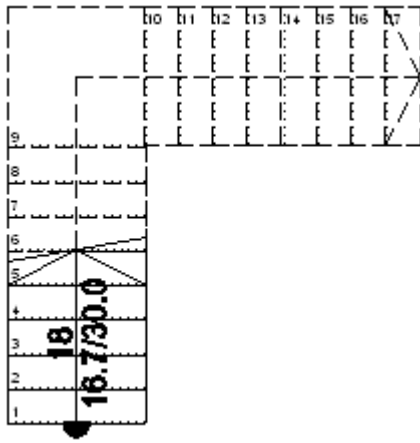
Numbering

The numbering of the stair steps is also possible.



Show geometry text

Show geometry text option will place the number of stair steps, the riser and tread on the walking line when the **Text on walking line** option is switch on, otherwise it will go below the 2D drawing of the stair. It doesn't place, if you switch off the Show geometry text option.

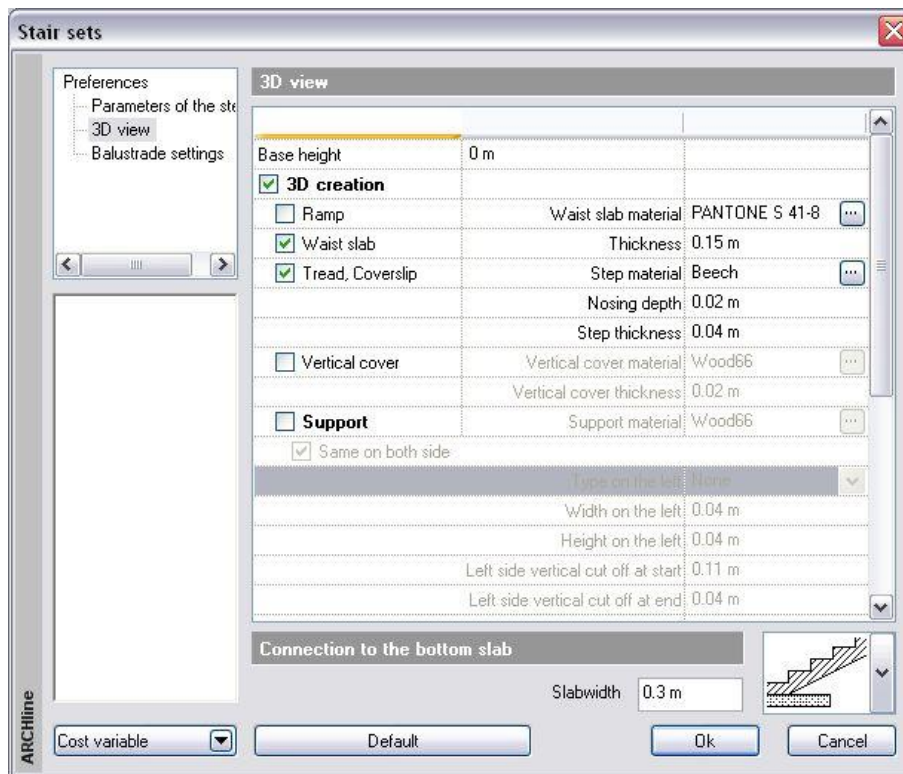


9.6.2.2. 3D view

Preferences
Parameters of the staircase
3D view

Click **3D view** on the left side. 3D view properties will appear:

Basic settings for stair 3D volume can be set here.



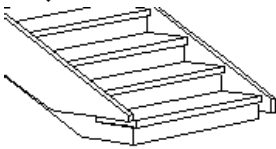
- ❖ You can specify the **base height** where the stair starts from. Base height is relative to the related floor.
- ❖ The architecture of the stair is optional. It can be **ramp**, **waist slab** or **tread, cover slip**. In case of **ramp** choice the numbering of stair steps and the **vertical cover** and **tread, cover slip** options are not available, of course.
- ❖ In case of **ramp** or **tread, cover slip** choice the **waist slab material** and **thickness** are available to set.
- ❖ By the **Tread, Cover slip** options you can place cover slips on the waist slab. Without waist slab option only the cover slips will appear. This way stairs with steelwork can be constructed.



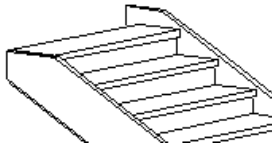
In the 3D window the stair will not appear if you switch off the **Ramp**, **Waist slab** and **Tread, cover slips** options.

- ❖ For the cover slip you can specify the **step material**, **nosing depth** and **step thickness**.
- ❖ You can place **vertical cover** between stair steps by checking this option. You can specify their **material** and **thickness** independently from cover slips.
- ❖ By **support** option you can place supports on one side or on both sides of the stair.

- ❖ Explanation to the support cutting settings:



Right side vertical cut off at start is 10 cm; left side vertical cut off at start is 0 cm. Vertical cut off starts from the height of the first stair step downwards. Right side horizontal cut off at start is 10 cm; left side horizontal cut off at start is 0 cm. Horizontal cut off starts from the first nosing line outwards.



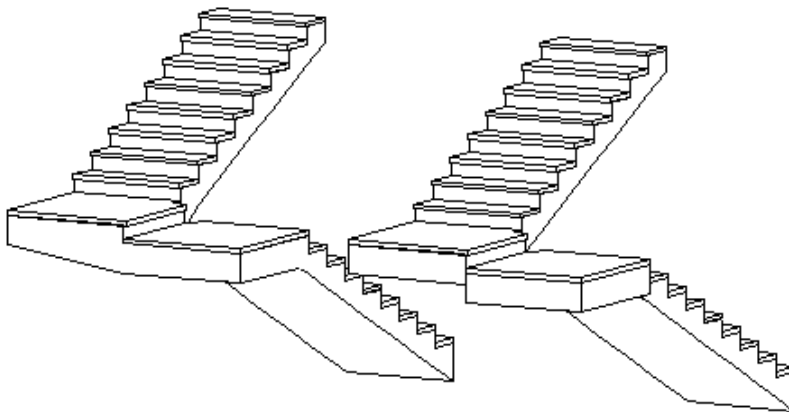
Right side vertical cut off at end is 10 cm; left side vertical cut off at end is 0 cm. Vertical cut off starts from the height of the last stair step upwards. Right side horizontal cut off at end is 10 cm; right side horizontal cut off at end is 0 cm. Horizontal cut off starts from the back contour line of the last step outwards.

- ❖ The **construct the rest like a slab** and **adjust the bottom face of the top slab** options are not available here because their availability depend from the actual stair settings.

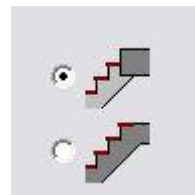
- ❖

| | |
|-------------------------------------|---|
| <input checked="" type="checkbox"/> | Construct the rest like a slab |
| <input checked="" type="checkbox"/> | Adjust to the bottom face of the top slab |
| Thickness of the slab 0.3 m | |

Enable Construct the rest like a slab option to convert the bottom surface of the rest to a horizontal plane in case of stairs with rests. See the U form divided stair, for example.

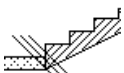


Adjust to the bottom face of the top slab option is available only if the first option is selected in the *Construction* dialog. The second option adjusts the top face of the stair to the top of the slab. In the *3D view* dialog you have to specify the thickness of the slab. The thickness of the waist slab of the stair will not change.



- ❖ Last you can choose the **connection to the bottom** slab from a drop-down list:

1.



In this case the stair is independent from slab.

2.



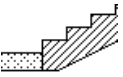
In this case the stair starts from the base height. This connection is independent from slab thickness.

The next two connection types are used between floors:

3.

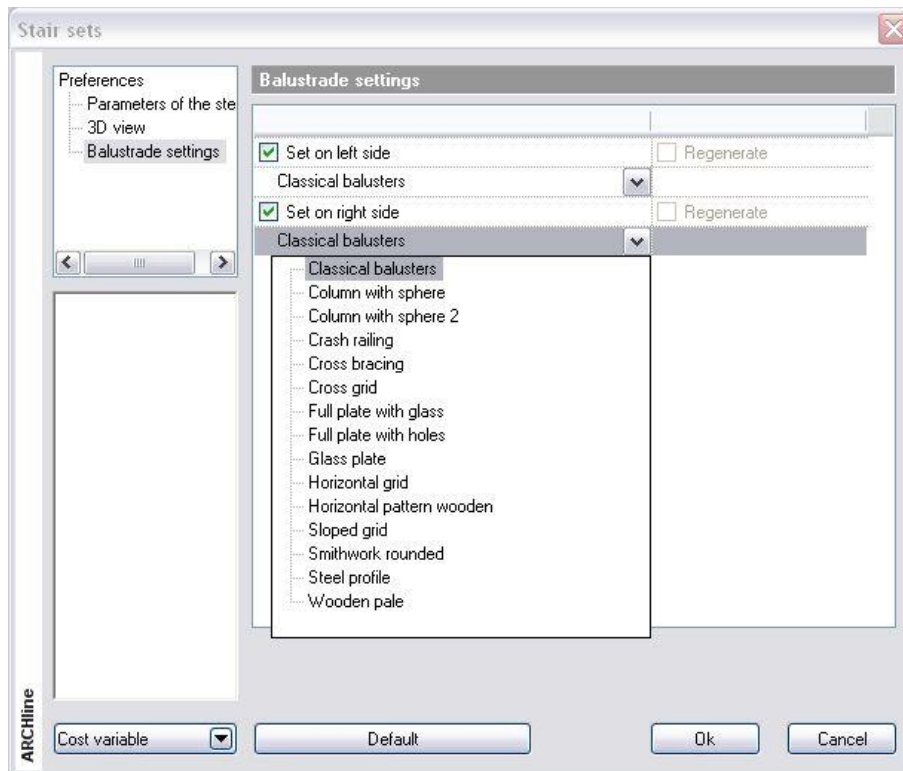


The bottom of the stair is aligned to the bottom face of the slab. In this case the stair waist slab thickness will change according to the slab thickness. Slab thickness is required.

4.  The bottom of the stair is cut horizontally according to the slab thickness. Slab thickness is required. Stair waist slab thickness will not change.

9.6.2.3. Balustrade settings

Click *Balustrade settings* on the left side. Predefined balustrade types will appear:




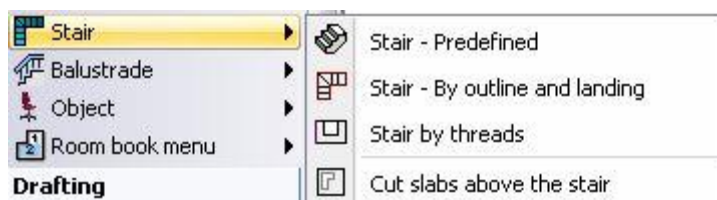
- ❖ You can specify whether the *Balustrade* will be generated **on the left side** and **on the right side**.
- ❖ The **Regenerate** checkbox can be activated when you modify an existing stair. The regenerate balustrade feature restores the original balustrade form deleting all eventual manual changes you did on it

9.6.3. Creating stairs

There are three ways of creating stairs.

- ❖ Predefined stairs (stair library)
- ❖ Stair by outline and landing (stairway)
- ❖ Stair by threads (only the profile of the stair steps are given)

You can create and place stair using the first three commands in  **Stair tool**:



Stair - Predefined

These are predefined stair forms in library with variable properties. The common stairs can be constructed this way.

Stair - By outline and landing

When you create a stair in this way, first you have to define the location of the stairway, and then you can divide this stairway area into stair steps. First you have to decide on the location of the stair by giving its route. This will be a stairway defined by the right and left sides of both arms. All stair steps will be inside this area. The next step is to divide this area into stair steps by giving the geometry.

The line sections given on both sides of the arms will be divided by the number of stair steps. The tread of stair steps will be equal to the length derived from the divisions. The rest will be resulted from the area between the arms.

Stair by threads

Many times you need stairs that are not found in the predefined stair library and cannot be created by defining simply the arms, or even the rising of the stair steps is not equal along the arms, e.g. in case of surveyed stairs. *Stair by threads* method will help in these situations. In that case the step height can be assigned to the individual stair step profiles.

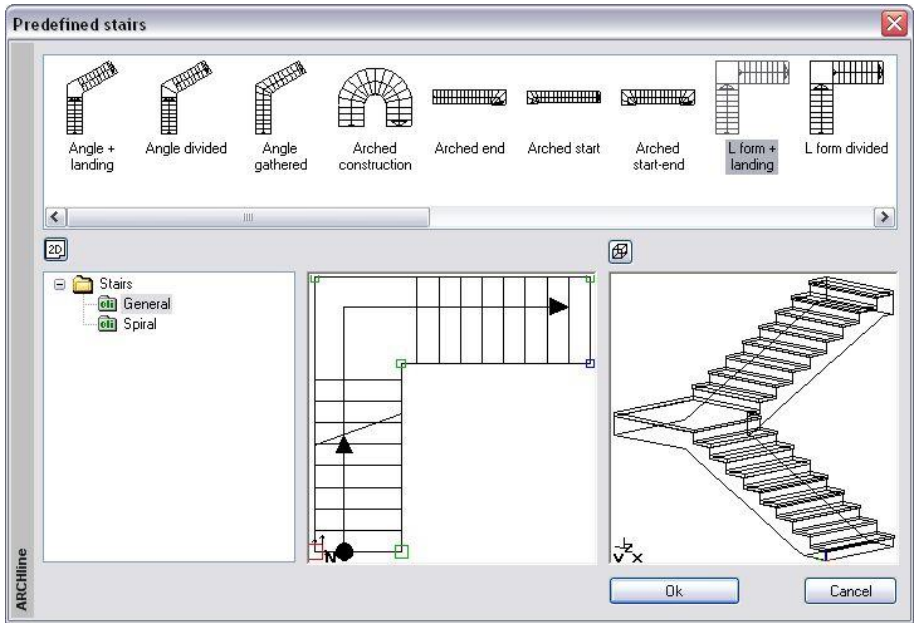
9.6.3.1. Predefined stairs

This is the simplest way of creating new stairs. The predefined stairs library contains the most commonly used stair types. The method is the following:

- ❖ Stair type and reference point selection
- ❖ Graphic placing
- ❖ Construction parameter settings
- ❖ 2D view properties
- ❖ 3D view properties

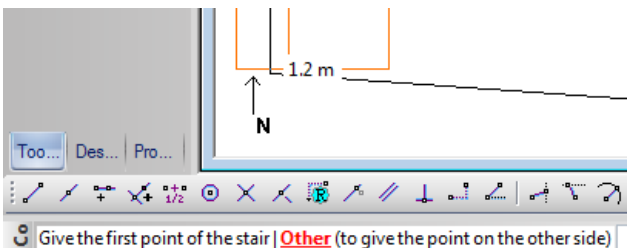
Stair type and reference point selection

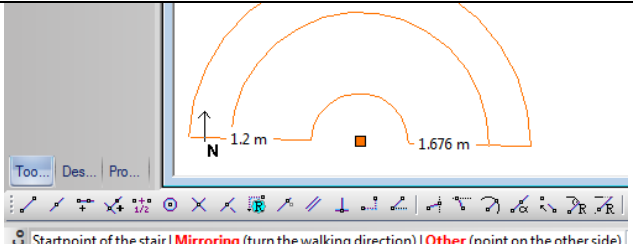
•



- Select your stair type and reference point. The active reference point is denoted by a red square. Close the dialog with Ok. You can place now the stair in the drawing with the selected reference point.
- Place the stair on the 2D draw with the cursor by giving the main geometrical points.
- At the main geometrical points you can use the keywords in the Command line if you want to change the stair route direction or you want to define a reference point on the opposite side.

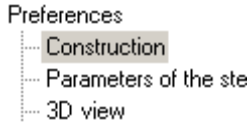
Options:

| | |
|--------|---|
| OTHER | <p>You can define the point on the opposite side of the stair.</p>  |
| MIRROR | <p>In case of spiral stairs you can change the route direction.</p> |

| | |
|-------|--|
| |  |
| Width | Define the width of the stair |

After placing a stair the **Predefined stairs** dialog box will pop up. Here you can set the construction parameters, 2D view and 3D view properties.

Construction parameter settings



Click *Construction* to specify the parameters of the steps and the geometry of staircase. The available stair geometry parameters depend on the stair type.

Parameters of the steps

Depending on the stair type different parameters appear. Each parameter is denoted by a drawing symbol as follows:



Total height of the stair (H)
Check the *Take the floor height* option if you want to make the stair and floor height equal automatically.



Stair ergonomics (2h + w)
Beside the actual value the minimum and maximum values defined in the stair standards are shown here. If the actual value exceeds the stair standard limit the background of the field will change to red.



Tread (w)
Beside the actual value the minimum and maximum values defined in the stair standards are shown here (see the description of *Stair standards*). If the actual value exceeds the stair standard limit the background of the field will change to red.



Riser (h)
Beside the actual value the minimum and maximum values defined in the stair standards are shown here. If the actual value exceeds the stair standard limit the background of the field will change to red.



Number of steps (n)
This is the number of steps necessary to cope with the total height of the stair.

In case of gathered stairs and stairs with more arms the number of stair step edges for each arm appears under the *Number of steps*.

Two types of **connections to the top slab** can be chosen:



One option is when the last step of the stair goes on the slab. If the total stair height is 3 m and the riser is 16 cm for example, the stair body goes up to 2.84 m and the last step will be on the slab.

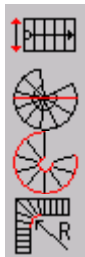


The other option is when the level of the last stair step is equal with the top of the slab. In this example the stair body goes up to 3 m. In that case it is worth to cut out the profile of the last stair step from the top slab. The thickness of the slab can be specified in the *3D view* dialog.

When you choose the **Ramp** option in the *3D view* settings the types of connections to the top slab options are not available.

Geometry of the staircase

Depending on the stair type you can specify different geometry parameters. Each parameter is denoted by a drawing symbol. These can be as follows:



Stair width
This parameter is available for all stair types.

Outer diameter of spiral
This is available only for spiral stair types.

Convolution angle
Available only for spiral stairs.

Inner radius or taper off distance
Depending on the stair type this symbol represents either the inner radius or taper off distance of the stair. For example it means inner radius in case of spiral stairs, and inner taper off distance for U form



winded stair.

Outer radius or taper off distance

Depending on the stair type this symbol represents either the outer radius or taper off distance of the stair. For example it means outer radius in case of spiral stairs, and outer taper off distance for U form divided stair.

Walking line distance

The distance between the walking line and the side of the stair.

Square side length

Available only for *Spiral square* stairs.

Major axis length of an ellipse

Available only for elliptic stair.

Minor axis length of an ellipse

Available only for elliptic stair.

Twisting angle

Available only for elliptic stair.

Length on the left side

Length of the stair on the left side measured in 2D view.

Length on the right side

Length of the stair on the right side measured in 2D view.

Total stair width

Length of the rest

Total stair length

Available only for T form stair.

Total stair width

Available only for T form stair.

Length of the left arm of the stair

Available only for T form stair.

The length of the longer side of the bottom arm in 2D view

The length of the longer side of the top arm in 2D view

Available only for L form and angled stairs.

Angle

Available only for angle gathered and angle divided stairs.

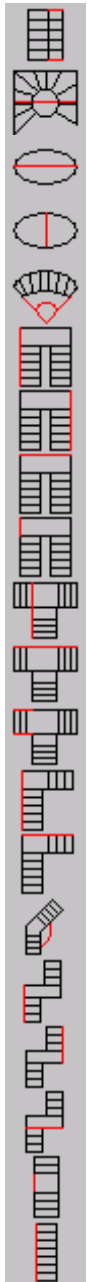
Total length of the lower arm and the rest

Total length of the upper arm and the rest

Total stair width

Length of the rest

Length of the stair



- During the construction of the stair you can specify both the parameters of the steps and the stair geometry. The architect can use lock buttons beside the parameters. According to the state of the lock buttons it is enable to give constrains or leave the parameters to be changed. The locks can have three states:



Open

The value of the parameter can change as a result of modification of any parameter. By clicking on an open-state lock you can switch to closed-state.



Closed

The value of this parameter is a given constrain and it will not change if we change any other parameter. Click the lock button again to turn its state into *open*.



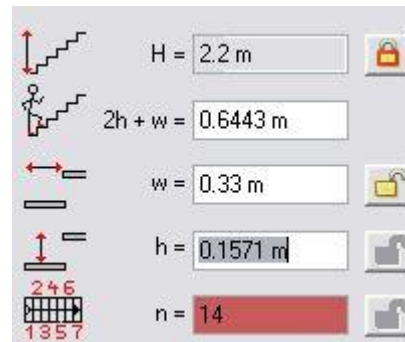
Inactive

The value of this parameter may change if we modify other parameter values. Depending from the other parameter values you can either modify the value in the input field or not. It is not possible to change the state of this button by clicking on it. In this state there is no way to get to the *open* or *closed* state.

- One change made in a state of a button can change the state of other buttons that are not *closed*. The parameter values in the fields are calculated automatically. Any change made in a field will be followed by a recalculation in the other fields.

The time needed for the automatic recalculations depends on the modified parameter and the computer configuration but takes no more than a few seconds.

- Sometimes the given constraints do not allow us to change a parameter value to the one we give in the input field. In that case all the parameter values remain unchanged; even the one we wanted to change. In that case the background of the geometry constrain parameter field turn into red.



2D view settings

- Preferences
 - Construction
 - Parameters of the steps
 - 3D view

Click *Parameters of the steps* to specify the general and 2D view properties:

The same properties can be specified here as for the stair sets.



See the detailed description on 9.6.2.1 *Stair Parameters*.

3D view settings

- Preferences
 - Construction
 - Parameters of the steps
 - 3D view

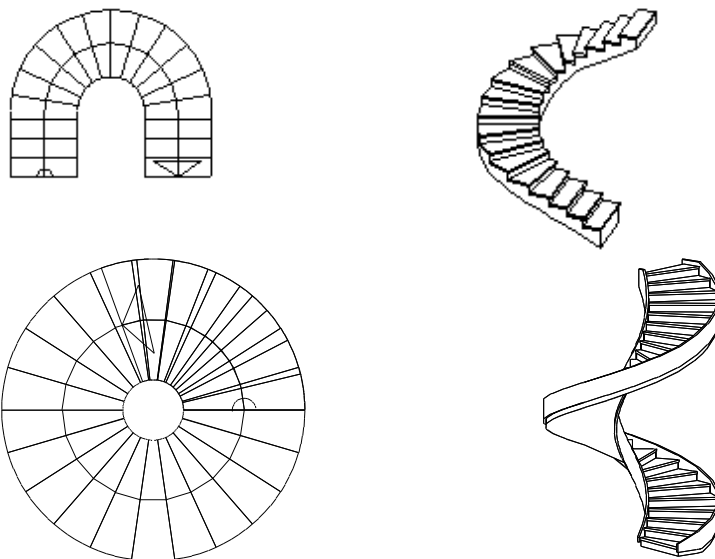
Click *3D view* to specify the 3D view properties.

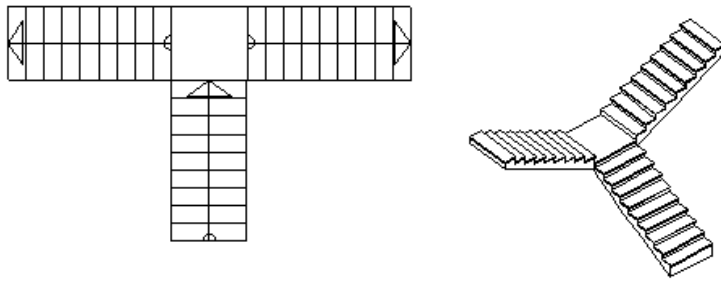
The same properties can be specified here as for the stair sets in general. Depending on the stair type the *construct the rest like a slab* and *adjust to the bottom face of the top slab* options are available.

Construct the rest like a slab option converts the body of the rest into slab shape.

Adjust to the bottom face of the top slab aligns the bottom face of the stair to the bottom face of the top slab. In this case the slab thickness input is required. The waist slab thickness of the stair will not change.

Predefined stairs examples:





9.6.3.2. Stair by outline and landing


You can create stair by outline and landing as follows:

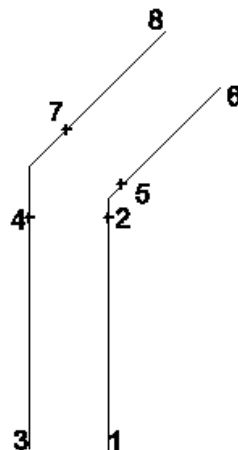
- ❖ Construct the side lines and the location of the rest of the stair.
- ❖ Select the right and left side of the stairway.
- ❖ Define the right and left side sections of the arms before and after the rest by point couples.
- ❖ Specify the number of divisions on the arms.

Both sides of the arms will be divided to equal lengths and these divisions will define the stair steps on the arms. The rest will be the area between the arms defined.

Some rules:

- ❖ The point given first must be the endpoint of the stair. The stair will start upwards from here.
- ❖ The hotspots of the arms are denoted by small squares. If you click outside the arms the program will select the closest existing hotspot on the arm automatically. However, if you select a point on the arm, the automatic hotspot selection function will switch off and the selected point will be accepted.

- Draw the sidelines of the stairway.
- Construct the location of the rest.
- Click  Stair by outline and landing.
- Select the right side objects of the stairway. Use the OPENCHAIN keyword and click on the endpoint if you have open object (1). Enter.
- Select the left side objects of the stairway. Use the OPENCHAIN keyword and click on the endpoint if you have open object (3). Enter.
-



- Specify the first point of the bottom arm on the right side (1).
- Specify the second point on the right side (2).
- Specify the first point of the bottom arm on the left side (3). This point corresponds to the first point given on the opposite side.
- Specify the second point on the left side (4). This point corresponds to the second point given on the opposite side. This way the arm before the rest is defined.
- You can specify the point couples on the next arm similarly (5-6, 7-8). This way the arm after the rest will be defined.

Option:

| | |
|-----------------|---|
| PREVIOUS | The first point of the couple will be the second point of the pervious interval. Available only when there is an existing couple. |
|-----------------|---|

Enter Close the definition.

Divide into steps dialog box will pop up then. Here you can define the number of stair steps in two ways:

- ❖ Use the **Calculate n step by all intervals** option if you want to specify the total number of stair steps along the stair.
- ❖ Use the **Specify n step of intervals** option if you want to specify the number of stair steps individually on each arm.

In case of stair the most important requirement is that it must go up to the next floor.

It has to be specified in the dialog the base level and the top level of the stair, the requested number of steps and the requested height of step. There are two ways to do this:

Specifying the height difference

- Enter the base level of the stair.
- Choose the **Top level** option.
- Enter the top level of the stair.
- Enter either the requested number of steps or the requested height of step.

Divide into steps

Base level: 0

☐ Top level not defined
☒ Top level: 3

☒ Calculate n step by all intervals

☐ Based on right side: 6.304

Requested number of steps: 17

Requested height of step: 0.1875

The width of steps: 0.3708

Possible number of steps and rests: 16 + 0

Number of riser: 16

Height difference: 3

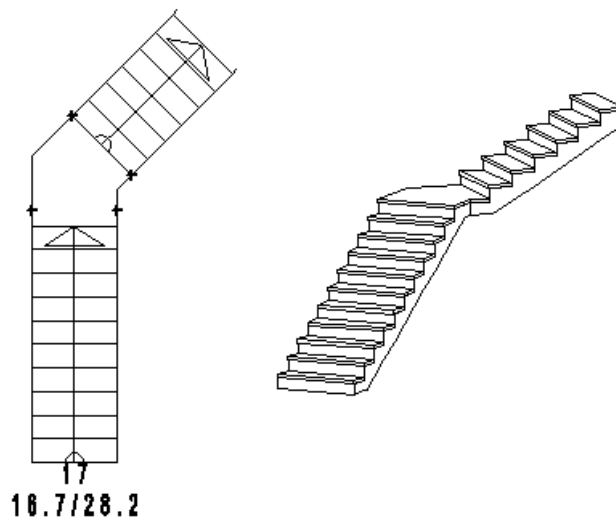
Ok Cancel

Specifying the number of steps and the height of step

- Choose the **Top level not defined** option. In this case you have to specify both the requested number of steps and the requested height of step. These two data determine the top level of the stair.

In both cases the program calculates the width of steps, the possible number of steps and rests, the number of risers and the height difference. All the calculated data are represented in the dialog.

The stair appears and the main parameters will be placed: the number of steps, riser and tread.



9.6.3.3. Stair by threads

The stair by threads method assigns the rising to each stair step profile individually.

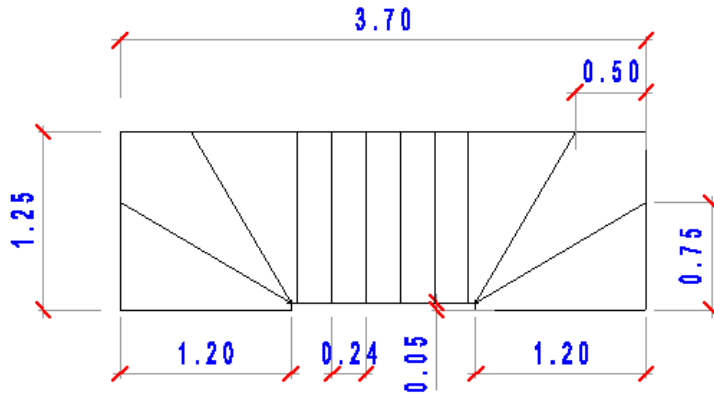
Some rules:


- ❖ Regarding the stair step profile there is no limitation but it must have a closed contour.
- ❖ First the 3D model will be represented by cover slips. Later you can change it by 3D view settings. This is available when you modify the stair.

- ❖ If there is no connection between two stair steps then:
 - the walking line will not be created automatically,
 - it is not possible to build the support and the body of the stair in 3D view.

This means that stair by threads functionality is available only when the back contour of a step will coincide with the front contour of the next step (or shifted parallel by the nosing depth).

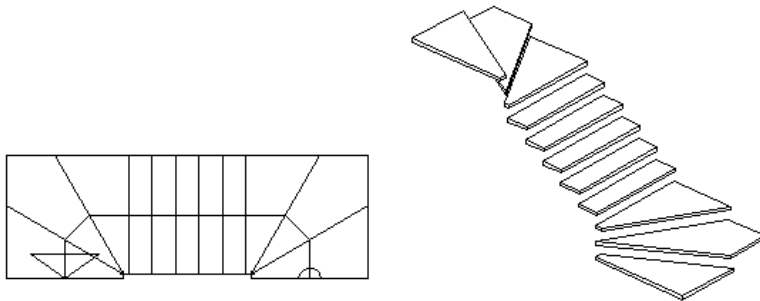
- Construct the closed profile of each stair step:



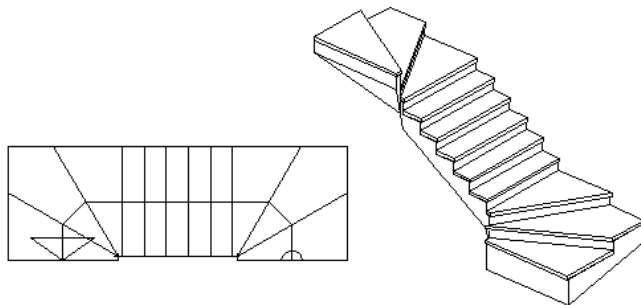
- Click  Stair by threads.
- Give the stair step contour for each step using the *Profile definition* tool in the Toolbox. Use the Internal point of a chain command if you have closed stair step profiles.
- Give the rising of the stair steps.
- Give the stair step contours of the remaining steps.
- **Enter** Close the stair definition.
- Right click on the stair and select the *Shortcut menu – Property* command,
- In the **User defined stairs** dialog click Geometry of the staircase to modify the rising of each step individually.

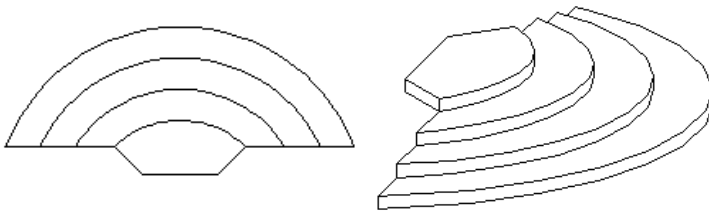


For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.



First the 3D model will be represented by cover slips. Later you can change it by 3D view settings. This is available when you modify the stair.





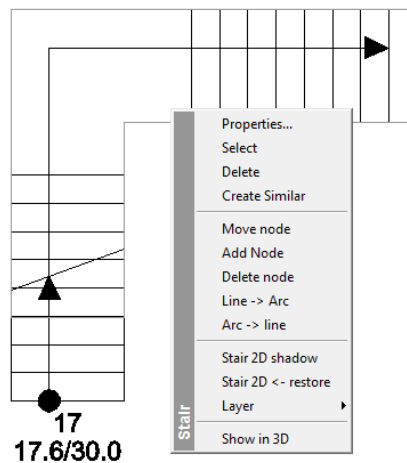
9.6.4. Modification of the stair geometry

You can modify the geometry of the placed stairs.

Modification is available in the **Predefined stairs** or **User defined stairs** dialog box or by using the edit commands. The available edit commands are as follows:

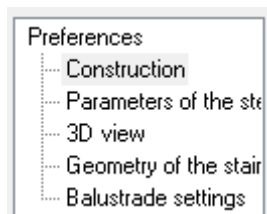
- ❖ Cut the slabs above the stair,
- ❖ Move, add, delete nodes of thread,
- ❖ Modify the sideline of the step contour,
- ❖ Query stair heights

Commands can be chosen from the *Shortcut menu*:



9.6.4.1. Modification of stairs in the *Predefined stairs* or *User defined stairs* dialog box

- Right click on the stair and select the *Shortcut menu – Property* command, make available either the **Predefined stairs** or **User defined stairs dialog**. This dialog box gives different constructional opportunities, compared to that dialog box, which is selected from the stair folder at placing stair.
- ❖ If the stair is a predefined one, the *Construction* menu will be available.



- ❖ The same settings are possible as after placing a predefined stair from the stair library.
- ❖ If the stair is not a predefined one, the *Construction* menu won't be available.
- ❖ If the geometry of steps is modified in the case of predefined stairs, the staircase does not suit the requirements of predefined stairs; this is the reason why the *Edit* command cannot be used in the dialog.
- ❖ The *Geometry of the staircase* is available independently from the original stair type.

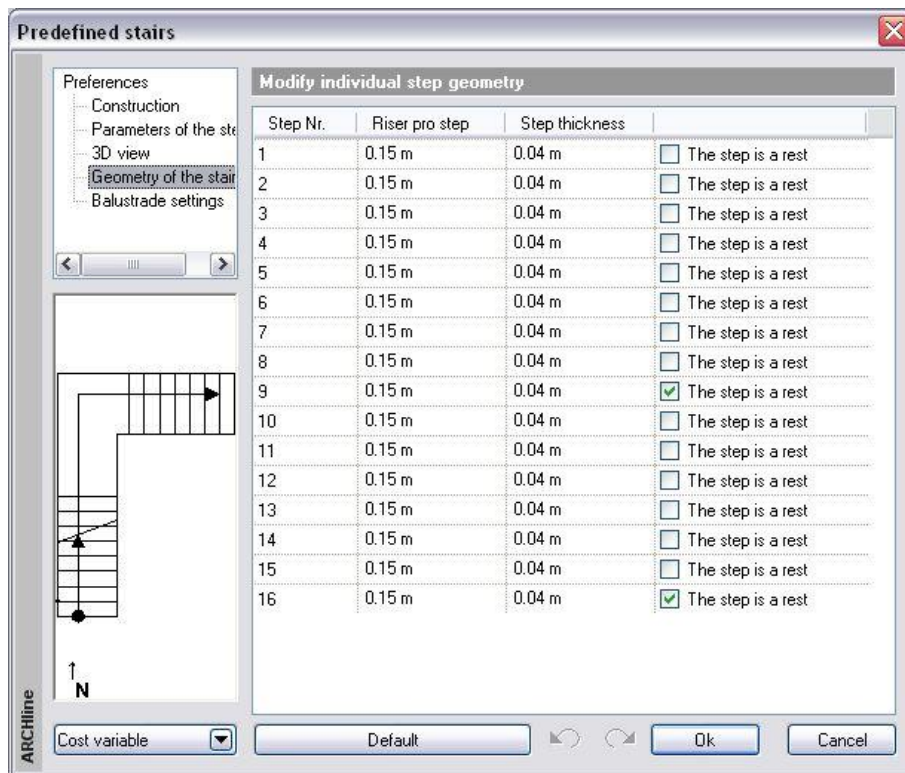
Setting the geometry of staircase

Preferences
Construction
Parameters of the steps
3D view
Geometry of the staircase

Click *Geometry of the staircase* to specify the geometry of individual steps. This menu is available after placing a stair.

The riser per step and step thickness can be set for each step. You can check if the step is a rest.

As we have seen, if the staircase is created by a user or it is a predefined one, but the staircase geometry has been modified, the *Edit* dialog cannot be selected, the height cannot be set there.

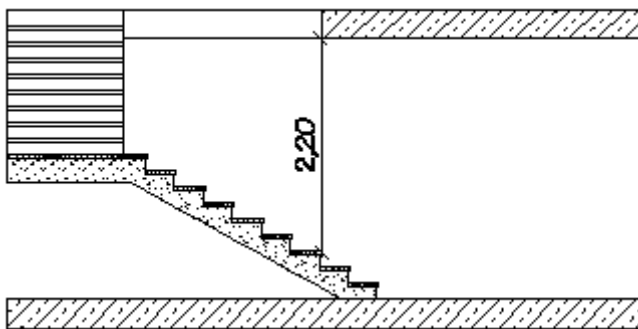


When such staircases are modified, the Stair geometry dialog contains the stair height that can be varied.

9.6.4.2. Cut slabs above stair

The program selects the slab above the stairs and cuts it automatically according to the position of the stairs. In this case the width of the slab cut is defined by the width of the stair. The program finds the step from where the 'free height', i.e. the height set by the user, is equal to the distance between this step and the slab. This allows an adult person to go up the stairs in upright position.

- To execute the command, click on the stair, above you want to cut the slab.
-



9.6.4.3. Move, add, delete nodes of tread

With the Shortcut menu you can move or delete nodes and add new ones to the existing stair steps.

Moving nodes

To change the position of a tread, click on one of its corner points.

Delete nodes

Click on a corner point of a tread to select it, and delete it by choosing the **DELETE NODE** keyword from the command line.

Add nodes

To add new corner points to the stairs, click on one of the stair edges.

9.6.4.4. From straight to arc

For this purpose you can use the following commands in the shortcut menu:

- ❖ Line → Arc
- ❖ Arc → Line

Line → Arc

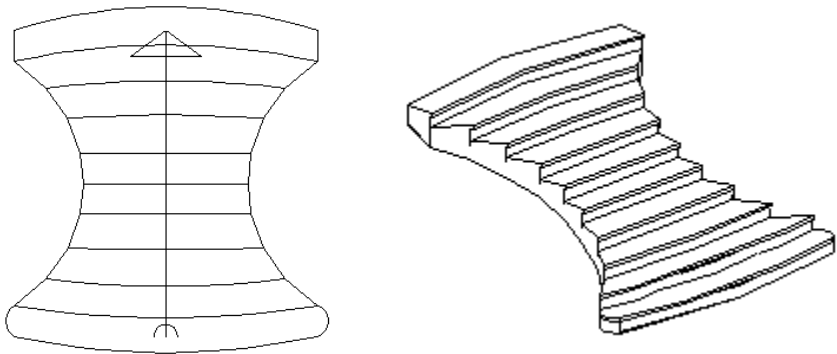
- Select a straight edge of the stair you want to modify or select an arched edge of the stair. In this case you can modify the radius of the arc.
- Specify a point. The arched edge of the stair will touch this point.

Options:

| | |
|-----------|--|
| DIAMETER | Specify diameter. |
| RADIUS | Specify radius. |
| PERIMETER | Specify perimeter (the length of the arc). |
| ARC | Specify the height of the arc. |

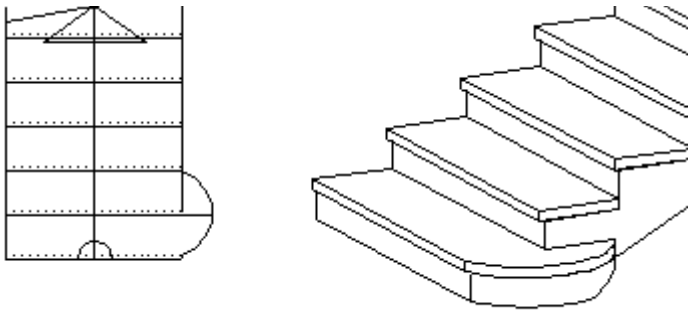
Arc → Line

- Select an arched edge of the stair you want to make straight.



Rounded stair with water drip

The program creates automatically the water drip, in case of stair rounding off, for the straight parts with the given value. It stretches the not cutting arch, so it will be ellipse arch from the circle arch.

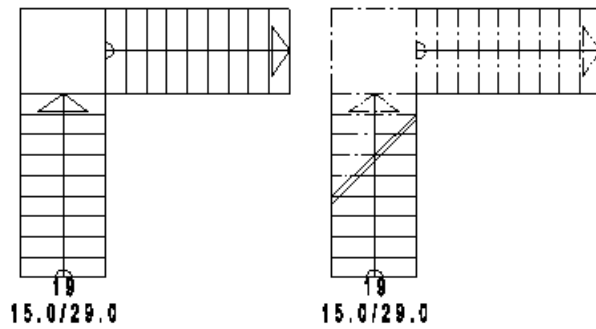


9.6.4.5. Shadow 2D representation

The floor plan visualization of the staircase can be set in the **Predefined stairs - 2D view** dialog. In such cases the staircase can be represented according to the cutting elevation on the floor plan.

If the offered possibility is not enough, the *Shortcut menu - Shadow 2D representation* command can be used to modify the floor plan graphically without affecting the 3D model.

- Select the staircase. Its ID appears. Do not forget this number.
- Edit the floor plan as you wish.
-



If you would like to regain the original floor plan of the staircase, use the *Shortcut menu - Original 2D representation* command.

9.6.4.6. Original 2D representation


The *Shortcut menu – Stair 2D <- restore* command recreates the original floor plan visualization of the staircase. In the appearing dialog the program shows the list of identifiers of those stairs which have been converted to 2D shadow. This way it is easy to select the required identifier and enter it into the command line.



If there is no real stair on the floor-plan and you cannot start the restoring command from the shortcut menu, it is worth to place a temporary stair to use its shortcut menu.

9.7. Balustrades

Balustrades are special objects, which can be placed:

- ❖ *on stair*; in this case the balustrade automatically follows the rise of the stair, or
- ❖ On the *path* (e.g. handrail) defined by the user. Here you have to specify height values .

With the *Balustrade wizard* you can create sophisticated individual balustrades.

Balustrade properties can be stored in sets. If you select a set, the balustrade will be created along the specified path without showing up the balustrade wizard, thus making the design process faster.

When you place a stair, it can be represented together with the selected balustrade.

Balustrades have two main components:

- ❖ *balusters*
- ❖ Handrail.

Balusters

When you define a balustrade, first you have to select the balusters. You can do it:

- ❖ *from the directory*:
Balusters are gathered in a directory as objects. You can create such objects with a solid modeller, so you can enlarge the collection in the directory.
- ❖ *by selecting a profile*:
Here you select the top-view (sectional) image of the balusters from the profile directory.

Handrail

The handrail of the balustrade can be defined with a profile taken from the profile directory. When you select the balusters from a directory, you will find that in case of some pre-made balusters the handrail type is fixed. You are free to choose other handrails from the profile directory.

After putting the handrail into place, you can modify its properties and edit its geometry.

You can select functions to create or edit balustrades:

- ❖ In Toolbox/Building/Balustrade tool:



- ❖ From the **shortcut menu** of the balustrade for editing.
- ❖



9.7.1. Balustrade properties and creating balustrades

When you create a balustrade, you have to define:

- ❖ the Balustrade properties using the Balustrade wizard
- ❖ the balustrade path

Balustrade properties can be saved into sets. The program includes pre-defined basic sets from which you can choose your type.

If you select a set, the balustrade will be created along the specified path without showing up the balustrade wizard.


9.7.1.1. Balustrade properties - Balustrade wizard

You have to define precisely:

- ❖ the baluster height,
- ❖ the handrail height,
- ❖ the position of the reference point of the handrail profile relative to the bottom of the baluster.

The position of the top point of the balustrade - measured from the stairs - on which it is placed; if you install the balustrade with an alignment path, measure height from 0 height of the active floor.

Before placing the balustrade, you have to define balustrade properties:

Right-click the *Toolbox*  *Balustrade tool* or use the *Building menu-Properties - Balustrade* command.

After you activated this command, a Balustrade wizard pops up. You can specify these values in three steps, in the following three dialog boxes:

- ❖ *Edit balusters with object*
- ❖ Edit handrail
- ❖ General preferences



Balustrade properties can be saved into sets. The program includes pre-defined basic sets from which you can choose your type. If you select a set, the balustrade will be created along the specified path without showing up the balustrade wizard.

Editing balusters

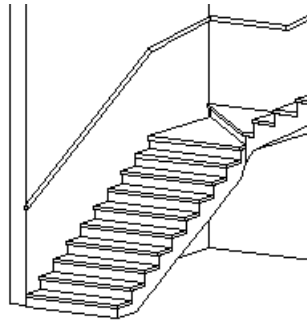
In the first dialog box you can set baluster properties.

Balustrade without balusters:

You can create balustrades without any balusters. To do this, *turn off* the **Enable balusters** option and the program only creates the handrail. You can install such handrails e.g. on the wall by the stairs.

Balustrade with balusters:

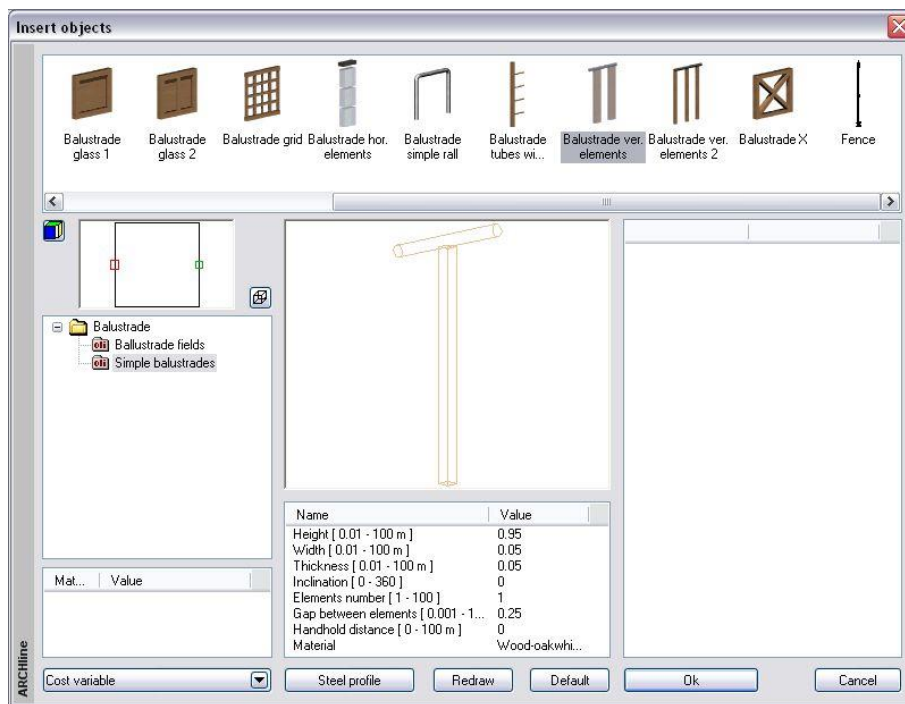
If you want to install balusters, tick the *Enable baluster* option.



You can define the baluster type with objects or with profiles:

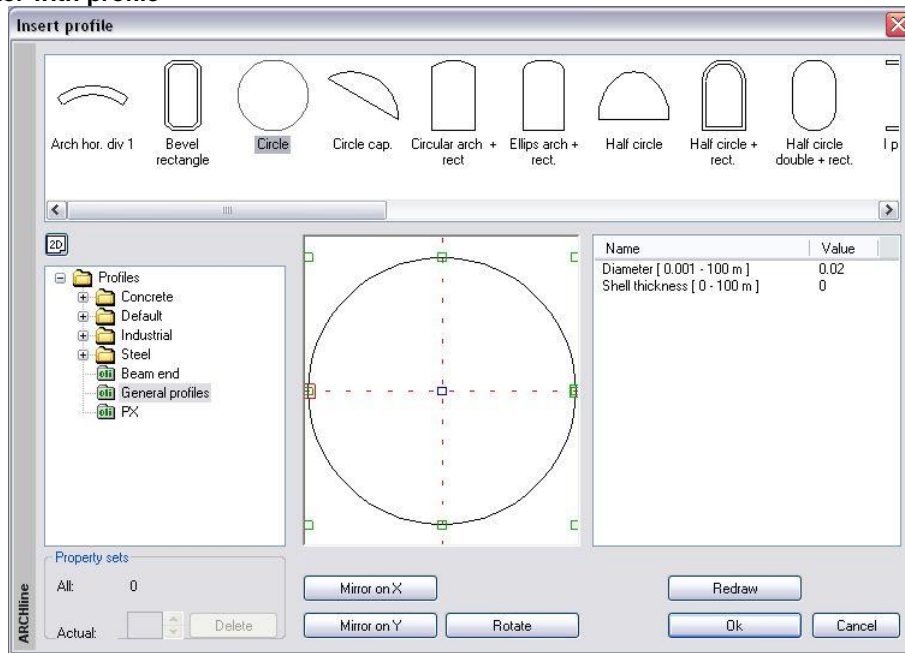
Baluster with object

- Click on the **Object** option, then the **Object selection** button to display the *Insert objects* dialog box.



-
- Select the desired baluster.
- Set the parameters of the selected object. Define the material of the object, as well.
- **Ok** Returns to the *Edit balusters* dialog box.

Baluster with profile



If you want to define balusters with a sectional profile instead of an object:

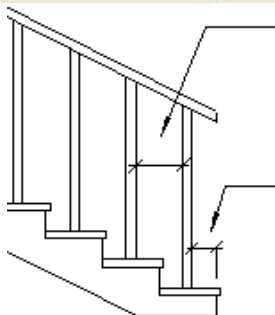
- Click the **Profile** option, then the **Select profile** button to display the **Insert profile** dialog box:
- Select the desired profile from the profile directory.
- Set the parameters of the selected object.
- **Ok** Returns to the *Edit balusters* dialog box.



Read about the **Insert profile** dialog box in detail in Chapter 8.9.10. *Select from list*.

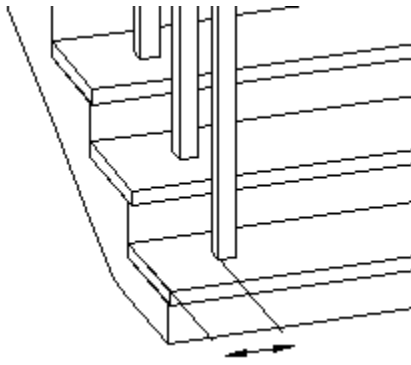
Carry on with settings in the *Edit balusters* dialog box.

- Height of first baluster relative to the 0 height of the active floor.
- Horizontal distance between balusters.
- The distance of the balusters from the alignment path. E.g. balusters can be installed on the side of the staircase structure.
- Distance between the reference point of the handrail and the bottom of the baluster.



Distance between balusters

Position of the first baluster



The distance of the balusters from the alignment path:
in case of positive values balusters are moved to the right,
in case of negative values to the left.

! With the value specified in the *Balusters' distance from the alignment path* field you only move the balusters. In case of handrails, you have to define the value of moving separately.

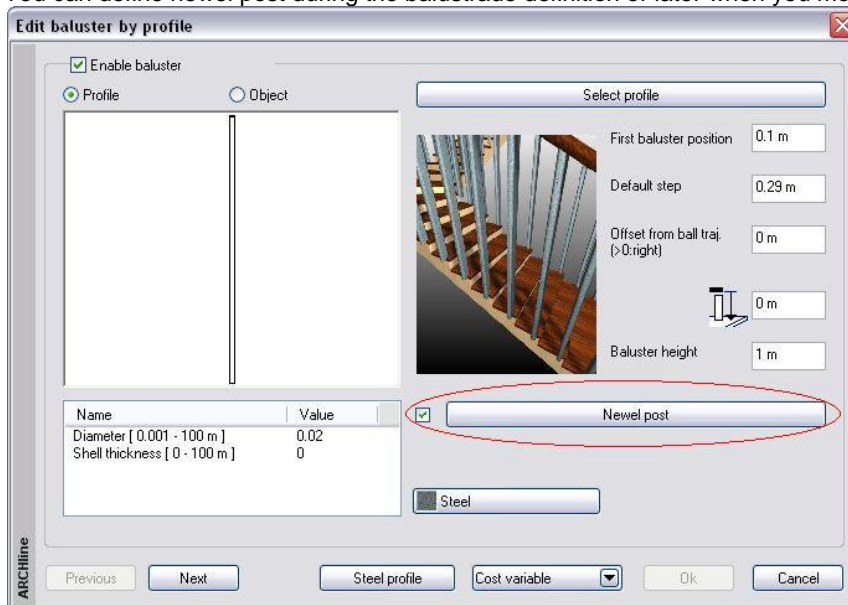
- Press **Next** to display the second dialog.

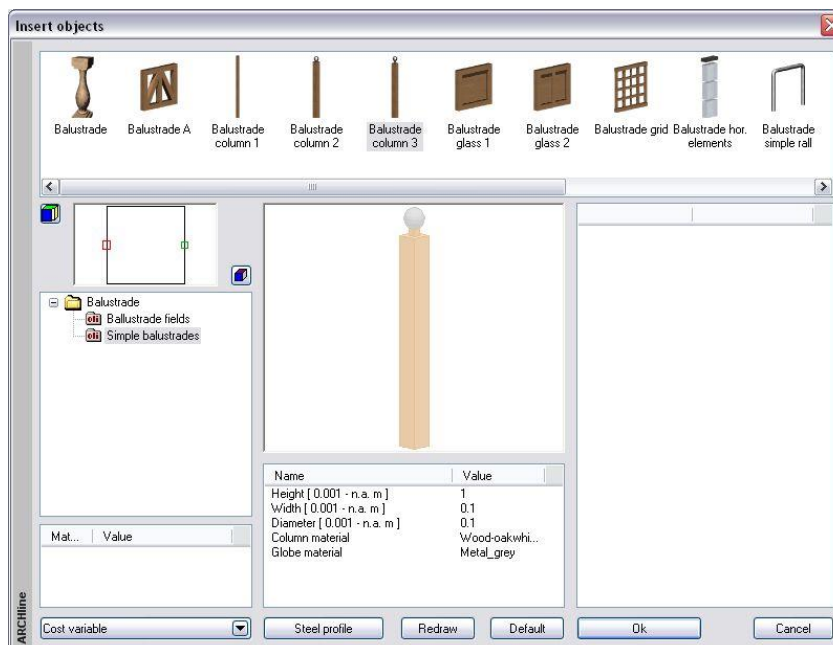
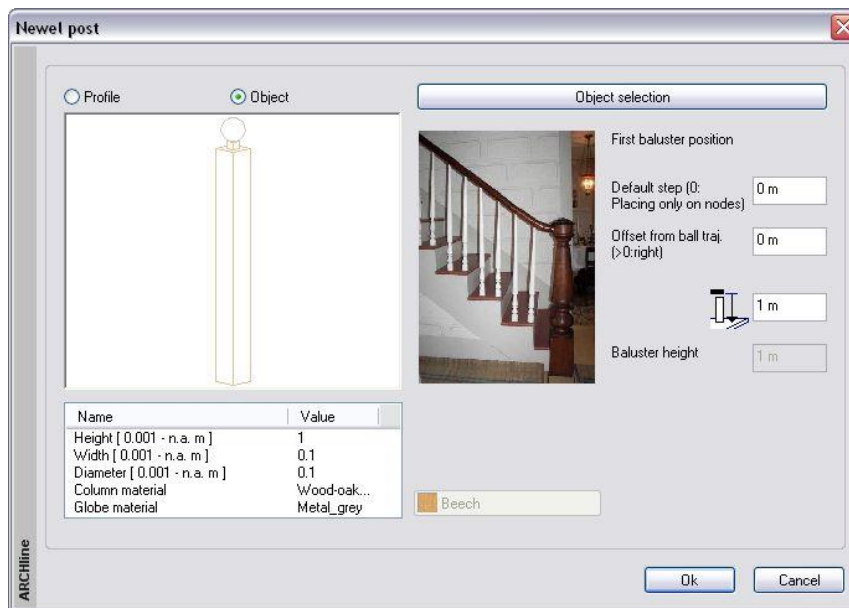
Newel post

Newel post is a tall post at the head or foot of a stair, supporting the handrail.



You can define newel post during the balustrade definition or later when you modify it. .

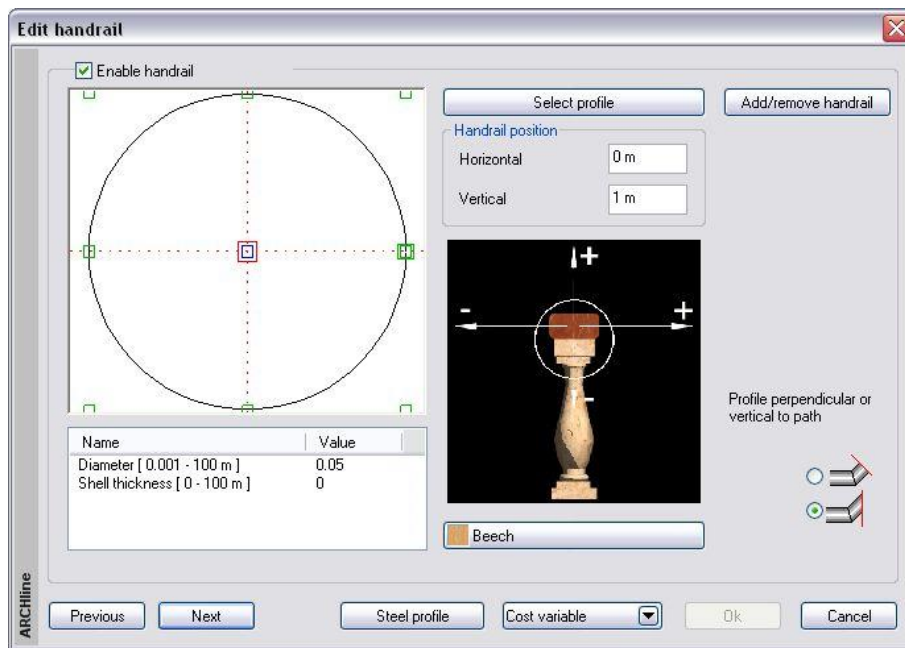




- After selecting the Newel post checkbox, choose an object from the dialog. The program inserts on each balustrade path node this selected object instead of the general object defined to fill the balustrade path.

Editing handrails

You can set handrail parameters in the following dialog box.



- The program displays the handrail only if you tick the **Enable handrail** option.
- Click on the **Select profile** button to display the **Insert profile** dialog box, where you can choose the appropriate profile.
- **Ok** Returns to the *Edit handrails* dialog box.

Carry on with settings in the *Edit handrails* dialog box:

You can define the horizontal and vertical distances between the handrail and the balustrade path in **Position handrail**.

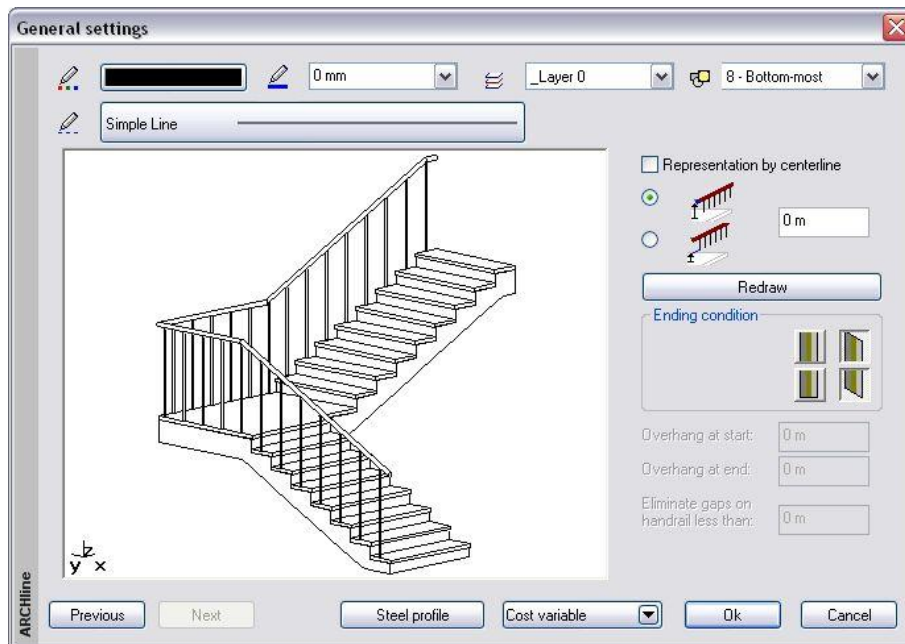
You can specify both positive and negative values.

Click on the **No material** button to display the **Material** dialog box, where you can assign materials to the handrails.

- Click the **Next** button to display the third dialog box.

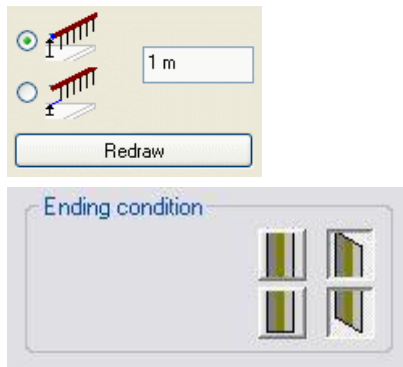
General settings

In this dialog box the whole balustrade is displayed, according to the set parameters.



You can define on which *layer* to put the balustrade. You can also specify the colour and the line type and line width of the balustrade on the floor plan and in 3D environment.

In this field you have to define the distance between the top/bottom of the balustrade and the stairs or alignment



path, where you install the balustrade.

If you place the balustrade on an alignment path, the height specified here is measured from the 0 height of the active floor. You can modify this value when you install the balustrade and the program asks for the height of the points of the alignment path.

Selects the top and bottom ending of the balusters, which can be horizontal or oblique.

Eliminate gaps on handrail

If there is less interruption in the baluster than the given value, the program makes it continuously.


At this point you have defined all parameters of the balustrade. On the image displayed in the dialog you can check the result of your settings. If you want to make further modifications, click the **Previous** button to go back to the second or the first dialog box and modify balustrade properties.

To accept your settings, click Ok.

9.7.1.2. Installing balustrades

Balustrade properties can be saved into sets. The program includes pre-defined basic sets from which you can choose your type.

If you select a set, the balustrade will be created along the specified path without showing up the balustrade wizard.

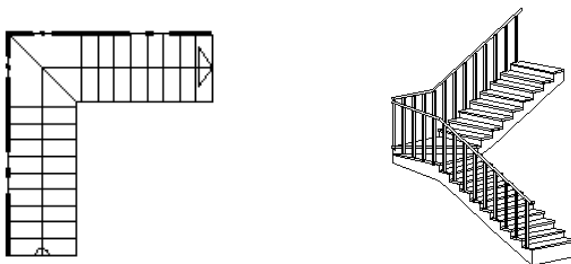
The  *Balustrades tool* offers three possibilities for installing a balustrade. It places it:



Create balustrade on stairs

Select one side of the stairs. The program uses this side as the alignment path of the balustrade.

- Click on one side of the stairs.
If the balustrade set was selected, the program creates the balustrade on the stair.



Create balustrade - open path

You have to define an open alignment path for balustrade.

- Define the points of the alignment path after each other.
The path can contain lines and arcs. When these are joined, the next line or arc can join to the tangent of the previous arc.
- Enter** Completes specifying the alignment path.

Path points with the same height

- After specifying the nodes of the path and pressing *Enter*.
The base height defined in the Balustrade wizard will be assigned to all nodes of the path.

Path points with different heights

- After specifying the nodes of the path you can select the node to which you want to assign a different height.

- Give the height of the node relative to the base height defined in the Balustrade wizard.
- Repeat the node selection and height specification with any other nodes. Pressing *Enter*, the balustrade is created.

Stair

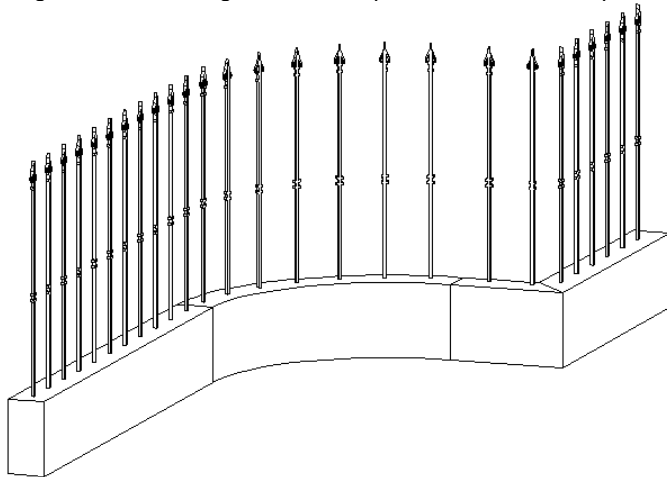
For giving the height value you can choose a point of a stair.

- After selecting the node and the **STAIR** keyword, choose a point of a stair to obtain its height.

Roof

Similarly, for giving the height value you can choose a roof.

- After selecting the node and the **ROOF** keyword, choose a point of an edge of a roof to obtain the required height. By default, the top height of the roof plane at the selected point will be assigned. By selecting the **BOTTOM** keyword, you can assign the bottom height of the roof plane at the selected point.



Create balustrade - closed path

You have to define a closed alignment path for the balustrade.

- Define the points of the alignment path after each other. The path can contain lines and arcs. When these are joined, the next line or arc can join to the tangent of the previous arc.
- **Enter** Completes specifying the alignment path. The command joins the two end-points of the balustrade.

You can assign different height for the points of the path.




See the description in the chapter *Create balustrade - open path*.

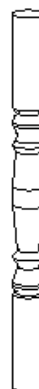
9.7.2. Creating new balusters with solid modelling




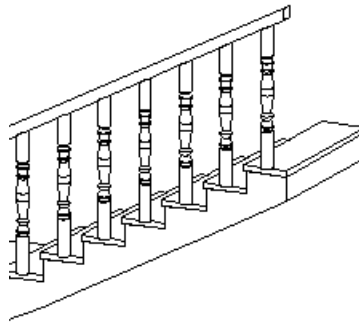
In the *Create balustrade* command we learnt that balusters of a balustrade can be selected from the *Balustrade* directory. You can extend this directory with balusters that you created with the help of the program's solid modeller.

- To create a new object with the solid modeller e.g. draw the longitudinal section of the baluster and rotate it around the rotation axis.
- Save the object thus created as a new object according to

Chapter 9.11.2. *Creating objects* –  *Define custom object*. Make sure that the object is placed in the specified *category* of the *Object* directory.



- When you apply the  *Create balustrade* command, select the new object from the *User defined* category to define the baluster.



9.7.3. Modifying balustrades

You can modify a balustrade after you have installed it. You can change its

- ❖ *properties*,
- ❖ *alignment path* and
- ❖ *Geometry*.

Right-click on the balustrade to display the shortcut menu. It contains the commands to modify baluster properties and to edit balusters.

Modifying properties

Choose the **Properties** command from the *Shortcut menu* of desired balustrade to display the *Balustrade wizard* dialog box, which has been used before creating the baluster. In this dialog box you can modify all properties of the balustrade. These properties only refer to the selected balustrade.



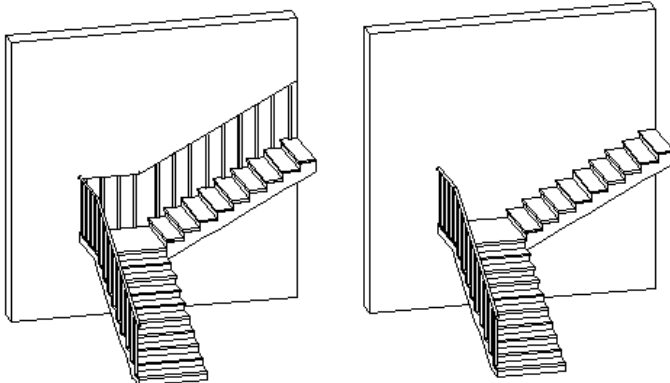
Modify balustrade path

To edit balustrade paths, the program offers the *Toolbox - Edit profile* tool. At this point you can edit the balustrade path on the floor plan (in top view).



See the description of the *Edit Profile tool* in Chapter 8.2.9 *Editable profile*.

With the *Modify balustrade path* command you can easily install a balustrade on only one side of the steps, instead of both sides. To do this, apply the *Delete part* command from the *Edit profile* tool.



Editing balusters on layout image

With this command you can modify the geometry of an existing balustrade.

To achieve the same result click the Balustrade tool -  **Modify balustrade** icon and select the balustrade you want to lay out for editing.



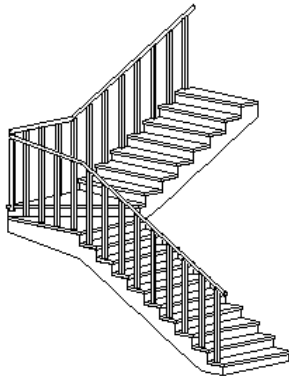
Read about the command in detail in Chapter 9.7.3. *Modifying balustrade*.

Position balustrade layout

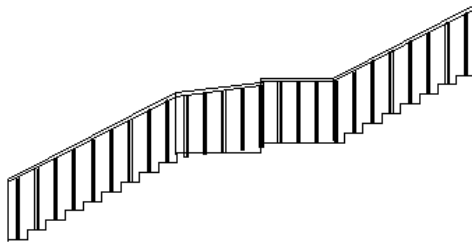
The side view image of the balustrade is laid out on the floor plan. No changes occur.

9.7.4. Edit balustrades

With this command you can modify the geometry of the existing balustrades:



- Select the balustrade whose image you lay out for editing.
- Place the layout image on the floor plan.
-



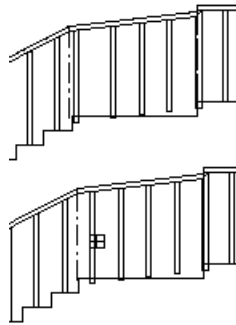
The *Edit railing* tool appears on the *Toolbox*:



Move balusters and handrails

With this command you can move

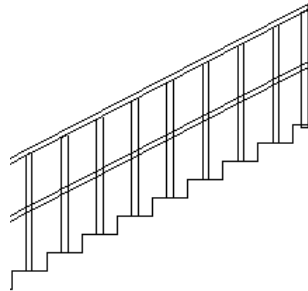
- ❖ the selected handrail and
- ❖ the selected balusters only according to the direction of the balustrade.
- ❖
 - Select the balusters or the handrail.
 - Define the reference point.
 - Define the new position of the balusters/handrail.



Duplicate balusters and handrails

With this command you can duplicate:

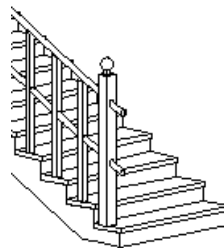
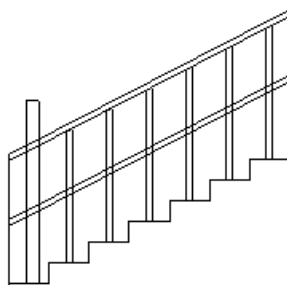
- ❖ the selected handrail and
- ❖ the selected balusters, which you can move only according to the direction of the balustrade.
- ❖
 - Select the balusters or the handrail.
 - Define the reference point.
 - Define the new position of the balusters/handrail.



Modify balusters and handrails

With this command you can modify the type of the selected handrail or baluster.

- Select the balusters or the handrail.
- A dialog box appears, in which you can modify the properties of the selected object.
- E.g. modify the last baluster of the balustrade:



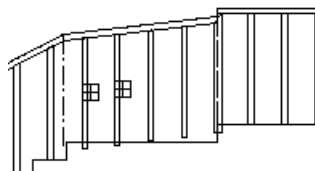
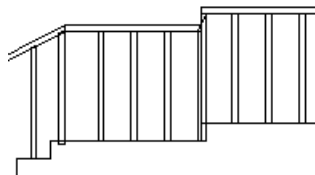
Delete balusters and handrails

Delete the selected baluster or handrail.

Modify balustrade inclination with balusters

You can adjust the balustrade to the stairs. The handrail follows the angle of the stairs and the balusters follow the stairs. Select two balusters to define the part of the balustrade to be aligned with the stairs.

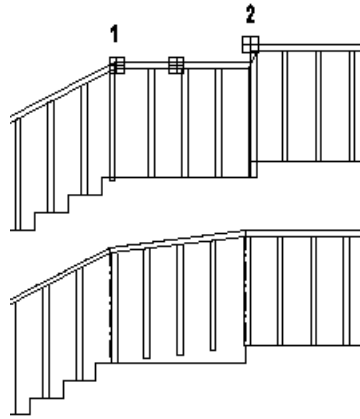
- Select two balusters which indicate the part of the balustrade you want to adjust to the stairs.



Modify balustrade inclination with points

You can define the angle of the selected handrail (together with the balusters) with the direction defined by the two selected points.

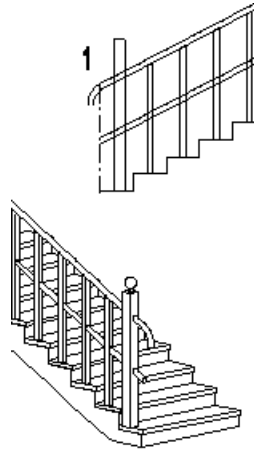
- Select the handrail whose angle you want to modify.
- Select the first point.
- Select the second point to define the angle of the handrail.



Add loose handrail-end

You can add an overhanging end-part to the handrail.

- Using the *Profile definition* tool in the Toolbox define the path of the overhanging handrail, which you add to the layout image of the balustrade. Apply also the **OPENCHAIN** keywords from the Command line.
- Specify the reference point of the selected profile. (See point 1 in the figure.)
- Add the new handrail part to the layout image of the balustrade. (Select point 1 in the figure.)

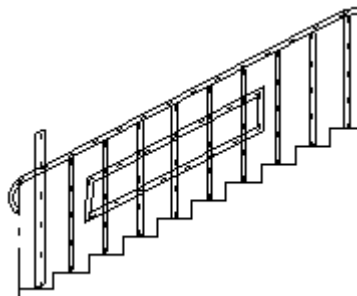


For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.

Add bound handrail-end

You can add a bound end-part to the handrail:

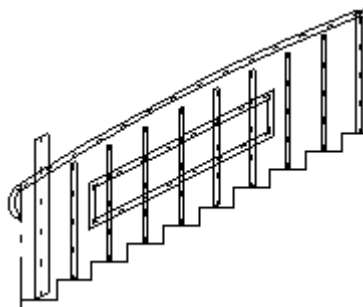
- Using the *Profile definition* tool in the Toolbox define the path of the bound end-part, which you add to the layout image of the balustrade.
- Specify the reference point of the selected profile.
- Add the handrail path to the layout image of the balustrade.



Edit handrail trajectory

You can modify the trajectory of the selected handrail section.

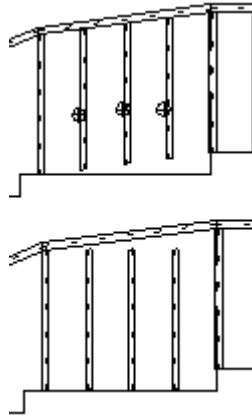
- Select that part of the handrail you want to modify.
- Apply the **Edit profile** commands (e.g. the **Line -> Arc** command).



Adjust balusters to stairs

Adjusts balusters to the stairs. Only the bottom of the baluster is fitted to the stairs. The *length of the balusters does not change*. To adjust the baluster precisely to the stairs, apply the **Adjust balusters to handrail** command.

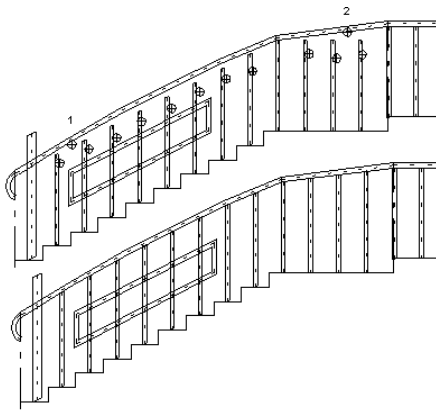
- Select the balusters you want to adjust to the stairs.
-



Adjust top of balusters to handrail

You can adjust the top of the balusters to the handrail.

- Select the (appropriate side of the) handrail, to which you want to adjust the top of the balusters.
- Select the balusters whose top point you want to adjust to the balustrade.
-



Move balusters vertically

You can apply this command in two ways:

- ❖ You can adjust the bottom of the selected balusters vertically to the specified point. The length of the balusters does not change.
- ❖ You can modify the length of the balusters by defining a new top point.
- Define the new position of the baluster.

9.8. Roof

Introduction

Constructing roof is one of the most complicated processes in architectural design.

ARCHLine.XP® offers you a variety of options to create roofs.

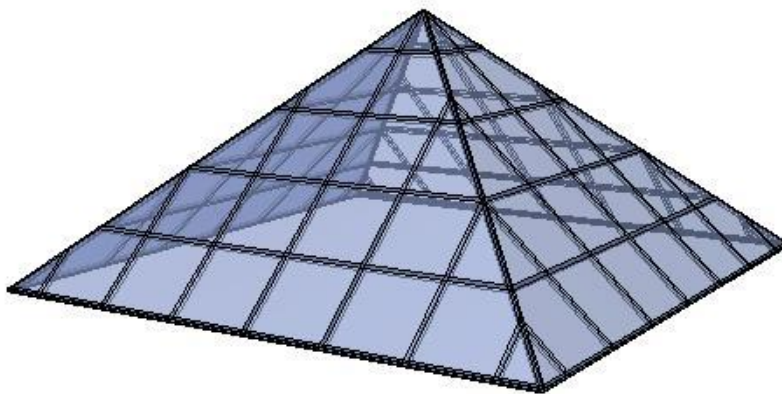
You can create roof *automatically* – the program performs the necessary calculations (works out the intersection lines of the roof planes) and immediately creates the complete roof.

In case of simple roofs, you can create your roof by planes.

In case of traditional roof types you can choose from a long list of default options (pitched roof, tent roof, mansard, arched roof etc.) When you need something different from the default forms, specify a profile and the program creates the desired roof.



(János Varga, architect)



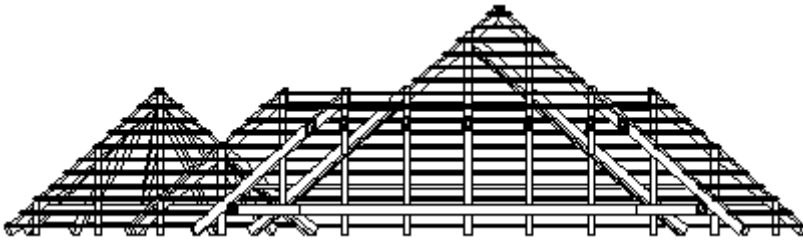
There is no geometrical restriction for either the contour of the roof outline or the profile of the vertical sectional view. This enables you to draw a roof on the floor plan without any difficulty. You can modify the roof later, even by adding new roof planes, or you can add new roofs, glass roofs, extruded roofs, skylights or dormer windows, openings in the roof etc.

The program is able to calculate the roof structure.


The roof structure includes: *rafters, eaves purlin, middle purlin, ridge board, collar beams, and battens for roof tiles*. The position of these structural objects can be modified later, e.g. you can use beams in case of chimneys.

The program is able to list the roof quantity take-off.

The program lists the sizes of roof surfaces and the applied structural objects, which makes it simple to carry out a cost calculation.



9.8.1. Roof properties

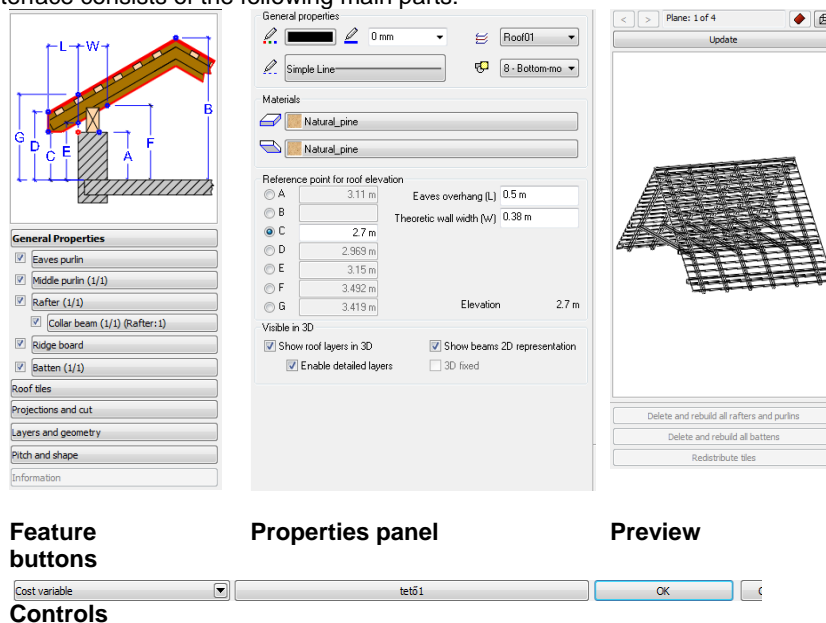
Before creating a roof, you can specify its properties. To do so, right-click on the Roof icon in the toolbox or select the *Building menu - Properties –  Roof* command.



When you define an automatic roof, the command activates the *Roof properties* dialog.

The **Roof properties** dialog comes up where you can set the roof properties.

The interface consists of the following main parts:



Feature buttons

You can find the Feature buttons at the left side of the Roof properties dialog. These buttons can be used to switch between main structural objects and properties of the roof. The schematic figure on top of the buttons will change according to the selection. (e.g.: when you select the Rafter button, you can see the rafter figure, explaining the values on the properties page.)

There is a very important special feature for these buttons. They have a checkbox to enable / disable a structural part of the roof.

Properties panel

In the middle of the Roof properties dialog, you can find the Properties panel, which shows the properties of the selected feature (Rafter, Batten, Projections and Cut, etc.).

Preview

You can find the Preview at the right side of the Roof properties dialog. Click on the Refresh button when you would like to see the changes that you made in the settings. You can also switch between roof planes, by using the “<” and the “>” buttons on top of the 3D preview. You can cycle through the model representations with the Presentation settings button. Also, in some cases, when you need you can actually completely drop your changes for the rafters or battens if you use the Delete and rebuild all rafters and purlins and the Delete and rebuild all battens buttons.

Controls

You can add Cost parameters, save or open sets by using the buttons on the Controls bar. Use the OK button to accept the changes and close the dialog, or use Cancel if you would like to drop all changes you made after opening the Roof properties dialog.

9.8.1.1. How to use the Roof properties dialog

When you work with the Roof properties dialog you should use the Feature buttons on the left hand side of the dialog to switch between main roof features and structural parts. You can use the checkboxes next to the Feature buttons to enable or disable a specific structural part.

You can make changes on the Properties pages for each feature and after using the Refresh button at the right top corner of the dialog, you can update the changes to the 3D preview.

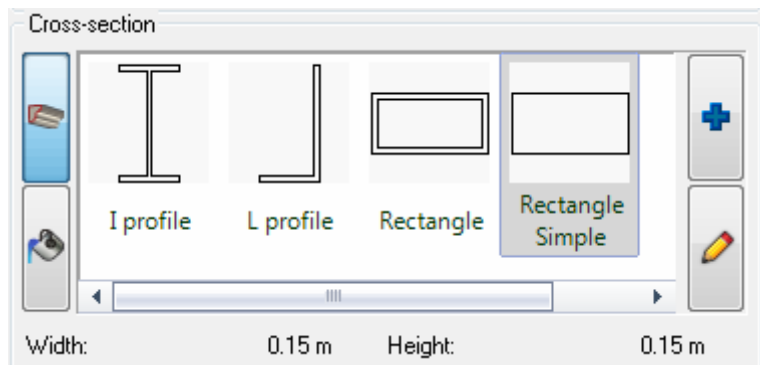
Finally you can use the Set button to store and/or recall sets to spare time. Use the OK button to accept the changes and close the dialog, or use Cancel if you would like to drop all changes you made after opening the Roof properties dialog.

Multi-level roof structures

By adding multiple raster for the same structural object ARCHLine.XP allows users to create complex and architecturally correct roofs in the details. This way it becomes very easy to handle one roof object with main rafters and raster for sub-rafter.

Eaves purlin, Middle purlin, Rafter, Batten, Ridge board

On these four pages there is a profile cross-section button, used for defining the cross-section profile of the actual object.

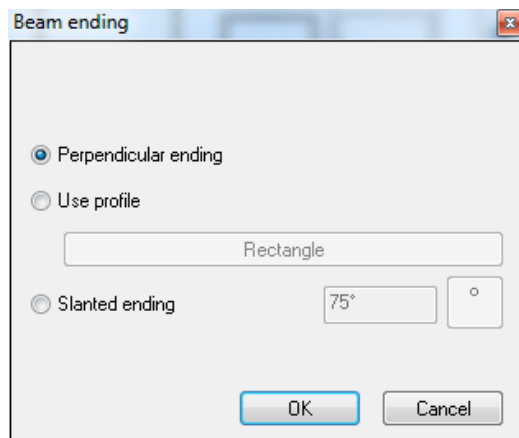


Also, on these pages of the Roof properties dialog window you can change these structural objects' (except battens') endings. You can set bottom and top endings one by one, and you can use profile endings also.



Bottom (start) ending

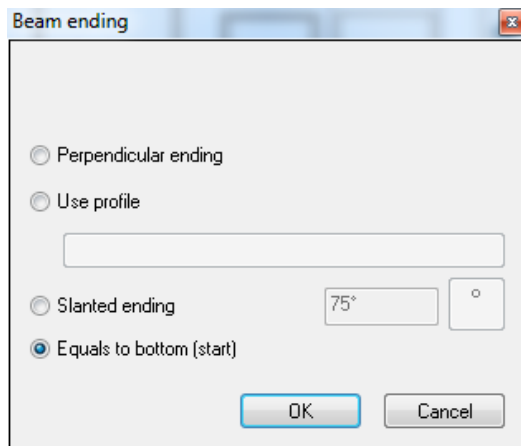
When you click to change Bottom (start) ending, you will see the following dialog window.



You can choose from a list of ending types and you can set the desired one.

Top (other) ending

When you click to change Top (other) ending, you will see the following dialog window.



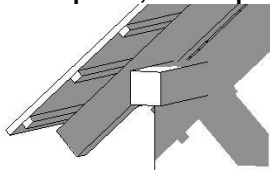
You can choose from a list of ending types and you can set the desired ending. By using the Equals to bottom (start) option you can make both endings similar in one single step.

Exchange endings -

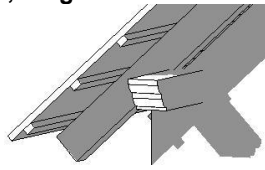
If you defined different endings you have the possibility to exchange them in one single step by clicking on Exchange endings button.

Endings of certain objects

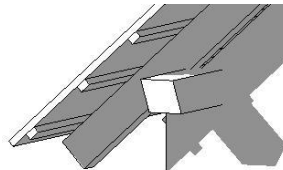
Eaves purlin, Middle purlin, Ridge board



Perpendicular ending

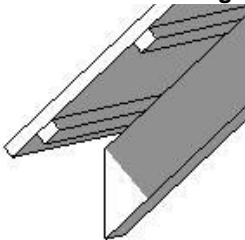


Profile ending

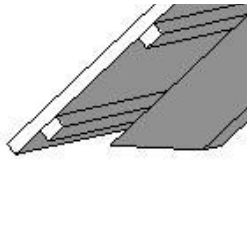


Slanted ending

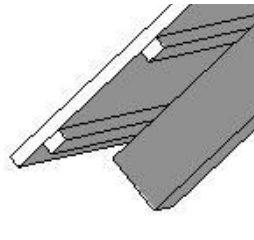
Rafter - bottom ending



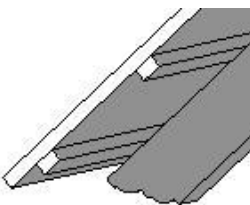
Vertical ending



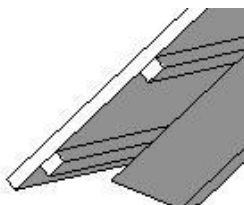
Horizontal ending



Perpendicular ending

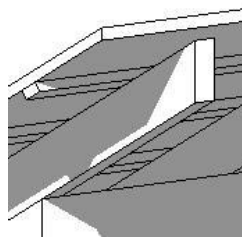


Profile ending

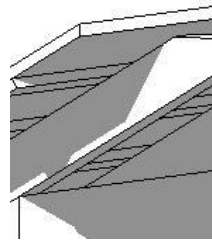


Slanted ending

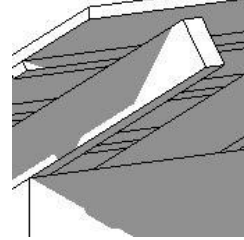
Rafter – top ending



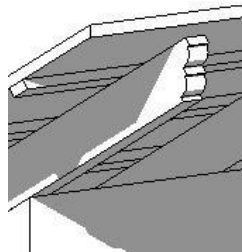
Vertical ending



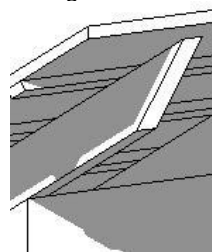
Horizontal ending



Perpendicular ending



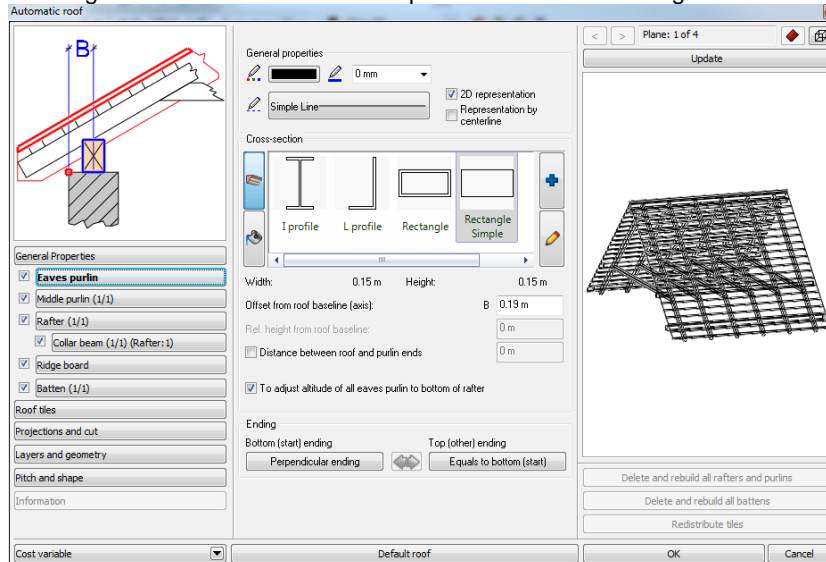
Profile ending



Slanted ending

9.8.1.2. Eaves purlin

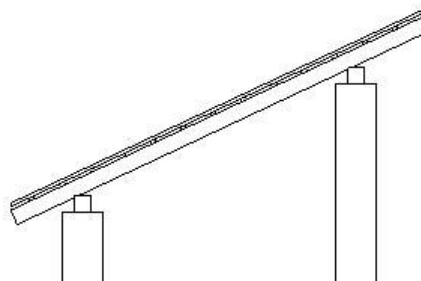
The height of the bottom of the eaves purlin determines the height of the roof.



To adjust altitude of all eaves purlin to bottom of rafter

With this option it is possible to represent those eaves purlins which do not match on the reference line. This is the case when the roof plane is defined by a reference line.

By switching the option, the eaves purlin on the opposite site of the reference line will be represented with the appropriate height, too. See the figure.



Offset from roof baseline (axis) – B

You can define how far the centreline of the eaves purlin indicated in the figure should be horizontally from the roof baseline.

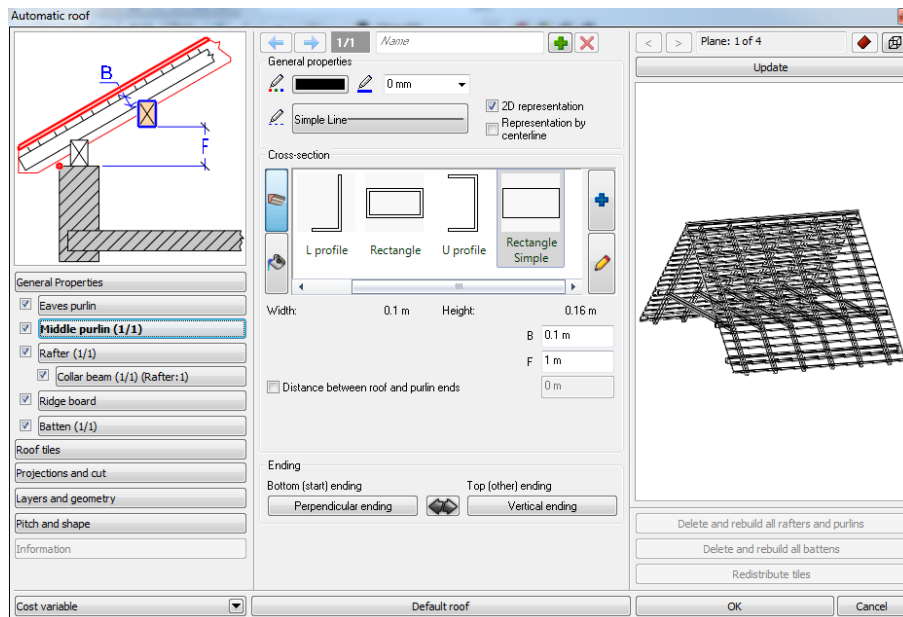
Distance between roof and purlin ends

If this option is disabled, purlins reach to the edge of the roof. Enable the option to specify distance between roof and purlin ends.

Relative height from the roof base line

This field is active when you specify the eaves purlin properties individually. (Shortcuts menu – Roof framing – Properties... command). This way you can specify the height of the selected eaves purlin relative to the reference line so it can be different from the height of other eaves purlins.

9.8.1.3. Middle purlin



Relative height from roof baseline– F

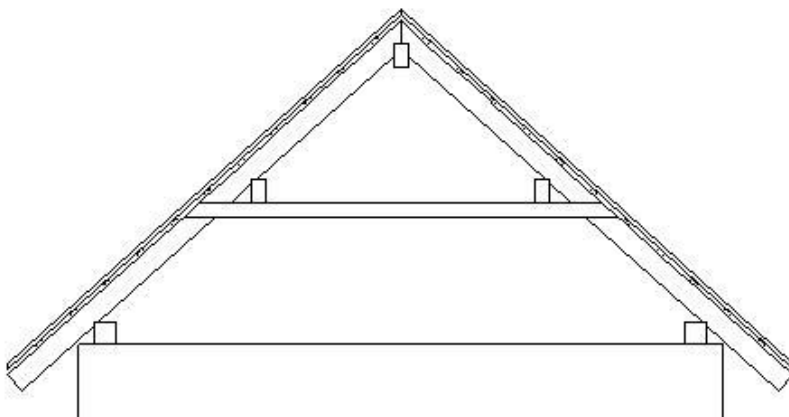
Of the individual properties, first specify the **relative height** of middle purlin from the roof baseline.

Deepness in rafter– B

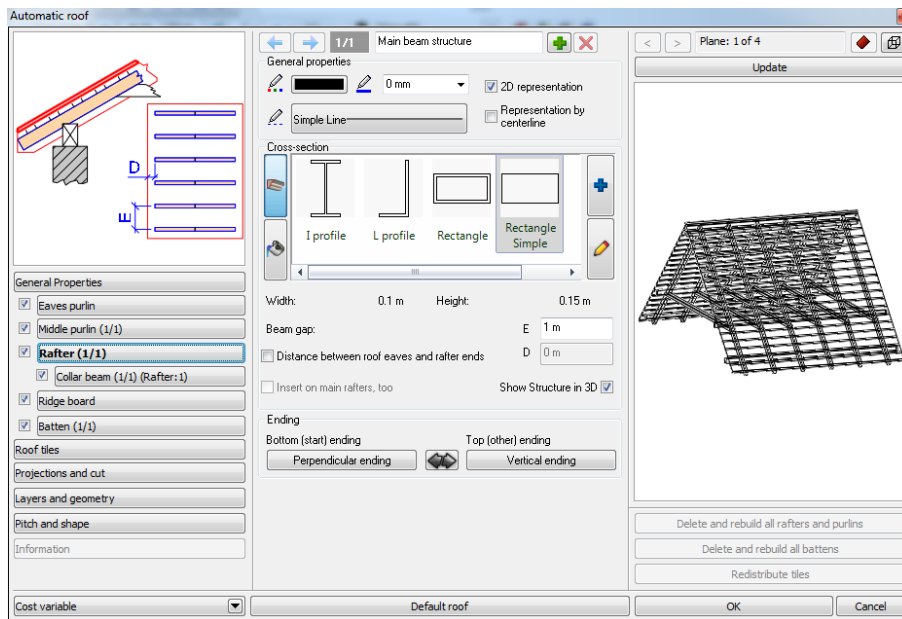
After specifying the deepness the middle purlin should cut into the rafter. The parameters F and B define precisely the place of the middle purlin.

Distance between roof and purlin ends

If this option is disabled, purlins reach to the edge of the roof. Enable the option to specify distance between roof and purlin ends.



9.8.1.4. Rafter



Distance between roof and rafter ends – D

If this option is disabled, rafters reach to the edge of the roof. Enable the option to specify distance between roof and rafter ends.

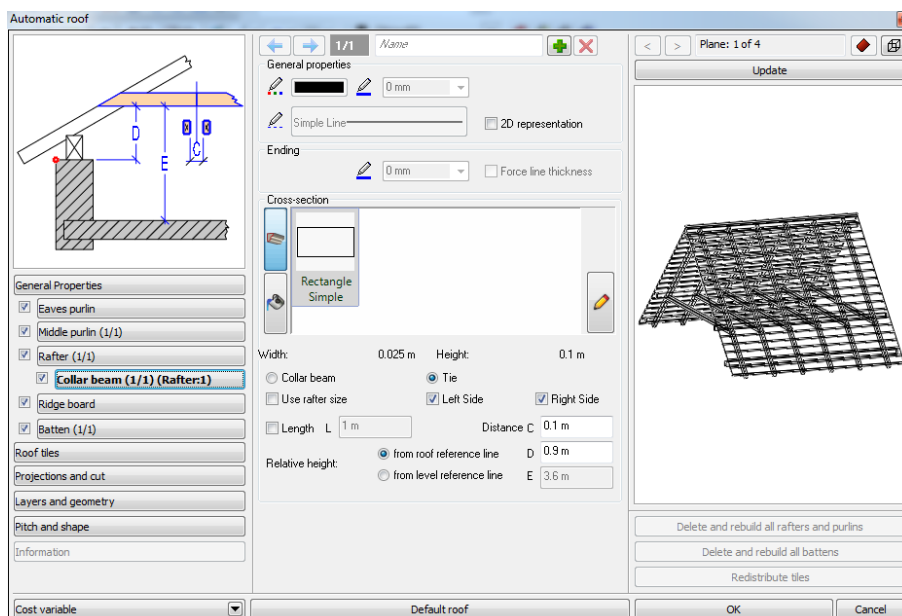
Beam gap – E

To put rafters into place specify the distance between the axes of the beams.

Roof structure – representation by centreline

Representation of each main structural parts of the roof (rafter, batten, purlins...) can be set one-by-one. To represent each structural part by centreline enable the option on the setting page of the object



9.8.1.5. Collar beam





2D representation

The collar and tie representation in is extended. According to some EU countries norm, the standard of these objects also represent distinct ending.

General properties




0 mm

 Default material

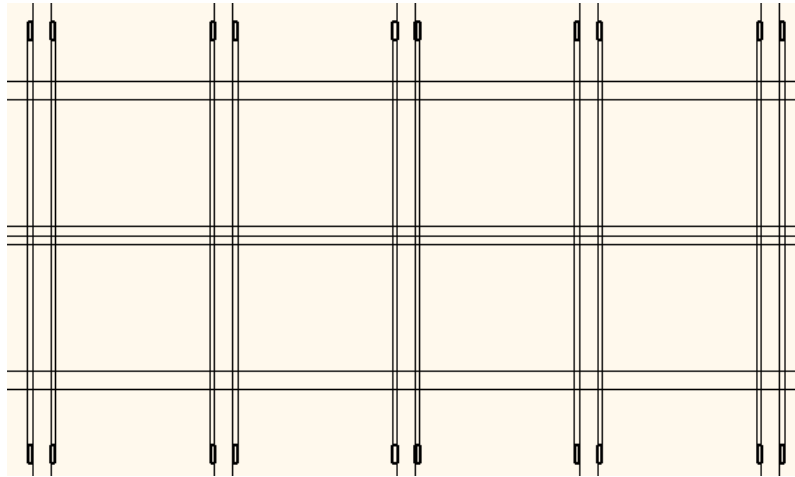
 Simple Line

☒ 2D representation

Ending


0.2 mm

☒ Force line thickness



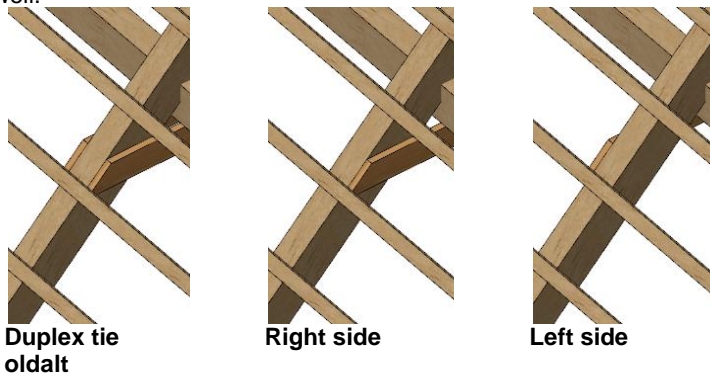
Distance

You can specify the distance: **C**, in case of tie. The Left side and Right side options allow you to create one-sided ties; tick both for duplex ties.

You can use this parameter from the rafter, if you switch on the *Use rafter size* option.

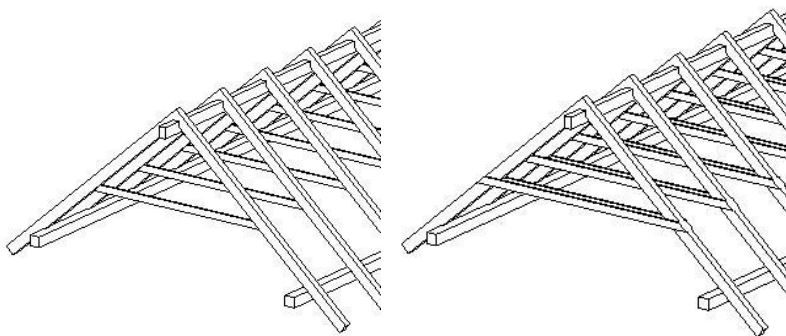
Roof tie: one-sided or duplex tie

The tie can be switched on and off side-by-side. This option lets you specify one-sided left, one-sided right ties or duplex tie as well.

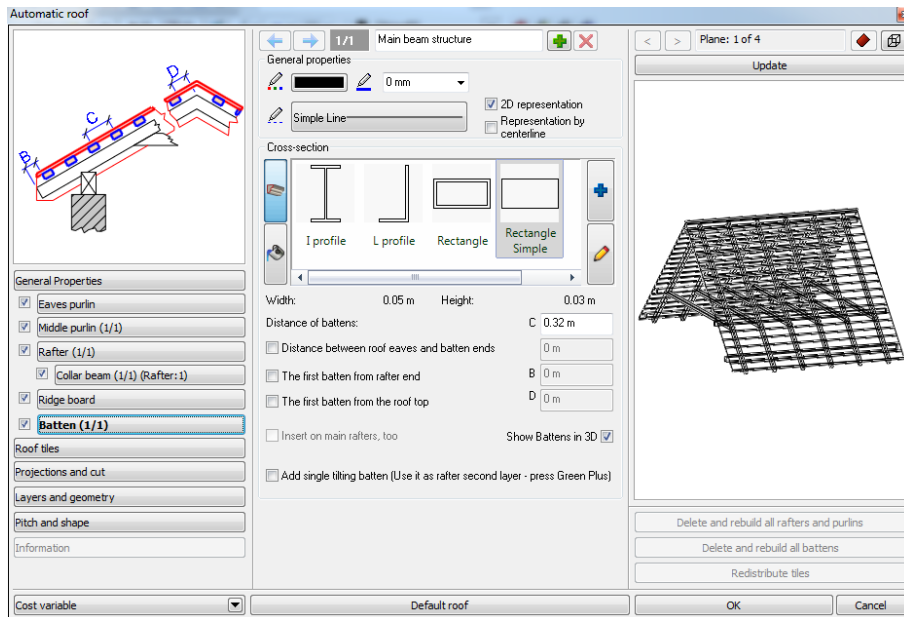


Height

You can specify the height of the collar beam: **D** relative to the roof reference line or relative to the actual floor: **E**.



9.8.1.6. Batten



Distance between roof and batten ends

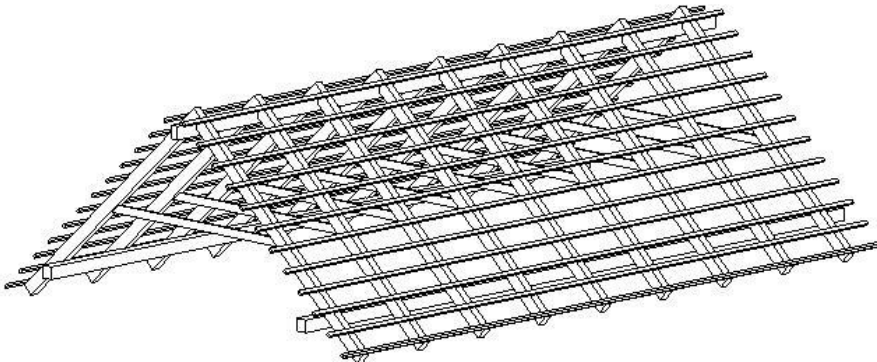
If disabled, battens will be adjusted to the roof ends.

The first batten from rafter end – B

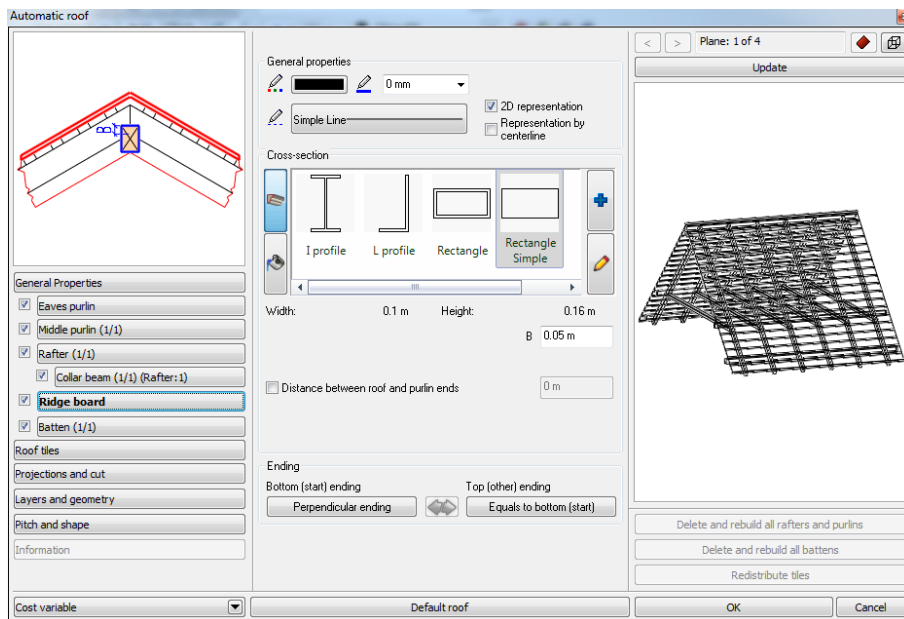
If this option is disabled, batten reach to the rafter end. Enable the option to specify distance between the first batten and rafter end.

Distance of battens – C

To put battens into place specify the distance between the axes of the beams.



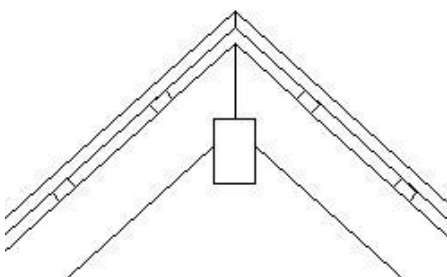
9.8.1.7. Ridge board



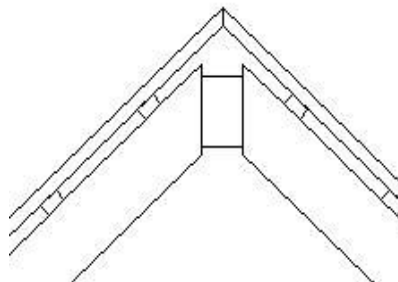
Relative height from rafter intersection – B

You can specify the **relative height** of ridge board from the rafter intersection.

! If a $B < D/3$, then rafters ends are met at the top. Otherwise the rafter ends on the top are adjusted to the ridge board. (D is the height of the ridge board.)



B= 1 cm, D=16 cm



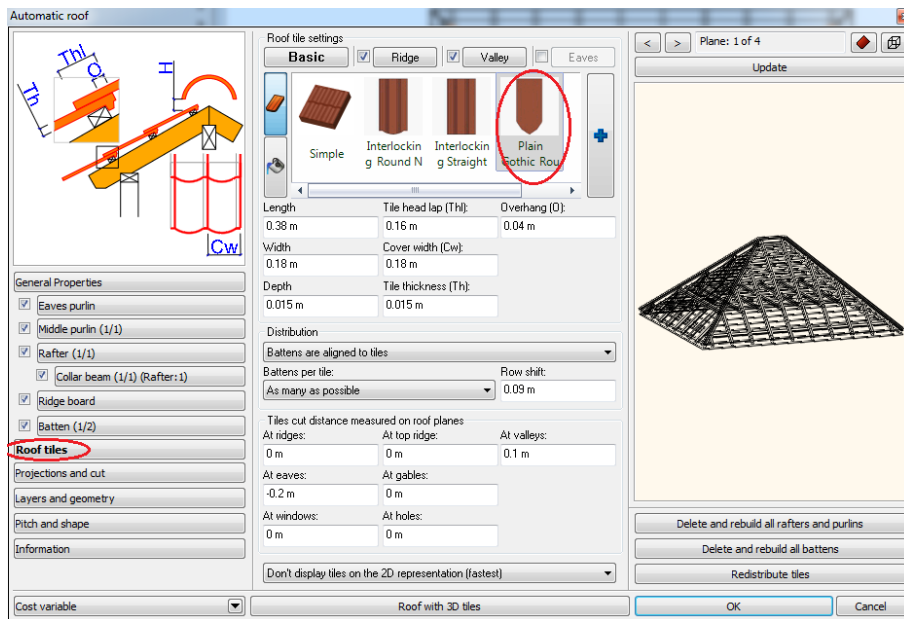
B= 13 cm, D=16 cm

Distance between roof and purlin ends

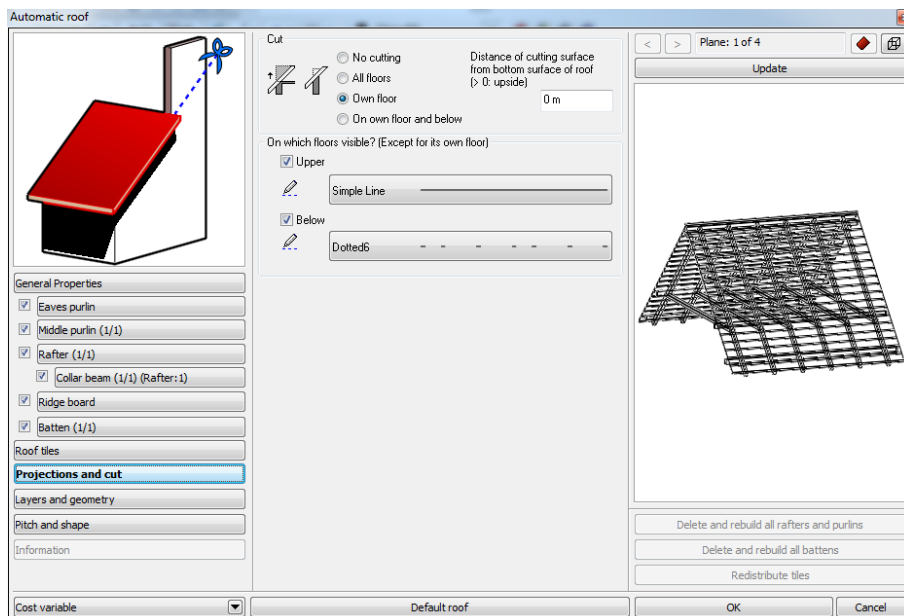
If this option is disabled, purlins reach to the edge of the roof. Enable the option to specify distance between roof and purlin ends.

9.8.1.8. Roof tiles

The roof tiles will let you generate and manage tiling for roofs in ARCHLine.XP.



9.8.1.9. Projections and cut



Cut

You can choose from the following options:



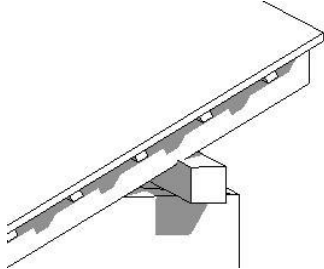
- ❖ Cuts the walls on the current floor.
Switch on this option in case of attic rooms.
- ❖ Cuts the walls of all floors.
This option is useful in case of alpine houses.
- ❖ Does not cut walls automatically.
- ❖ Cuts the walls on the current floor and on the floor below.
This option is useful in case of walls under a so called "dog's house roof".

Distance of cutting surface

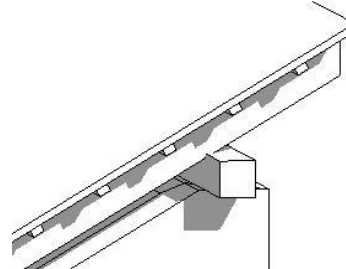
The software is able to cut the walls by the bottom surface of the roof plane. You can set the distance measured from the bottom roof plane surface by changing the value in the Roof properties dialog window's Projections and cut page.

Distance of cutting surface
from bottom surface of roof
(> 0: upside)
0 m

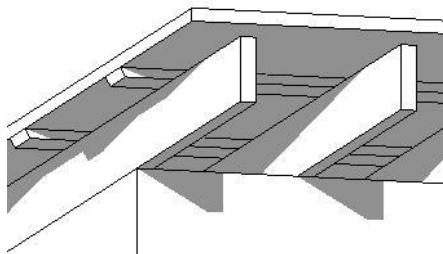
If you keep the value of Distance of cutting surface from bottom surface of roof (>0: upside) unchanged, the walls will be cut by the bottom roof plane surface. If you set a value that is different from zero, then the software will reposition the cutting surface measuring the given value from the roof bottom surface.



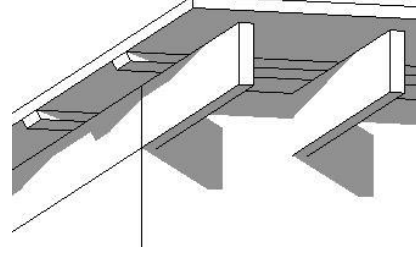
Distance of cutting surface is 0m



Distance of cutting surface is -0.1m



Distance of cutting surface is 0m



Distance of cutting surface is 0,15m

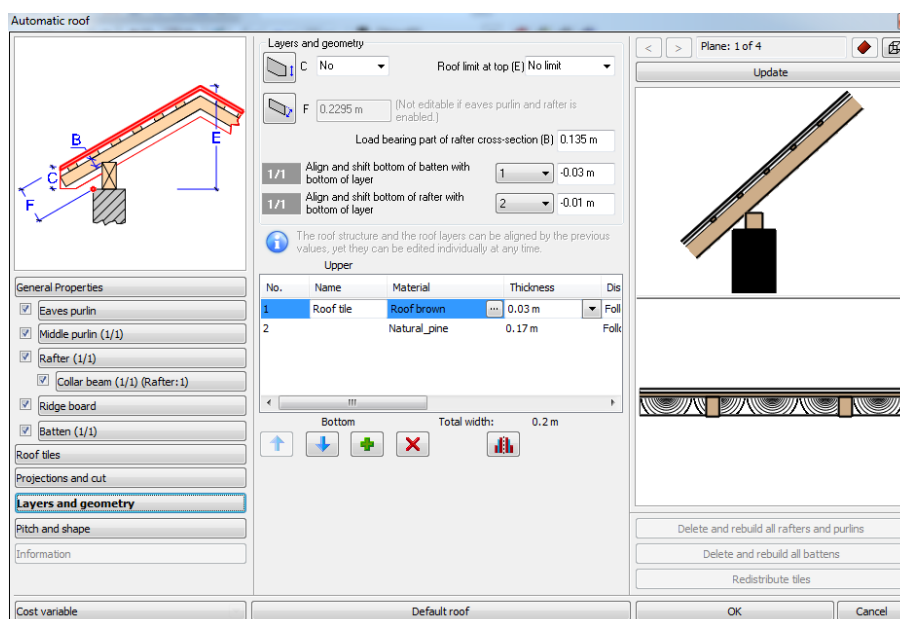
On which floors visible?

The roof can be shown on the 2D view, one floor above and/or below the roof level. The floors and the certain line types can also be defined.

Ridge tile and roof valley

You can set whether the section of the roof planes are covered with ridge tiles and roof valley or not. If enabled, you have to define their width, thickness and material.

9.8.1.10. Layers and geometry



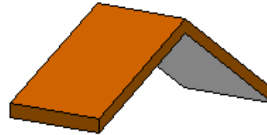
Geometry

Roof thickness - B

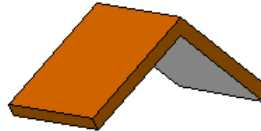
You can define roof thickness vertically or perpendicular to the roof plane.



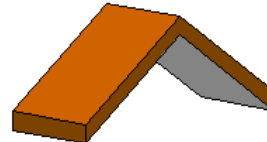
Relative to the vertical projection, while the end of the roof is vertical.



Roof thickness is perpendicular to the roof plane; the roof ending is also perpendicular.



Roof thickness is perpendicular to the roof plane; the roof ending is vertical to the roof plane.



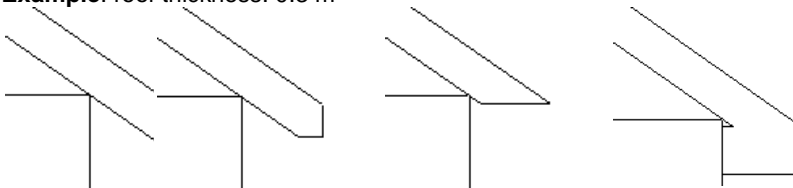
❖ **Roof thickness at end - C**

You can apply this method with the different eaves types (see the examples). You can cut the end of the roof by using a value smaller than the one applied to the vertical projection.

The **No** option means that there is no horizontal cut.

- Click on the icon to create the desired roof, which connects to the wall, and then specify thickness.

Example: roof thickness: 0.3 m



Roof thickness at end:



No



0.2 m

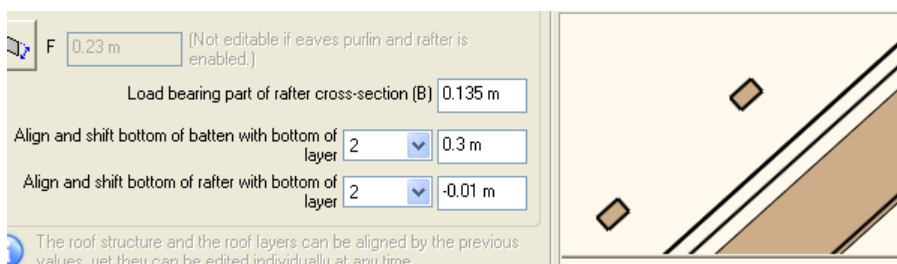
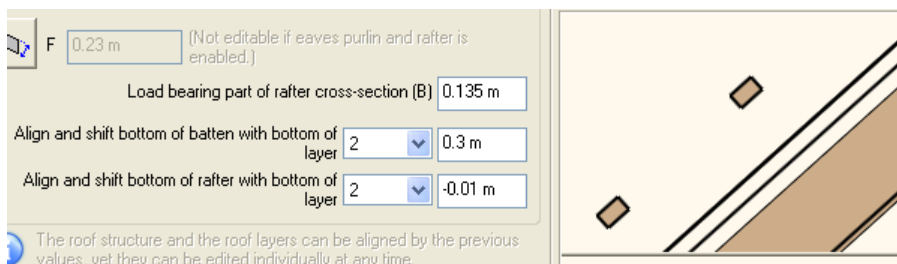


0 m

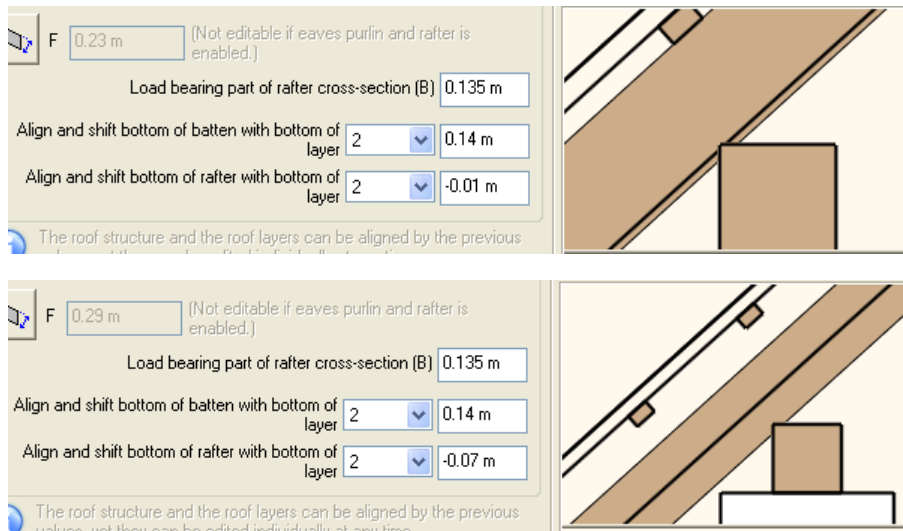


0.3 m

- ❖ **Roof limit at top (E)**
The maximum height of the roof, parts above this value will be cut.
- ❖ **Load-bearing part of rafter cross-section**
Load-bearing part (dimension) of the rafter, this can be used for statics calculations.
- ❖ **Align and shift bottom of batten with bottom of layer**



- ❖ **Align and shift bottom of rafter with bottom of layer**



Layer list

At the top of the Roof layers dialog window you can see the layer list ordered from top to bottom as the top and bottom layers of the roof structure. In layer list you can check and edit roof layers.

Layer number

The No. column shows the number of each layer.

Name

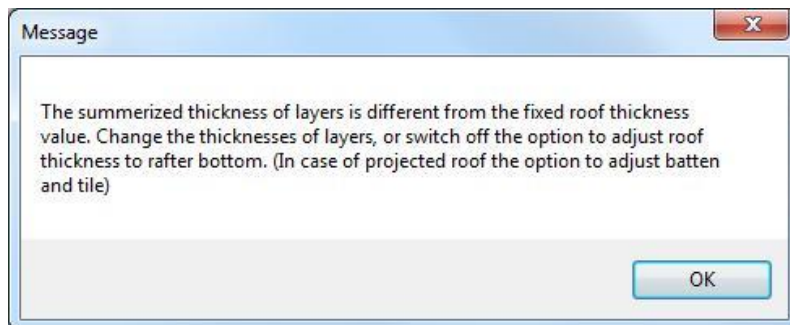
The Name column shows the given name of each layer. You can modify these names. Please click on one name to retype it.

Material

In Material column you can change one layer's material. The given material will be represented on sections and in 3D views.

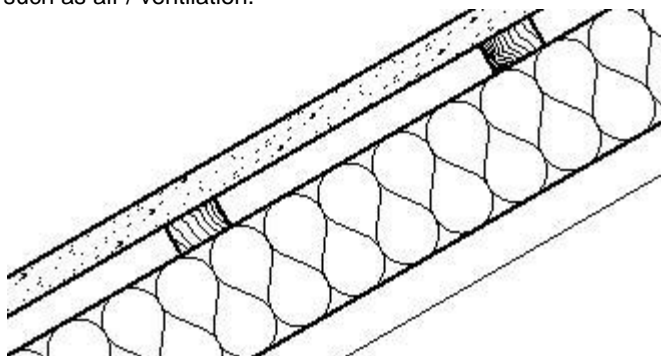
Thickness

In Thickness column you can change the thickness of each layer. If you already set adjustments for roof previously and this affects the roof layers, you may see the following message when pressing OK.



Representation in 3D

Representation in 3D option makes each layer visible or invisible in 3D and on section views. You can use it for layers such as air / ventilation.



Editing roof layers

In Roof layers dialog window you can change the order of layers, add new layers or remove existing ones.

Move layer up

You can change the order of the roof layer list by selecting one layer and pushing Move layer up if it is possible.



Move layer down

You can change the order of the roof layer list by selecting one layer and pushing Move layer down if it is possible.



Add layer

You can add new layer to the layers of the roof.



Remove layer

You can remove the selected layer from the roof layers.

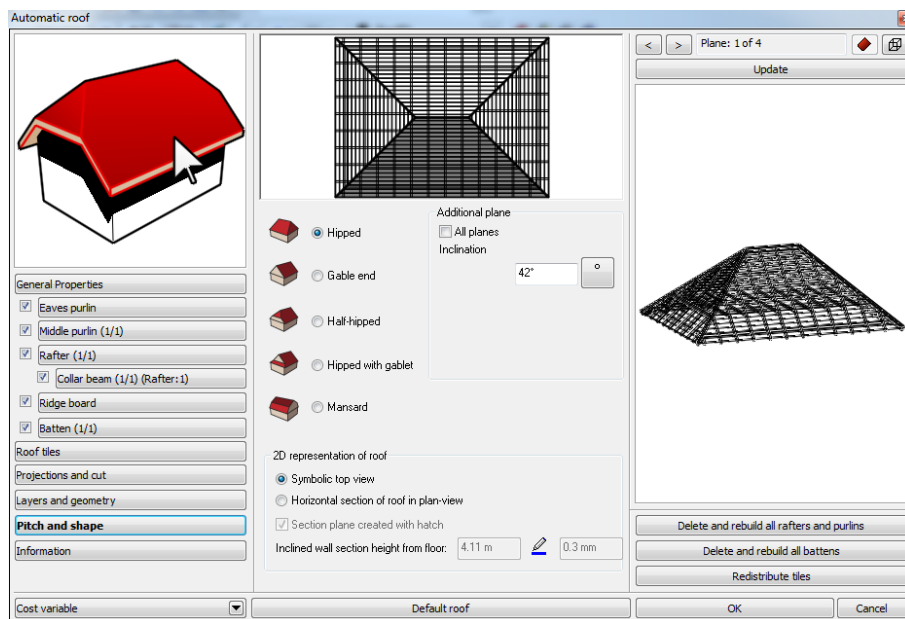


Mirror layers

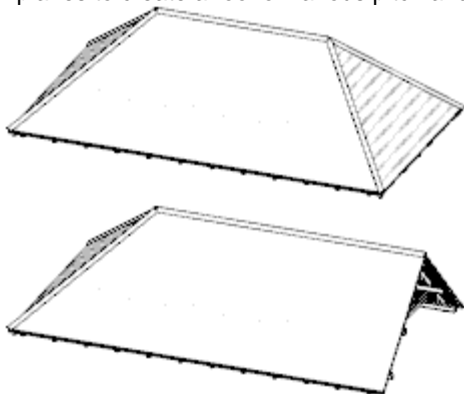
You can mirror the complete order of the layers of the roof.



9.8.1.11. Pitch and shape

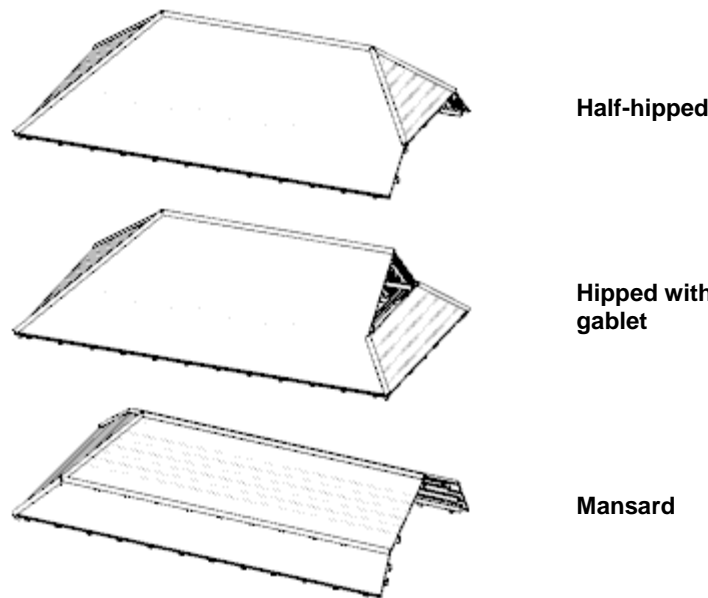


Edit roof planes to create a roof of various pitch and shape:



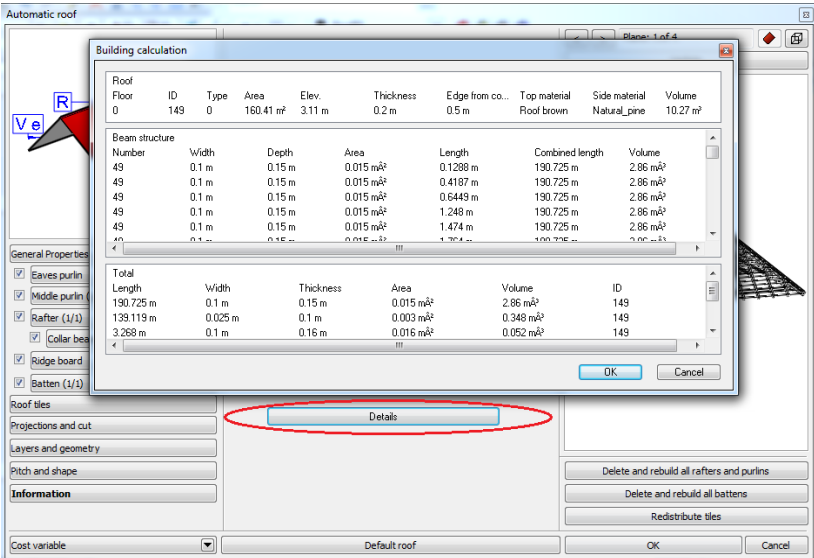
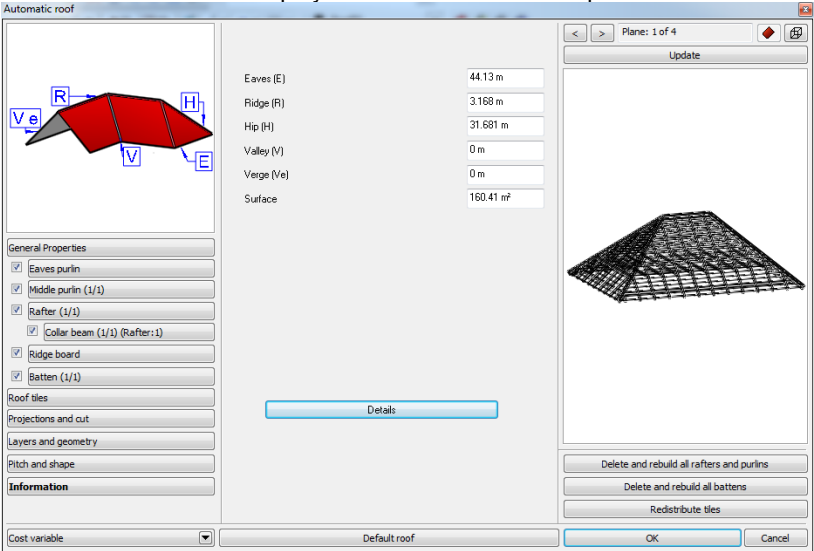
Hipped

Gable end




9.8.1.12. Information

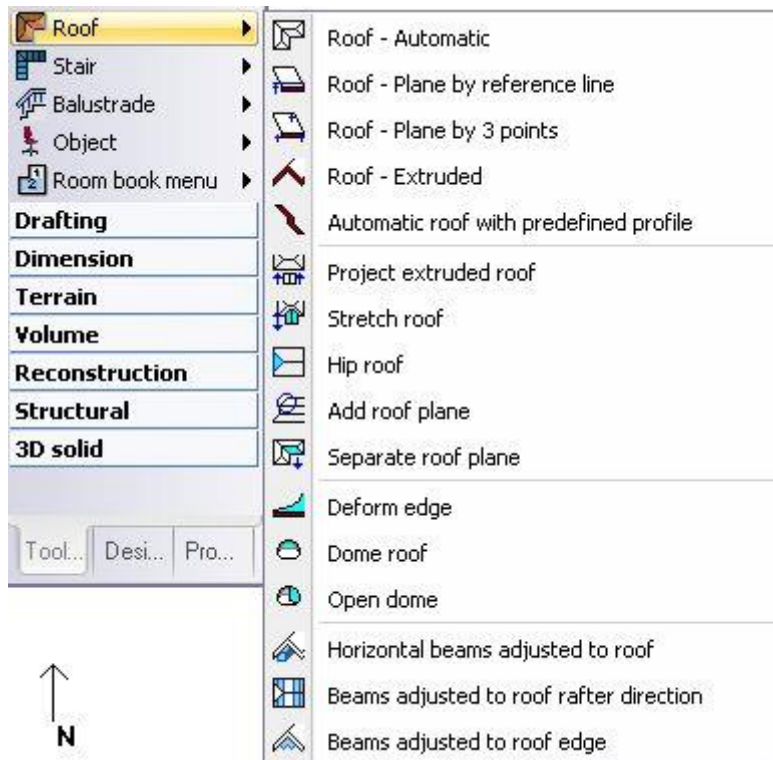
The Information button displays the main summarized quantities of the roof.



9.8.2. Creating roofs

Creating roofs is one of the most complicated tasks in architectural design. The program offers various methods to create roofs - besides frequently used roof-types you can also create special roof structures.

With the icons of the  **Roof tool** you can create roofs using different methods.



Working in 2D environment, you can use the icons of the Roof tool to create the following:

- ❖ **Automatic roof**
Automatically creates roofs made up of roof planes of a given slope.
- ❖ **Roof plane by reference line**
The command creates a roof as individual roof plane. Having specified the roof surface, the roof plane is defined by the reference line and the roof slope.
- ❖ **Roof plane by 3 points**
Creates a roof plane by defining 3 height points. This method is useful if there are walls of different height in buildings where a survey has been carried out.
- ❖ **Extruded roof with predefined or free profiles**
Creates roof structures with various predefined profiles (pitched roof, mansard roof etc.). You can create even the most complicated roofs with the help of the properties you specify. It is also possible to define special profiles i.e. the vertical cross-section of the roof can be defined freely.
- ❖ **Automatic roof with profile**
Creates a roof automatically with the help of a user-defined profile.

9.8.2.1. Automatic roof

You can create roof *automatically* – the program performs the necessary calculations (works out the intersection lines of the roof planes) and immediately creates the complete roof according to the reference contour on the floor plan. After you define the reference contour of the roof, *Properties* dialog is displayed. It is important to specify the height of the roof reference line. With automatic roofs the reference lines of all roof planes are in the same height. In *Roof Plane dialog* you can specify the inclination of each roof plane. (In this case you do not have possibility to define the inclination in the Roof geometry dialog.)

Define roof reference line

The command offers two possibilities to define the reference line of the roof:

- ❖ The reference line is defined by *the area enclosed by the walls*.
- ❖ The reference line is created by the commands in *Profile definition* pop menu.

In both cases you are allowed to offset the reference line *horizontally, with the desired distance*, relative to the given contour.

Area enclosed by the walls

- Select the walls one by one, or select the building with the selection window. The reference line of the roof is created along the outlining contours of the selected object.
Enter Completes selection.

Profile definition pop menu

- Select **POPMENU** keyword from the Command line to display *Profile definition* menu. Use this menu to draw the reference line of the roof.



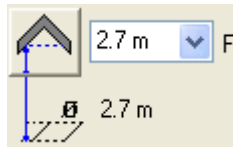
For description see Chapter 8.9. *Specifying profile*.

Shifting the reference line

- Before defining the reference line, choose **SHIFT** keyword from the Command line.
- Specify the length of the shift. If the reference line is within the specified contour, you have to define the length of the shift with a negative value.

Defining roof planes

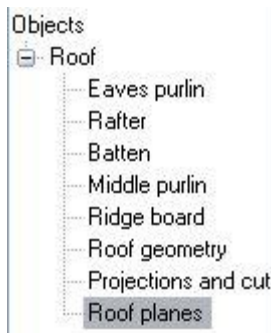
After you define the reference line, **Properties** dialog box comes up. Specify the height of the reference line in the *Eaves purlin* dialog box.



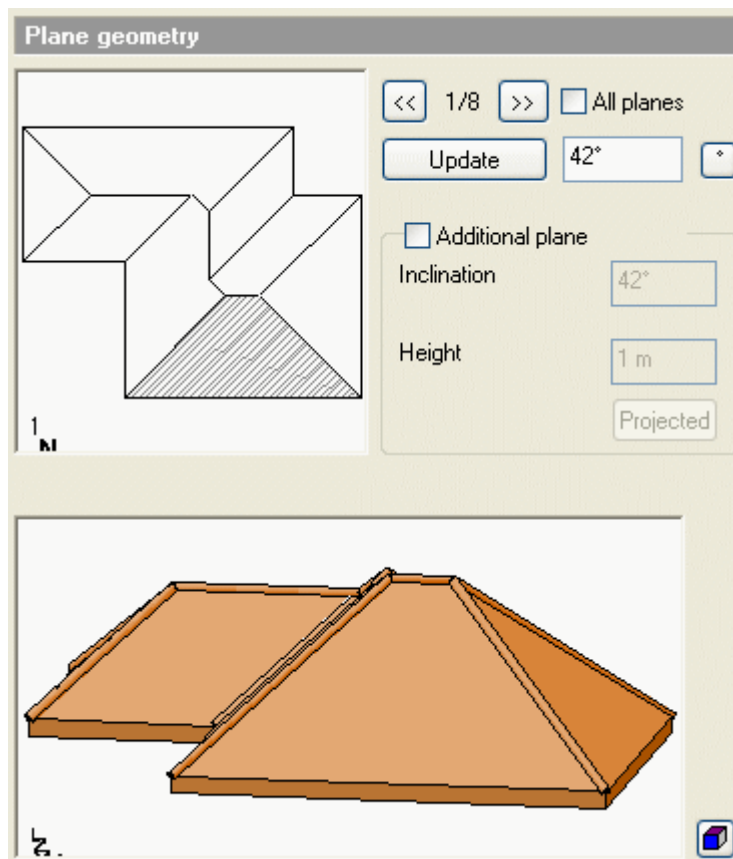
For description see Chapter 9.8.1. *Roof properties*.

Select **Roof planes** dialog.

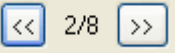

Here you can modify the slope of the roof planes one by one or together. You can also insert a new roof plane e.g. you can create a hip roof.



The angle defined in the *Roof property – Roof geometry* dialog is the default value. You can modify it:

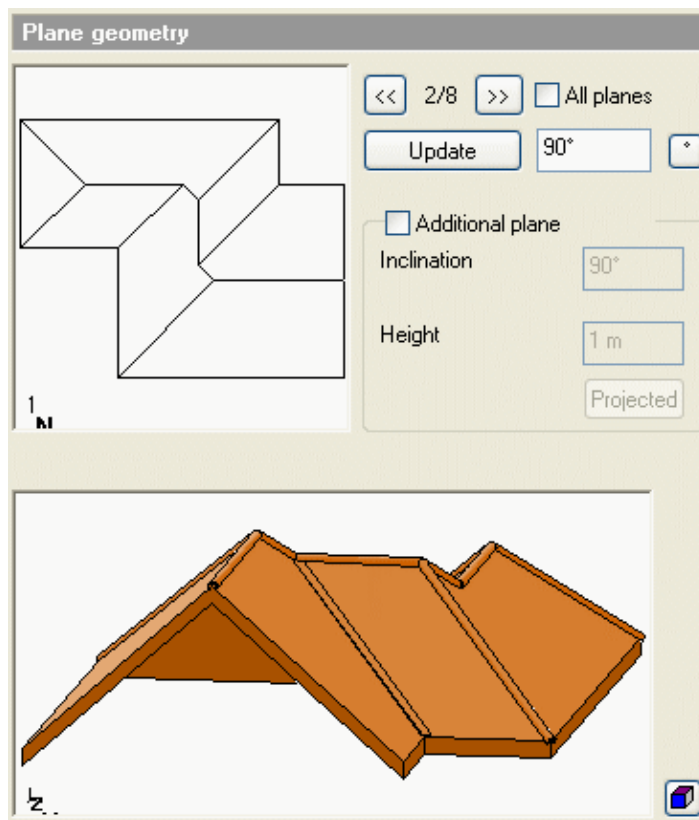


You can select the roof planes to be modified from the top figure in the dialog box. In the figure the active roof plane is indicated with gray. You can move on to other roof planes by using the arrow or by clicking on the desired plane.

- Select the roof planes to be modified one by one, and then specify their slope. To select the roof planes you can use the arrows, too.  If you want to assign the same inclination to all roof planes, select *All planes* option.
- After specifying the inclination of the roof plane, apply *Update* to see the result in the dialog box.
-  By clicking on this icon you can specify whether to display the image in a wireframe model, with hidden lines or with shading. In case of larger models it is recommended that you use a wireframe model or turn off the display.



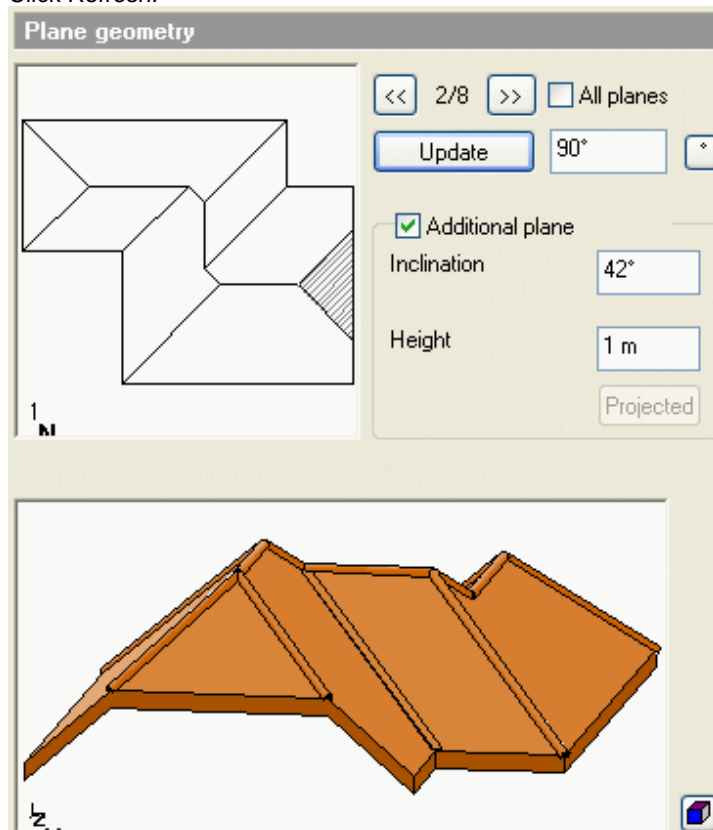
If you set the slope of one of the planes at 90°, the roof plane disappears on the actual side, giving way to the pediment.



Adding a new roof plane

Create a hip roof: add a new plane to that side of the roof whose inclination you set at 90°:

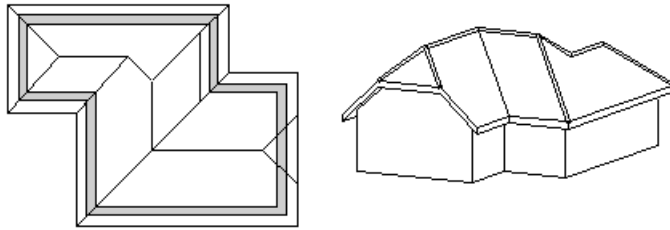
- Select the side with 90° slope; for the selection use the arrows.
- Enable Additional plane option.
- Specify the inclination of the roof plane as well as the height of the reference line of the new roof relative to the reference line of the roof.
- Click Refresh.



After defining the roof planes, you can return to the *Properties* dialog by using the arrow button




- **Ok** Closes the dialog box.
The program creates the roof:



Deleting the added roof planes

- Select the roof plane to which you added the new roof plane.
Additional plane option is enabled, which indicates that the roof plane contains an additional roof plane.
- Disable *Additional plane* option.
- Click *Update*.
The additional roof plane is deleted.
-



To add a new roof plane you can also apply  *Hip roof* icon

9.8.2.2. Roof plane by reference line

With this command you can design each roof plane individually.
You can also use this command when you wish to create a roof on walls of different height i.e. the reference lines of the roof planes are not in the same height.

The steps are the following:

- ❖ Define the contour of the roof plane
- ❖ Define the reference line
- ❖ Specify the height of the reference line and the angle of the roof plane

Defining the contour of the roof plane

- Define the contour of the roof plane:
either by selecting the walls (the walls must form a closed contour),
or by applying a command from **POPMENU** - *Profile definition* menu.



For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.

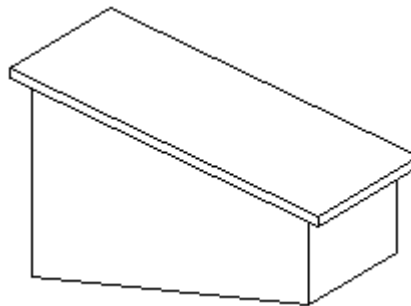
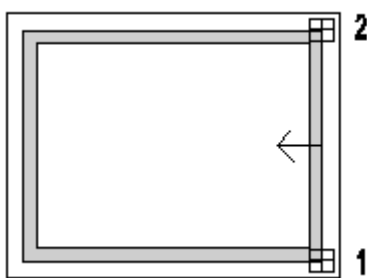
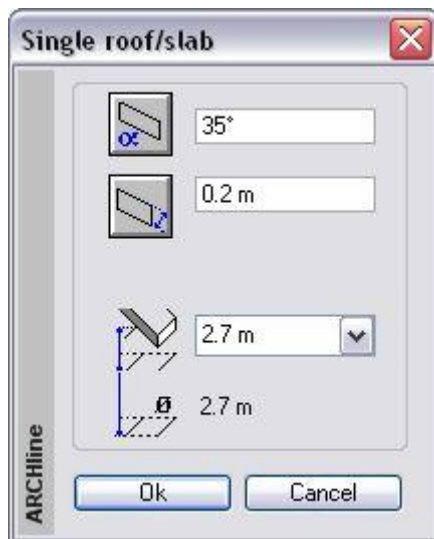
Option:

| | |
|--------------|--|
| SHIFT | Apply this keyword if the contour of the roof plane reaches beyond the defined profile, or is smaller than that. |
|--------------|--|

Defining the reference line and the angle of the roof plane

After defining the contour of the roof

- Specify the reference line of the roof plane by its endpoints. (In the example below the line specified by endpoints 1 and 2.) The value for the actual elevation concerns this line. The arrow in the middle of the reference line symbolizes the upward direction.
If you want to modify this direction, click on **ENTER** keyword. After this you can select the first point of the reference line again.
- Define the roof slope, roof thickness and the height of the reference line in the appearing dialog.



9.8.2.3. Roof plane by 3 points

If you do not know the inclination of the roof planes when drawing your roof, you have to rely on other data. In case of surveys the known value usually is not the roof slope, but the roof height at different points. So, if you have these values it is recommended that you draw a roof plane by specifying 3 height points.

When you define height you have the possibility to use the height of the object on the drawing.

The steps are the following:

- ❖ Define the contour of the roof plane
- ❖ Specify three height points

Defining the contour of the roof plane

- Define the contour of the roof plane:
 - either by selecting the walls (the walls must form a closed contour),
 - or by applying a command from **POPMENU** - *Profile definition* menu.



For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.

Options:


| | |
|--------------|--|
| SHIFT | Apply this keyword if the contour of the roof plane reaches beyond the defined profile, or is smaller than that. |
|--------------|--|

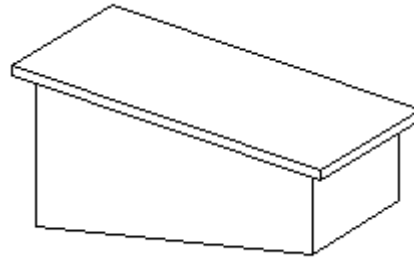
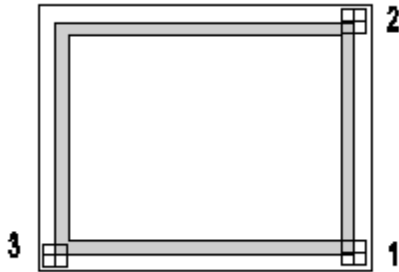
Specifying three height points

- Specify the first point of the roof plane.
- Specify the height of the bottom of the roof plane at the given point (2.5 m - wall height). You have to define the height of the points in relation to the active floor. By default, the program asks for the height of the bottom of the roof plane at the given point. By clicking on **UPPER** keyword you can specify the height of the roof plane top.
- If you want to specify height by using the height of an already existing object, click on **LIKE** keyword.
 - Select an object. Select a point on it.
 - Using the icons, specify if you want the height of its bottom or top point.
 - For instance, in case of walls you can decide whether you wish to apply the top or the bottom of the wall as reference height.
 - The program interprets the height relative to the current floor.
- Specify the second point of the roof plane and enter its height (2.5 m - wall height).

- Select the third point of the roof plane and enter its height (3.5 m - wall height). These three points you specified clearly define the roof plane.


Options:

| | |
|---|--|
| UPPER | Point height means the height of the roof plane top. |
|  | Uses the height of the top/bottom of the object as reference height. |

**9.8.2.4. Creating extruded roofs**

- ❖ You have the possibility to create roof structures with various predefined profiles (pitched roof, mansard roof, arched roof etc.) More complicated roofs can also be created easily by using properties that you specify.
- ❖ You can design a roof of any form by defining an individual profile i.e. you define the vertical cross-section of the roof with a special, individual profile.

Drag the selected profile along a straight line, or along an open or closed path to create the roof.

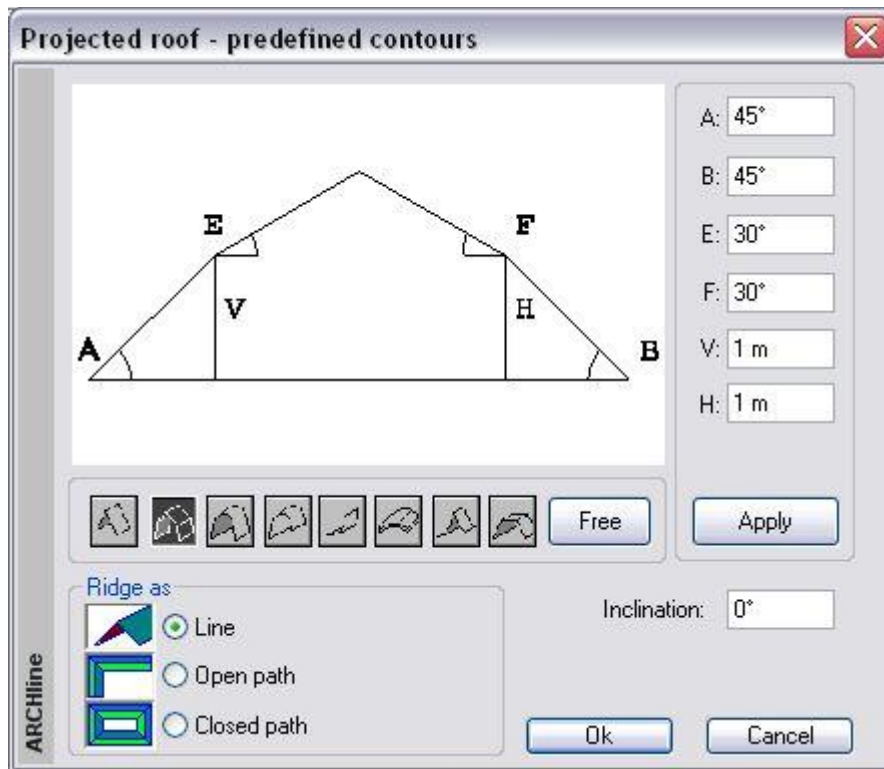
The roof thus created can be projected into an automatic roof with  Project extruded roof command, and this way you can create e.g. so called "bull's eye or dog house type roofs".

Follow these steps:

- ❖ Define the profile; the profile can be predefined or free
- ❖ Define ridge slope
- ❖ Select the type of the path: line, open or closed path
- ❖ Drag the profile along the path

We discuss creating extruded roofs in two steps: first, when we use a predefined profile for the cross-section, second, when we define the cross-section with a free profile.

9.8.2.5. Creating extruded roofs by predefined profiles

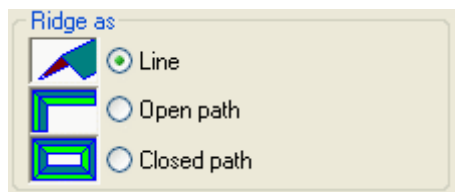


- Select the icon the profile you want to apply.
- Set the geometrical values for the profile.

Some of these parameters are the same in case of some profile types.

- A** Inclination or the angle of the tangent of the side that is drawn first, relative to horizontal direction.
- B** Inclination or the tangent angle on the opposite side.
- E** Inclination of the second roof plane relative to horizontal direction (e.g. in case of mansard roofs)
- F** Inclination of the second roof plane on the opposite side (e.g. in case of mansard roofs)
- H&V** Height difference between the reference lines of the two roof planes.

- After you modified the values press **Apply** to refresh the image.
- Set the inclination of the ridge, relative to horizontal direction.
- Select the type of roof contour path by choosing from the following options:



- **Ok** Closes the dialog.

After this you can define the path, according to the selected path type:

Line

The profile is set onto a straight line. The top view of the roof is a rectangle:

- Define a line by specifying two points (in the example below points 1 and 2) to define the first side of the roof (it is also the reference line of the first roof plane).
- Drag the cursor and specify a third point (point 3) to define roof width.



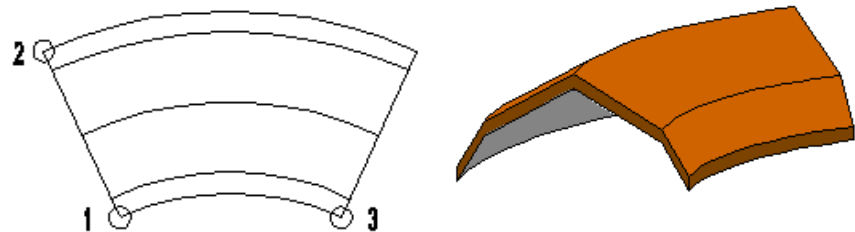
Open path

- Define a line by specifying two points. (In the example below points 1 and 2). These define the roof width.
- Define the length of the first line of the roof with a new point (point 3).
- Drag the cursor and specify other points to define the open paths of the other lines of the roof.
- **Enter** Completes defining the path.

Options:

| | |
|------------------|--|
| ARC | Choose this keyword if you wish to define an arched path. |
| SELOBJECT | Choose this keyword if you select an already existent object as part of the contour of the path. |
| INVERSE | Choose this keyword if the width of the path is not in the appropriate direction. |

- Define the height of the points after each other. The program indicates those points whose height it requires.
- If the height is the same in case of every point, after you specify the first value, press Enter for the other points.
-



Closed path

In this case the contour of the roof forms a closed path. The determination of path is the same as in the former point, except if you press **Enter**, the program closes the roof contour i.e. joins the starting point and the end point of the contour.

Let's see the predefined roof types in detail:

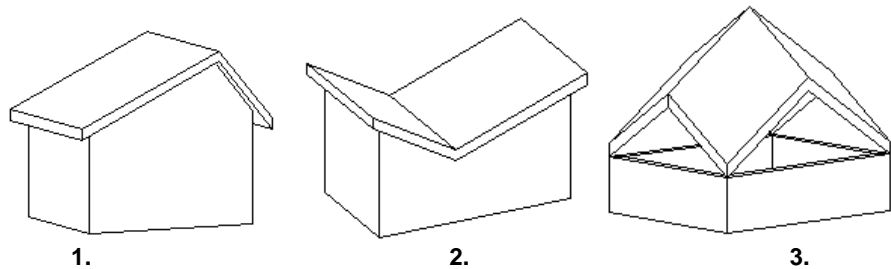


Pitched roof

The program creates the roof by two roof planes.
The reference lines are in the same height.

Example:

| | 1. | 2. | 3. |
|--------------------|-----|------|-----|
| A | 25° | -20° | 35° |
| B | 50° | -30° | 35° |
| Ridge angle | 0° | 0° | 35° |



Two pitched roofs with sloping ridge, joined

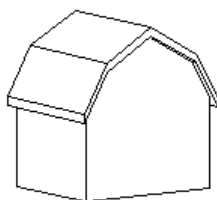


Mansard roof

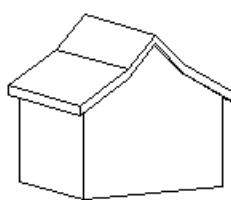
The program creates a mansard roof on the defined path.
The reference lines are in the same height.

Example:

| | 1. | 2. |
|---|-------|-----|
| A | 60° | 30° |
| B | 60° | 30° |
| E | 30° | 40° |
| F | 30° | 40° |
| H | 1.6 m | 1 m |
| V | 1.6 m | 1 m |



1.



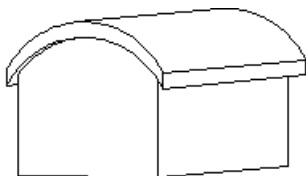
2.

**Vault 1**

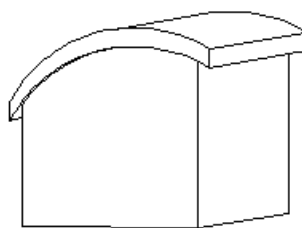
The program builds a vault following the contour of a rectangle. The convex vault follows the arc defined by two of its tangents.

Example:

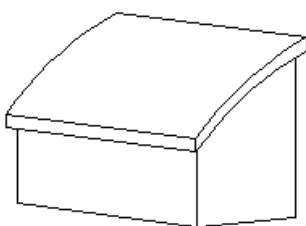
| | 1. | 2. |
|---|-----|-----|
| A | 60° | 60° |
| B | 60° | 30° |



1.



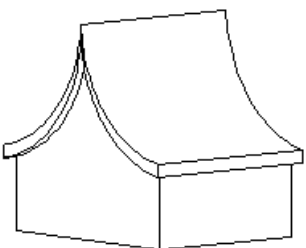
2.

**Vault 2**

The convex vault follows the arc defined by one of its tangents, where you have to define the height difference between the reference lines of the opposite roof planes.

Example:

| | |
|---|-----|
| A | 45° |
| V | 2 m |

**Vault 3**

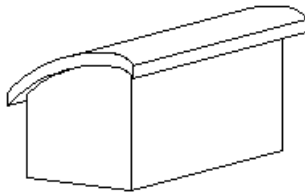
The concave vault follows the arc defined by one of its tangents, where you have to define the height difference between the reference lines of the opposite roof planes. In the example below the created arched surface is mirrored on its ridge.

Example:

| | |
|---|-----|
| A | 10° |
| V | 3 m |



Vault 4



The convex vault follows the contour of two tangentially joined arcs. You have to specify the angle of the two tangents and the height difference between the reference lines of the opposite roof planes.

Example:

| | |
|----------|-----|
| A | 45° |
| B | 45 |
| V | 2 m |

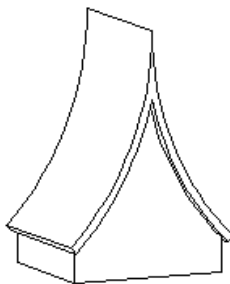


Vault 5

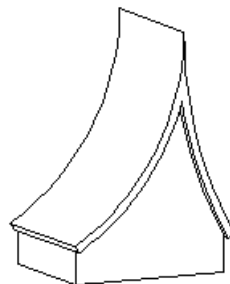
The program builds two vaults following the contour of a rectangle. The concave vaults follow the contour of two joining arcs. You have to define the angle of the two tangents on the bottom and the height difference between the reference lines of the opposite roof planes.

Example:

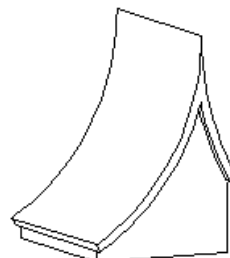
| | 1. | 2. | 3. |
|----------|-----|-----|-----|
| A | 45° | 30° | 30° |
| B | 45° | 60° | 60° |
| V | 0 m | 0 m | 2 m |



1.



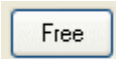
2.



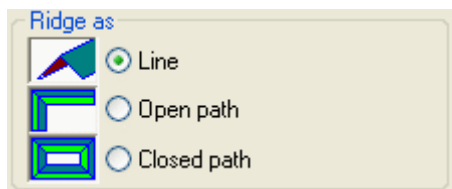
3.

9.8.2.6. Projecting extruded roof by free profile

Using this command you can draw a roof with any shape by customizing the profile. This command is similar to the previous one; however, here you have to define the vertical cross-section of the roof. You can also project the roof thus drawn onto an automatic roof, this way creating a so called "bull's eye roof" for instance (see the example below).



- Select the **Free** icon.
- Define the angle of the ridge relative to the horizontal plane.
- Select the type of the roof path with one of the following options:



- **Ok** Closes the dialog box.
- Define the profile using the Profile definition tool in the Toolbox, or:

Options:

| | |
|------------------|--|
| OPENCHAIN | <ul style="list-style-type: none"> • You can select an already existing profile. Click on the endpoint of the open profile. Define the reference point of the selected profile. |
|------------------|--|

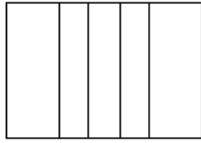



For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.

Then define the path according to the selected type:

Path

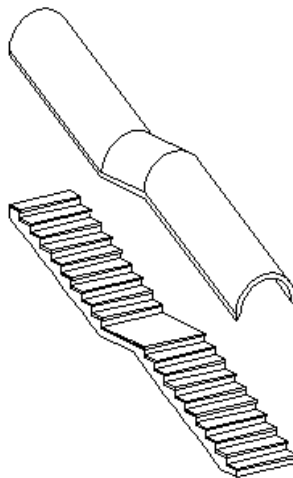
- Define the reference line of the roof by its two points. The reference point previously defined will be placed on the reference line.
-



You can project the so called "bull's eye roof" onto the automatic roof by clicking on the  Project extruded roof command.

Open/Close path

- Define the points of the open/close path. The reference point of the profile will correspond to the first point.
- **Enter** Completes path definition.
- Define the height of the points indicated by the program.
- In the case of the same height for each point press **Enter** for all the subsequent points after defining the first value.



Using this command you can place a roof above a staircase as well. See the example. You can insert a profile with different predefined height values on an open path or a free profile.

9.8.2.7. Automatic roof with predefined profile

This command is different from the *Automatic roof* command in that instead of using simple roof planes it applies a profile. The defined profile can consist of both straight and arc segments.

- Define a cross-sectional profile of the roof to move along the reference line of the roof using the *Profile definition tool in the Toolbox*.



See detailed description in chapter 8.9. *Specifying profile*.

Options:

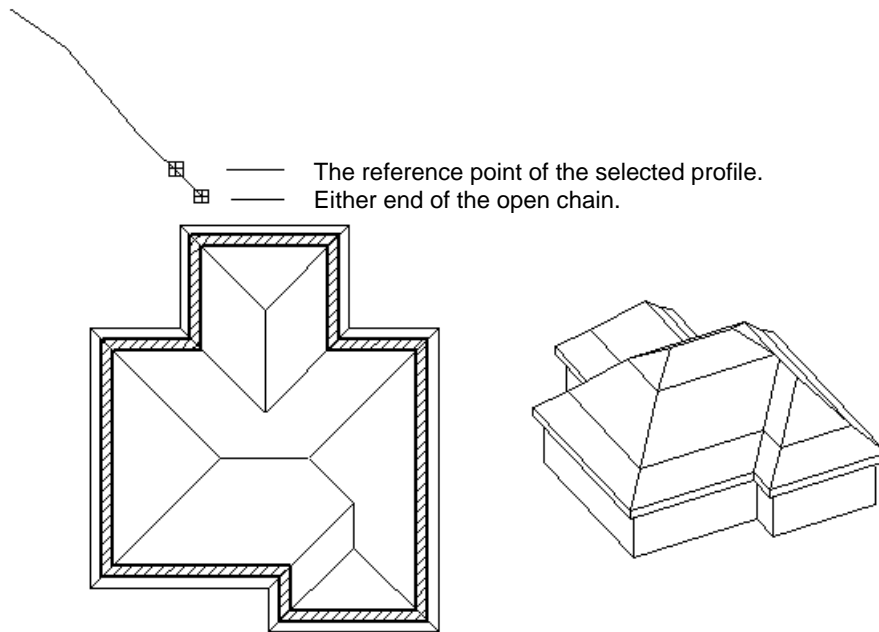
| | |
|------------------|--|
| OPENCHAIN | You can select an already existing profile. Click on the endpoint of the open profile. |
|------------------|--|

- Define the reference point of the selected profile.
- Define the reference line of the roof.

For the next steps see the description under the  **Automatic roof** command.



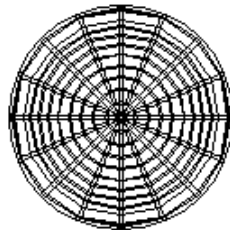
See detailed description in chapter 9.8.2.1. *Automatic roof*.



It is recommended to determine the profile from right to left, so that its reference point will be on the right side.

9.8.2.8. Dome roof

You can create a dome-like roof by using the *Dome roof* command. Basically, you have to place a circle on the floor plan by applying the keywords appearing in the command line. The diameter entered is actually the internal diameter of the roof and you can set the roof thickness in the Roof properties menu.



9.8.2.9. Open dome

With the *Open dome* command you can use a part of a dome roof cut out along the radius as roof. You can either define the open dome by three points on the floor plan (using the **P3** command) or you can define the starting angle and the end angle in the *Circular arc* dialog box previously.

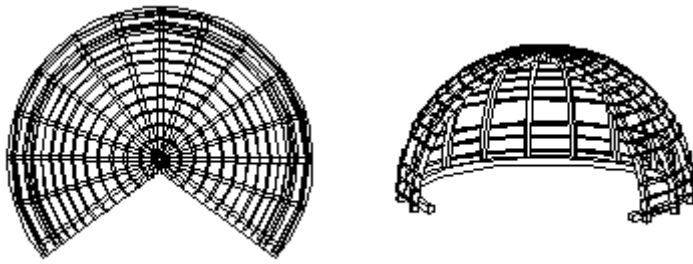
Circular arc

Start angle

320


End angle

225



9.8.3. Modifying roof properties

You can modify the roof properties by selecting the **Properties** command from the Shortcut menu. The dialog box thus appearing contains the current values of the selected roof. If you change any value, the roof will change accordingly. There are four dialog boxes within the **Roof properties** dialog box: *Eaves purlin*, *Rafters*, *Battens*, *Projection and cut*, and *Roof planes*.

A ridge tile can only be modified globally. In other words, to do so right click on the  Roof icon or select the **Properties menu - Roof - Roof properties** dialog box. This is a global command for all existing roofs.

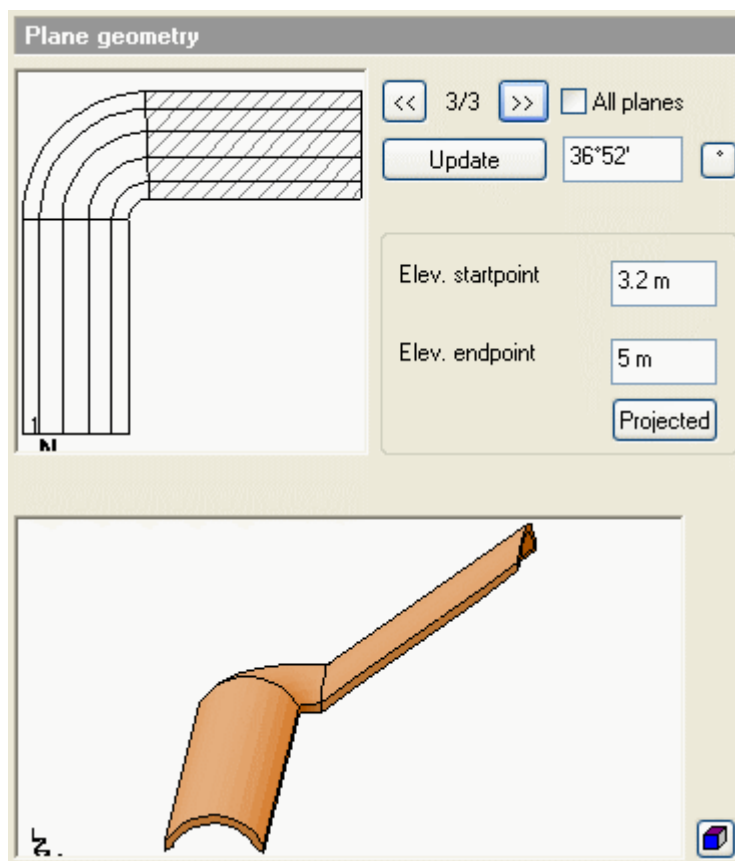


For details see Chapter 9.8.1. *Roof properties* and Chapter 9.8.2.1. *Automatic Roof*.

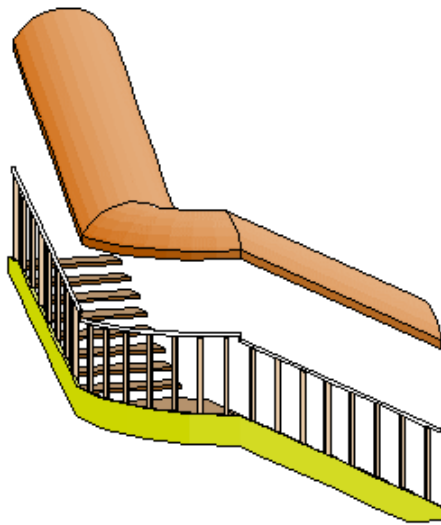
Modifying extruded roof

In case of an extruded roof the Modify properties dialog box is different from the ones discussed above.

- ❖ An extruded roof has fewer properties than an automatic one; consequently you can modify fewer values in the General properties dialog box.
- ❖ In the *Roof planes* dialog box you can modify both the **Starting height** and the **End height**. If you have placed the extruded roof on an open chain, the starting and the end heights refer to the segment with hatching. You can select the segments by either clicking or by arrows. The dialog box will calculate the slope of the ridge from the starting and the end heights. You can also define the end height with entering the slope.
- ❖ You can modify the profile of the projected room in the *Extruded roof* dialog box appearing when clicking on the *Roof slope - Projected* button.



With this option of modification you can easily set the roof height at the breakpoints above the stair.



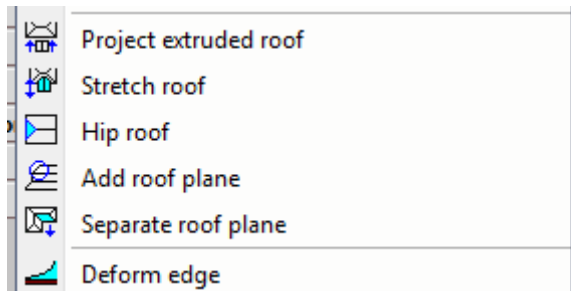
9.8.4. General editing of roof geometry

There are several methods to modify or edit the geometry of an already existing roof. In this part we will discuss the following:

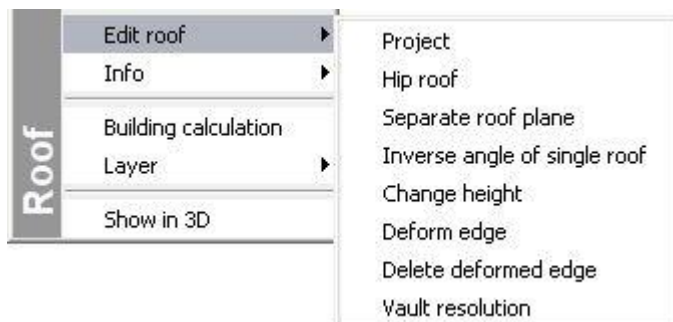
- ❖ Extruded roof
- ❖ Extend roof
- ❖ Hip roof
- ❖ Multiple hip roof
- ❖ Separating roof plane
- ❖ Inverting slope of single roof
- ❖ Modifying height
- ❖ Deforming roof edge
- ❖ Deleting deformed edge
- ❖ Vault resolution
- ❖ Roof window

You can select these commands the following ways:

- ❖ From the  **Roof tool:**




- ❖ From the *Shortcut menu*:

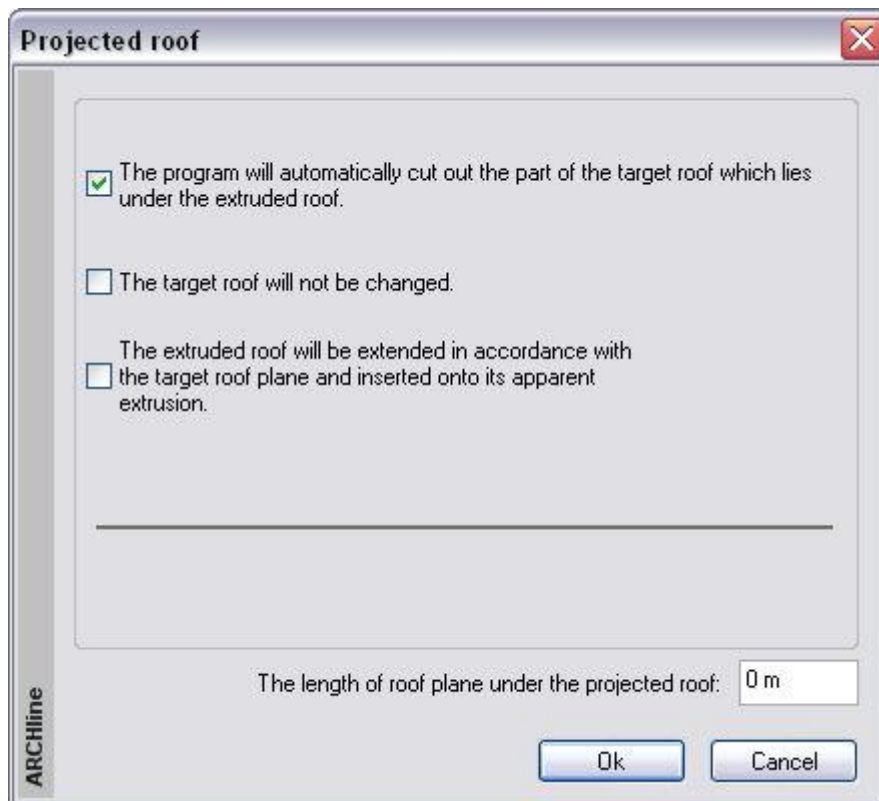


9.8.4.1. Extruded roof

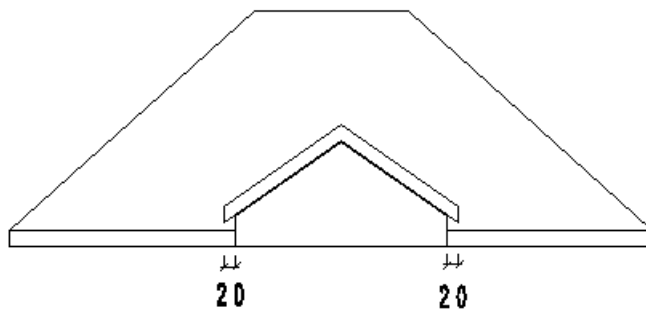
This command identifies the overlapping of the different roof surfaces. It projects the extruded roof first selected onto the target roof by applying different merging methods.

! You can only project a roof created by the  **Extruded roof** command. The target roof can be of any type; however, you have to keep in mind that the geometry of the roofs must be adjustable when projecting.

- Select a roof to be projected onto another roof plane.
- Select the method of projection from the dialog box. This command will merge the selected roof and the target roof.

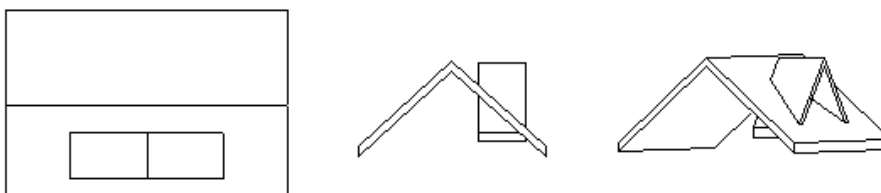


- When the roof is projected, you can define the length of roof plane under the projected roof in the *Projected roof* dialog.

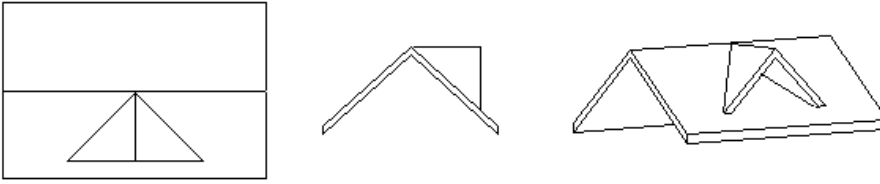


- Select a target roof into which you want to merge the extruded roof.
When selecting the third option, define a plane of the target roof by one of its internal points to which you can adjust the extruded roof.

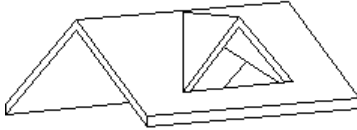
Before projecting:



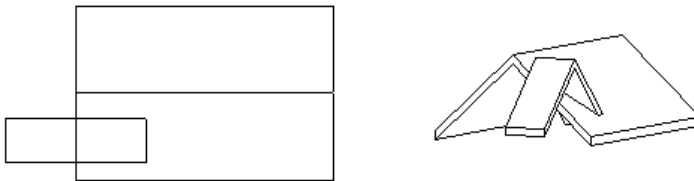
After projecting when using the second option:



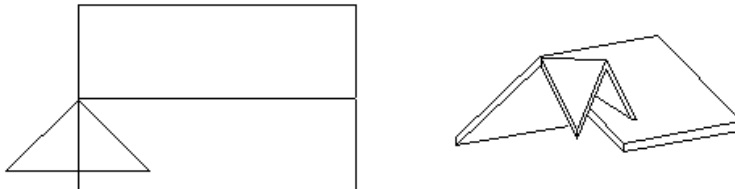
After projecting when using the first option:



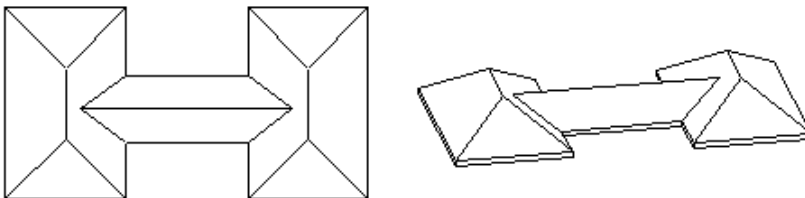
Before projecting:



After projecting when using the third option:



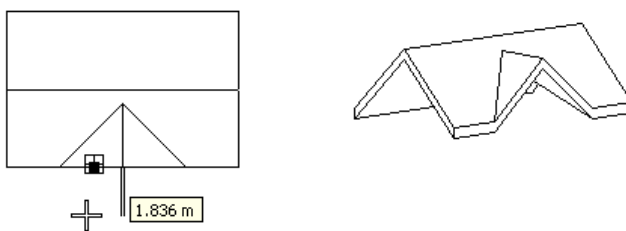
The extruded roof can be projected onto the prepared roof from both sides this way merging them as it is shown in the figure. Both sides of the extruded roof can be projected, so this way you can connect two already constructed roofs. See the following figure.

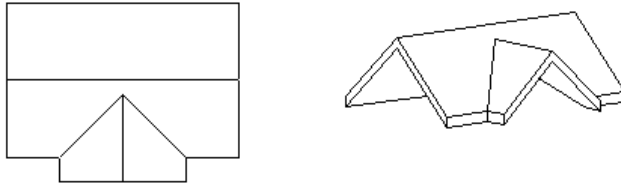


9.8.4.2. Stretching roof

With this command you can modify the length of an extruded roof.

- Select a side edge of the extruded roof to be extended.
- Specify the new position of the edge.





9.8.4.3. Hip roof

By creating a new roof plane this command will build a hip roof of two front facing roof planes with a common edge. Depending on the type of the selected roof you can use two different methods to insert a new roof plane. You can use the same command for deleting a previously inserted roof plane.

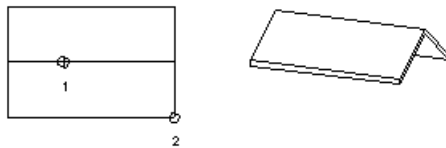
Extruded roof into hip roof

With this command you can create a new roof plane to fully or partly close the open side of the roof.

- Select an extruded roof to which you can add a new plane.
- Specify the reference line of the new roof plane by one of its points on the projection of the roof's open side. The point specified will define the height of the reference line. If you place the point on the corner point of the predefined roof, the new plane will fully close the open side of the roof.
- The Roof plane dialog box appears. You can modify the slope and the thickness of the roof as well as the relative and the absolute heights of the reference line.

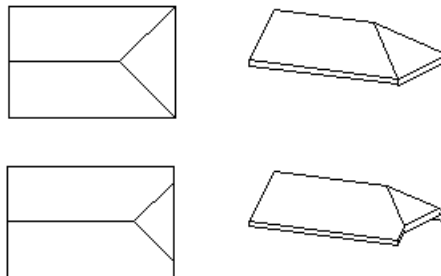
OK Completes the command.

Example:



The height of the reference line (2.70 m) corresponds to that of the already existing roof reference line. The slope is 35°.

The height of the reference line (3 m) extends that of the already existing roof reference line. The slope is 35°.



Automatic roof into hip roof

Here you can add a new roof plane to an automatic roof. You can place the new plane onto an already existing roof plane or onto an open side.

You can define the height of the new plane's reference line by either related to the reference line of the roof or by selecting a point of the roof.

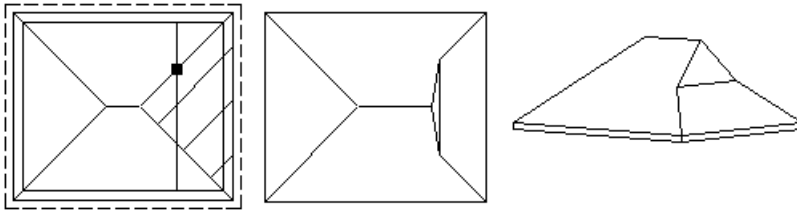
You can delete an added roof plane as well.

Reference line by height:

- Select a roof.
- Click on one of its roof planes to add another plane.
- Enter the relative height of the new roof plane's reference line related to the reference line of the selected roof plane.
- Enter the slope of the new plane.
- **Enter** Completes the command.

Reference line by selecting a point

- Select a roof.
- Click on the **SELECTPOINT** keyword.
- Select a point to define the height of the new plane's reference line.
- Enter the slope of the new plane.
- **Enter** Completes the command.
-



Delete added plane

- Select a roof.
- Click on the **DELETE** keyword.
- Select an added roof plane to delete.
- **Enter** Completes the command.

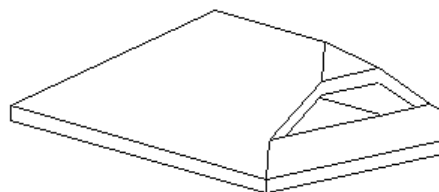
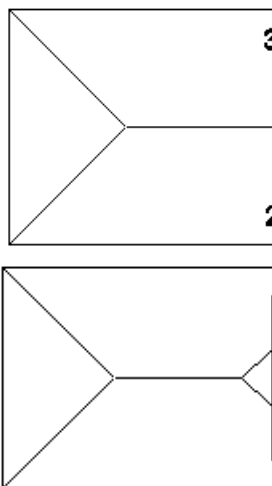
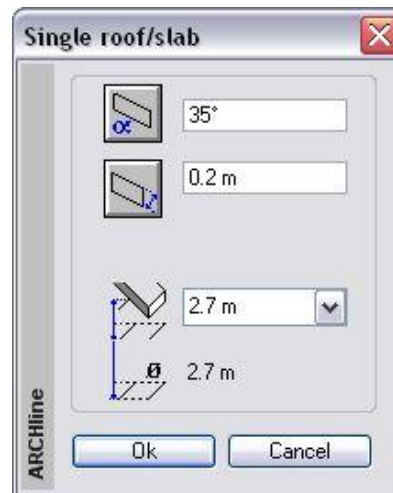


In case of an automatic roof you can add a hip roof by using the *General properties - Roof planes* dialog box.


9.8.4.4. Multiple hip roof

In the case of creating more complex, multiple hip roof structures you may have to add another new plane to the a previously merged roof plane, that is, you may have to create a new hip roof.

- Click on the roof plane (point 1) where you wish to create a new hip roof. (In case of a plane of 90° click on the edge, otherwise inside the plane.)
- Define the reference line of the new plane by specifying two points. (Point 2 and 3.)
- You can set the exact height of the reference line in the appropriate field.
- Enter the slope value of the new plane.



9.8.4.5. Separating roof plane

This command helps you to customize any selected plane of an automatic or a predefined roof. The corner points of the new roof are „free“, that is, they can be freely edited. You can, for example, apply the  **Move node** command.

- Select a roof plane to be customized.
- **Enter** Accepts the selected plane.
- **NO** Selects another plane.
- **Enter** Completes the command.





You cannot separate an automatic roof defined by a profile into roof planes. For such roof structures use the Edit structural node commands.

9.8.4.6. Inverse angle of single roof

This command inverts the slope of a single roof.

- Select a single roof to invert its slope



You can only apply this command for roofs created plane by plane (that is for roofs created by the  *Roof plane by reference line* or, the  *Roof plane by 3 points* commands).

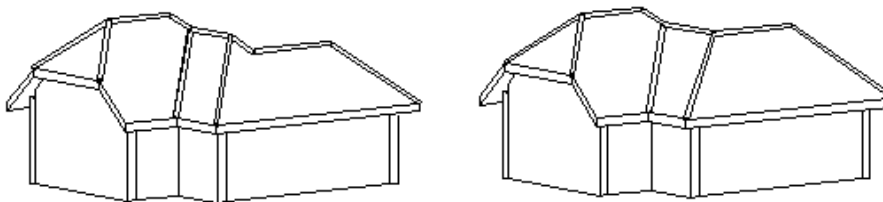
9.8.4.7. Modifying height

You can also modify the height of any point of the infinite plane belonging to the roof plane. If you modify a point, the program will rotate the roof around the reference line of the roof as axis. If the selected point is on the roof ridge, it means that the height of all the roof planes connected to the ridge will be changed.

- Select a roof to be modified.
- Select a point to define the height of the roof.
- Enter the height of the roof above the point selected in the previous step, or click on the **LIKE** option of the Command line to use the selected point of the roof edge to give the height and select the point of the desired height.
- Select the roof planes (by clicking on any of their internal point) which will be modified by the new height point.

For example:

In the case of an automatic roof the program will draw the planes by the given slope values. In case of more complex floor plans the roof ridges can have different heights. Use the Modify height command to move the selected ridges to the same height. This modification will, of course, change the slopes as well.



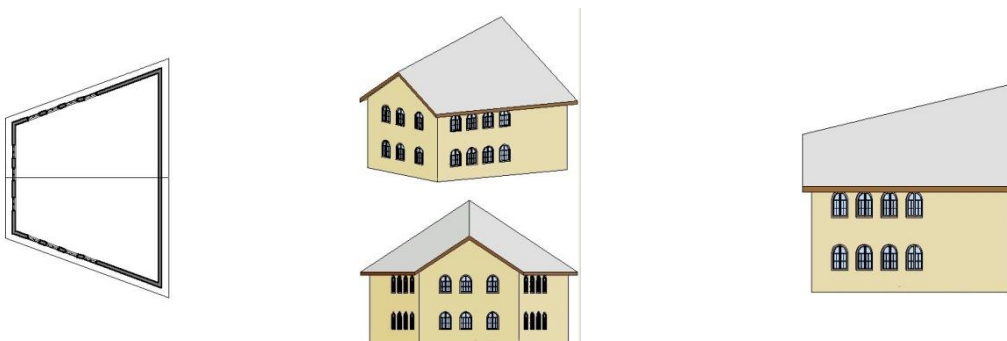
You cannot modify a point of the reference line. If you click on the reference line, the program will show its height, however, you cannot change it.

9.8.4.8. Deforming roof edge

This command in the side menu will deform the roof plane by modifying its selected edge. You can change the roof planes and create arched surfaces by modifying the ridge.

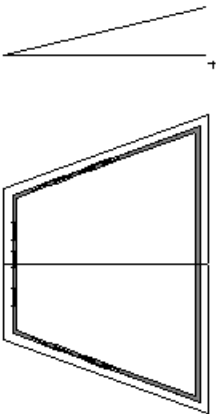
You may need this method when the opposite walls of the building are not parallel. Here the ridge of the automatic roof is not horizontal. If you want to change the ridge horizontal, it means that the roof planes will be deformed and arched surfaces will be created.

This building has been drawn with an automatic roof and two gables.



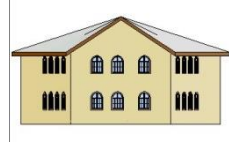
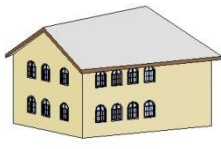
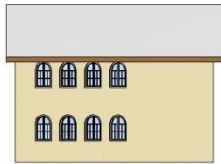
Using the command you can make the roof ridge horizontal.
After selecting the ridge use the commands of the *Edit profile* tool to deform the roof plane.

- Select the roof for modifying the height.
- Select the roof edge whose height you would like to modify. In the example the ridge has been selected.
- Place the layout image of the edge on the drawing area.
- Use the *Edit profile* tool to add a node or to convert a side into an arc, etc.
Now select the *Move node* option to move the higher endpoint of the ridge to the level of the lower endpoint.
- **Enter** Completes defining the profile.
- **Enter** Exist the Edit profile command.

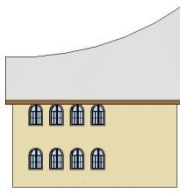
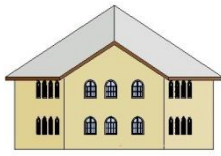
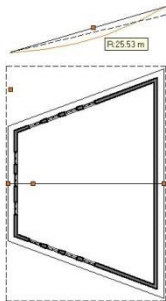


See the description of the *Edit Profile tool* in Chapter 8.9.9 *Editable profile*.

- Enter the value of resolution on the edge. The larger the set value is the higher the resolution becomes. This is important when you want to convert a selected edge into an arc. In the example the value of resolution is 1.
OK Closes the dialog box and completes the modification.



You can convert the edge into an arc. In this case select the *Edit profile tool - Line->Arc* command. Define the arc. The resolution is of great importance here. Enter for example 64.



In case you want to restore the original form of the modified roof edge, click on the *Shortcut menu - Edit - Delete deformed edge* command.

9.8.4.9. Delete deformed edge

With this command you can delete the edited roof edge and restore the original form.

- Select the roof to be modified.
- Select the pick point to be deleted.

Options:

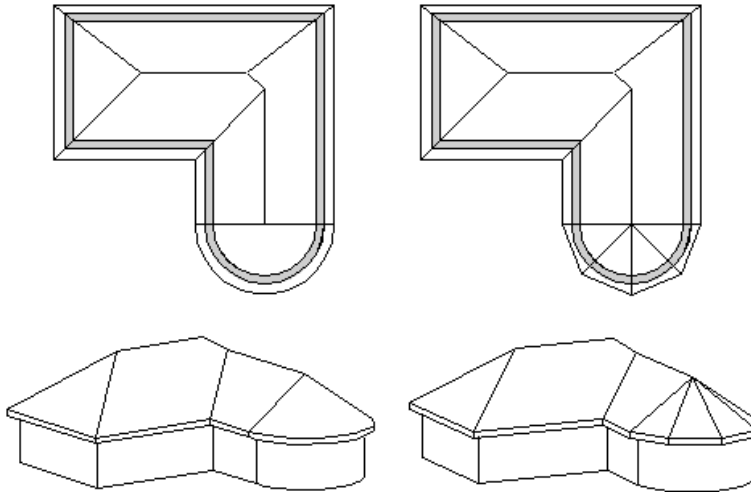
| | |
|-------------|--|
| ALL | Use this option when you want to restore each edge of the roof. |
| EDGE | Use this option when you want to restore the edited roof edges one by one. |

9.8.4.10. Vault resolution

If the reference line of the roof follows a circle or an arc, the program will automatically create a coned roof. Use this command when you want to convert a coned roof into a plane one due to implementation or projection.

You can transform a coned roof into a polygonal roof by entering the number of the nodes in relation to the arc and the direction of the polygon's basic edge.

- Select the extruded roof or an arched edge of the coned roof to modify the resolution.
- Enter the resolution degree of the arched segment (0 means no resolution).
- Define the direction of the pyramid's basic edge. The program will offer the centre point of the circle for setting the direction.



9.8.4.11. Roof window

Use this command to place a roof window on the defined roof plane. The type of the roof window can be selected in the dialog box appearing.



For detailed description see Chapter *Insert door/window – 9.3.2.5. Insert roof window* section.

9.8.5. Editing roof nodes


The free nodes of the roof can be moved or deleted and its free edges can be shifted parallel or converted into an arc and back.



The *free nodes* of the roof are the ones not used in the creation of the roof profile, while the ones used in the profile creation are called *structural nodes*.

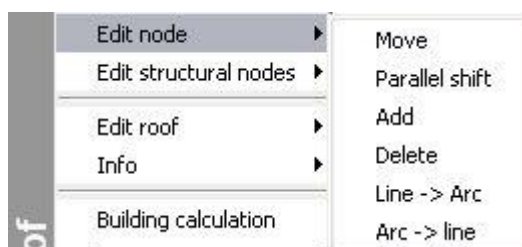
- ❖ Each node and edge of a single roof plane is free.
- ❖ An automatic roof has no free nodes. The arris and ridge are not free while the edges terminating a simple plane are free. The nodes added to the free edge are free as well.
- ❖ An extruded roof has no free nodes. Only the ones added to the only free edges perpendicular to the projection are free.

Consequently, if you want to edit the nodes of a roof plane in case of an automatic or extruded roof first you have to

separate the desired roof plane from the current roof. Use the  **Separate roof plane** command to do so. The nodes and edges of the single roof planes thus created are free.

In case of *automatic roofs by profile and extruded roofs with arched surfaces* you can only apply the commands related to editing *Structural nodes*.

You can find these commands in *Shortcut menu*:



9.8.5.1. Moving, adding or deleting nodes

Use this command to move, add or delete free nodes.

Move node

Moves free nodes by clicking on any of them.

Delete node

Deletes a selected roof node by clicking on it and selecting the **DELETENODE** keyword.

Add node

Add new roof nodes by clicking on any free edges of the roof.

- Select a free roof edge where you want to add a new node and specify the position of the node, or select the **SPLOYGON** keyword from the command line to create a closed polyline as part of the roof contour.
- Specify the nodes to be inserted.
- **Enter** Completes the command.

9.8.5.2. Parallel shift

Use this command to move a selected side of the roof with a given distance.

- Select the edge to be moved.
- Specify the new position of the roof contour.
- **Enter** Completes the command.

9.8.5.3. Line <-> Arc

You can do the following modifications with the help of this command:

Arched roof side → Straight roof side

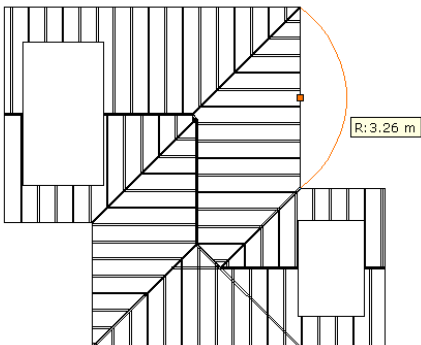
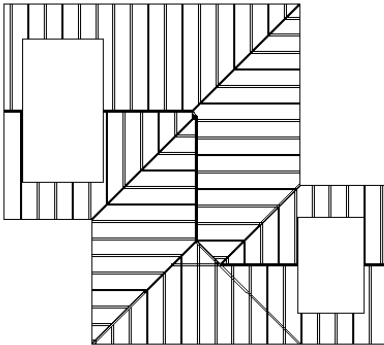
- Select an arched roof side to convert it into a straight one.

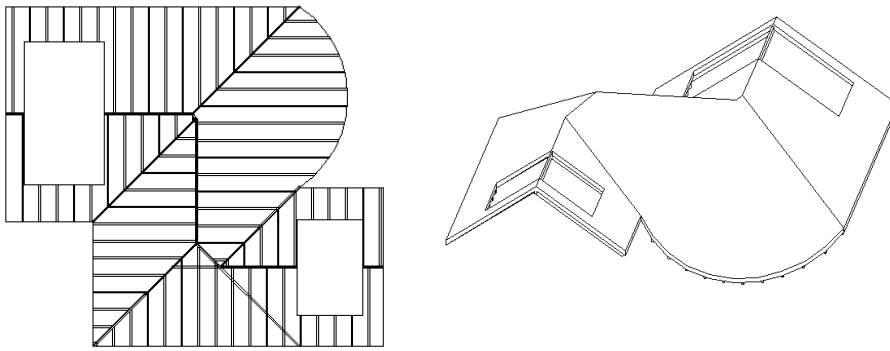
Straight roof side → Arched roof side

- Select a straight roof side to be modified.
- Specify a point. The arc will cross this point, or select any of the options of the command line. You can select and arched roof side as well to modify the arc radius.
- **Enter** Completes the command.

Options:

| | |
|------------------|--|
| DIAMETER | Value of the diameter |
| RADIUS | Value of the radius |
| PERIMETER | Value of the perimeter (length of the arc) |
| ARC | Value of the arc cord |

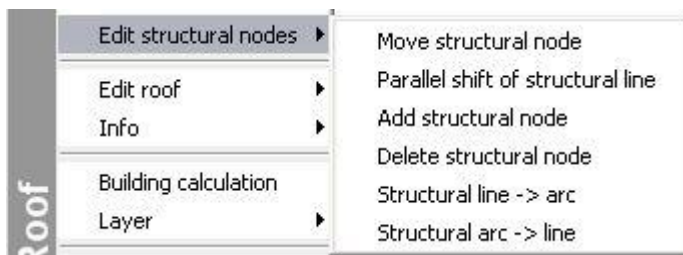




9.8.6. Editing structural nodes

The nodes involved in the creation of the cross-sectional profile of the roof are called **Structural nodes**. To edit structural nodes use the commands of *Edit structural nodes* (*Edit nodes* cannot be applied here).

You can find these commands in the *Shortcut menu*:



9.8.6.1. Moving structural nodes

Use this command to move structural nodes.

- Select the roof whose reference line you want to modify.
- Select the node to be moved.
- Specify the new position of the node.
- **Enter** Completes the command.

9.8.6.2. Parallel shifting of structural line

Use this command to move parallel a structural edge of the roof, that is, the reference line of the roof.

- Select the roof whose reference line you want to modify
- Select the edge to be moved.
- Specify the new position of the edge.
- **Enter** Completes the command.

9.8.6.3. Adding structural nodes

You can add structural nodes used for the creation of profiles to the reference line of the roof.

- Select a roof to be modified.
- Select the segment of the reference line where you want to add a new node.
- Specify the position of the new node.
- **Enter** Completes the command.

9.8.6.4. Deleting structural nodes

You can delete structural nodes on the reference line of the roof used for the creation of profiles.

- Select a roof to be modified.
- Select the node to be deleted.
- Select other nodes, or
- **Enter** Completes the command.

9.8.6.5. Structural line - Arc

You can do the following modifications with the help of these two commands:

Arched roof side→ Straight roof side

- Select an arched roof side to be converted straight.

Straight roof side → arched roof side

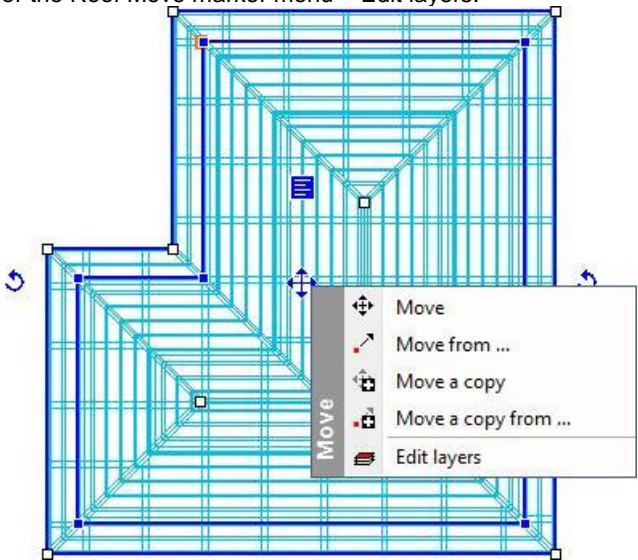
- Select a straight roof side to be converted arched.
- Specify a point. The arc will cross this point, or select any of the options of the command line.
- **Enter** Completes the command.

Options:

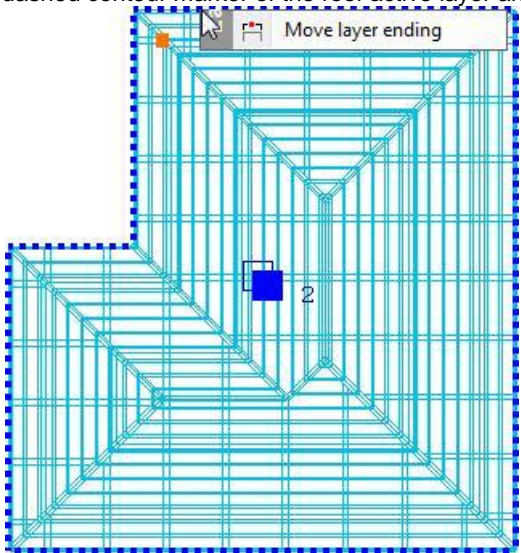
| | |
|-----------|--|
| DIAMETER | Value of the diameter |
| RADIUS | Value of the radius |
| PERIMETER | Value of the perimeter (length of the arc) |
| ARC | Value of the arc cord |

9.8.7. Roof – Edit layers

Roof layers can be edited similarly to editing slab layers. You can access Edit layers tool in Roof pop menu – Edit layers or the Roof Move marker menu – Edit layers.



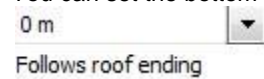
After selecting the Edit layers tool you can make an offset to all endings of the active layer in one step. Click on the dashed contour marker of the roof active layer and select Move layer ending.



The roof layers setting dialog is extended by new possibilities:

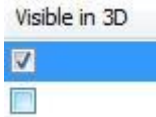
- Roof layer bottom ending distance and type can be set.

You can set the bottom ending distance by selecting from the dropdown list or you can type a value.



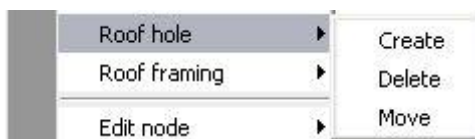
If the roof layer bottom ending distance is not set to “Follows roof ending” then you can select a layer ending type by clicking on the ... button. Select an ending type in the appearing dialog window and click OK to accept it.

- Visibility of the layer can be set for each roof layers one-by-one.



9.8.8. Roof hole

You can use this command to create, delete or move a hole on the roof. Use the Hole command when drawing chimneys. You can find these commands in the Shortcut menu:



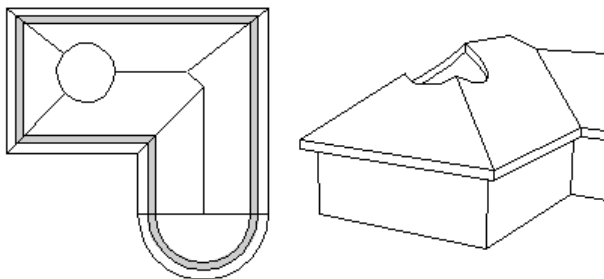
9.8.8.1. Creating a roof hole

You may need to create a roof hole when constructing for example a chimney. This function is always related to a roof.

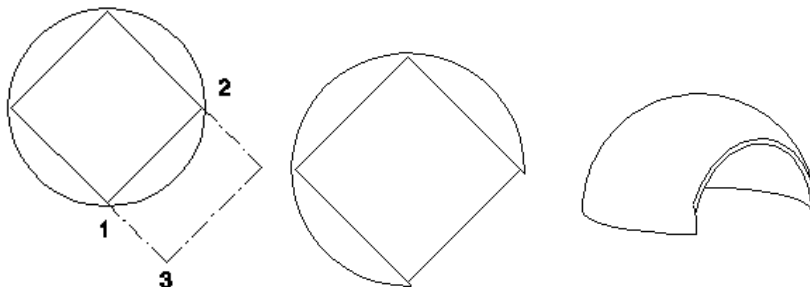
- Select a roof on which you want to create a hole (the plane of this roof will be the reference plane of the hole).
- Define the hole's profile using *Profile definition* tool.
- **Enter** Completes the command.

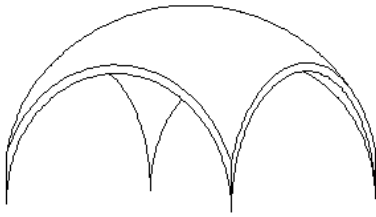


For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.



Another way to create a roof hole is to cut the roof contour with the defined profile:





9.8.8.2. Deleting a roof hole

Use this command to delete an already existing roof hole.

- Select a roof hole to be deleted.
- **Enter** Completes the command.

9.8.8.3. Moving a roof hole

Use this command to move an already existing roof hole.

- Select a roof hole to be moved.
- Select the reference point of the roof hole then define the new position of the hole by moving it by its reference point.
- **Enter** Completes the command.

9.8.8.4. Copy a roof hole

Use this command to copy an already existing roof hole.

- Select a roof hole to be copy.
- Select the reference point of the roof hole then define the new position of the hole by moving it by its reference point.
- **Enter** Completes the command.

9.8.9. Roof framing

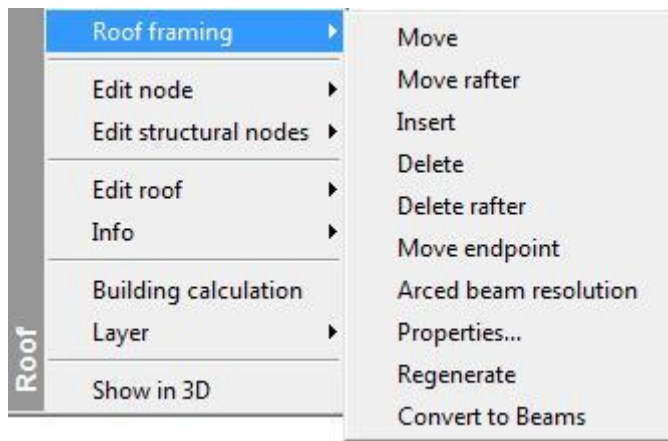
You have to enable the *Enable eaves purlin*, *Create rafters*, *Create battens* options in the *Properties* dialog box and the program will create the framing of the roof.

When drawing use the properties set in the *Eaves Purlins*, *Rafters* and *Batten* dialog box.



The roof framing is displayed on the floor plan as well as on the 3D representation. To satisfy your needs with regard to the geometry of the framing the program enables its editing. You can edit the framing by its objects, one by one, or all on the roof plane at the same time.

Use the following commands for editing in the *Shortcut menu*:

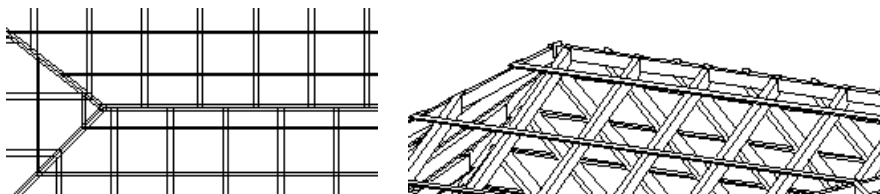


9.8.9.1. Moving

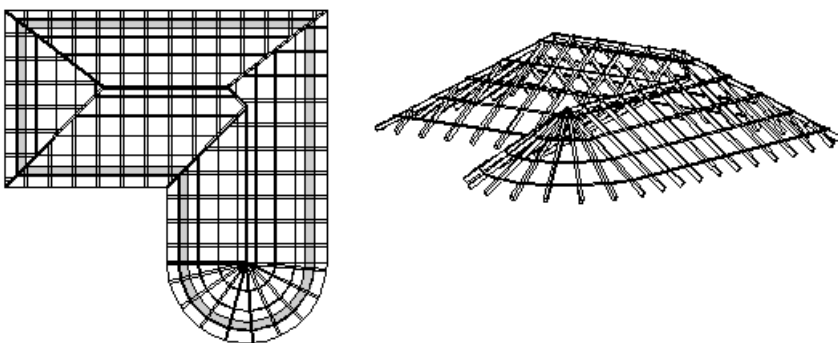
Moves the whole framing of the selected roof plane.

- Select a beam by the point to be its reference point when moving.
- Specify the new position of the beam. The whole framing of the roof plane follows the movement; however the distances between the beams will remain the same.
- **Enter** Completes the command.

The following figure clearly illustrates that the opposite beams do not join:



After moving:



You can also move the framing so that the outermost beam is adjusted to the roof edge (e.g. in the case of a gable wall).

9.8.9.2. Moving one beam

Here you can only move the selected beam.

- Select a beam by the point to be its reference point when moving.
- Specify the new position of the beam.
- **Enter** Completes the command.

9.8.9.3. Inserting

This command inserts a new beam into the desired place.

- Select a beam (the inserted beam will be parallel to this one and be placed on the same roof plane).
- Specify the position of the new beam. The program will automatically insert a new beam into the specified place.

9.8.9.4. Deleting

This command deletes the whole framing from the roof plane or the complete roof framing.

- Select a beam on the roof. The program will automatically delete all the beams on the selected roof plane, or
- Select the **ALL** keyword from the command line to delete the complete roof framing. **Enter**.

9.8.9.5. Deleting one beam

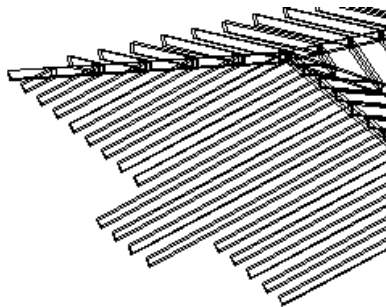
This command deletes the selected beam from the roof.

- Select the beam to be deleted. **Enter**.

9.8.9.6. Move endpoint

This command moves the endpoint of the selected beam closer to the point of selection. Beams can be both longer and shorter than the plane of the selected roof.

- Select a beam.
- Specify the new position of the selected beam. **Enter**.



9.8.9.7. Arc batten

This command can divide the arched segment of the batten following the curve of the wall into equal parts. This command is similar to the Vault resolution command.

- Specify the value of resolution. This is actually the number of the equal segments of the purlin.
- Specify the new position of the framing. You can define the starting point from where the resolution of the batten's arched part begins.

9.8.9.8. Modifying

With this command you can modify each beam property one by one.

- Select the beam/beams to be modified. **Enter**.
- Define the desired properties in the **Beam properties** thus appearing. The defined properties concern the selected beam(s) only.
- **Enter** Completes the command.

Example:

You have defined the cross-section of the beams in the Roof properties dialog box. This cross-section is of global relevance. However, you have to assign a larger cross-section to the hip-beam due to the extra weight on it. Apply the *Roof framing - Modify* option to the selected hip-beam. Specify the desired cross-section. The newly defined cross-section is relevant to the hip-beam only.



See the detailed description of the properties in Chapter 9.8.1. *Roof properties*.

9.8.9.9. Restoring framing

This command restores the original framing of each roof plane one by one.

- Select an option in the Command line:

| | |
|-------------------|--|
| HORIZONTAL | It restores the battens for roof tiles only. |
|-------------------|--|

| | |
|----------------------|--|
| PERPENDICULAR | It restores the eaves purlins only. |
| ENTER | It restores the complete roof framing. |

- Select the appropriate roof lane.
- **Enter** Completes the command.



To restore the complete roof framing use the *Properties - Roof - Delete and rebuild all rafters and eaves purlins / battens options.*

9.8.9.10. Horizontal beams adjusted to roof

You can adjust horizontal beams to roof with the help of command. The selected roof plane defines direction and height of beam.

- Define the parameters of beam through the *Beam* dialog box.



See 9.2.2. *Beam* chapter.

- Select a roof plane to adjust the beam.
- Define the origin of beam.
- Define the end of beam, or
- Or choose an option from the Command line:

| | |
|----------------|---|
| INVERSE | The profile of the beam mirroring to the path. |
| FULL | The roof plane determines the length of the beam. |

•



The beam can't be longer than the roof plane.
The beam, created like this is not part of the roof, so it is not part of the roof list either.

9.8.9.11. Beams adjusted to rafter direction

You can adjust beams to rafter direction with the help of command. The selected roof plane defines the angle of beam. The beam can't be longer than the roof plane.



See the detailed description in chapter 9.8.9.10. *Horizontal beams adjusted to roof.*

9.8.9.12. Beams adjusted to roof edge

You can adjust beams to roof edge with the help of command. The selected roof edge defines the position of beam. The beam can't be longer than the roof edge.

You can use the command well for example, if you create the roof from roof planes. In this case the hip-rafter and ridge purlin are not part of the built framework.



See the detailed description in chapter 9.8.9.11. *Beams adjusted to rafter direction*

9.8.9.13. Roof Framing – Convert to Beams

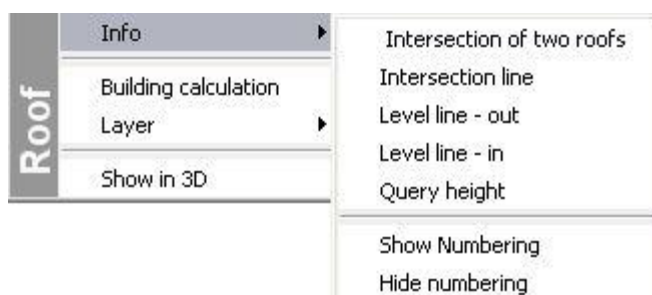
With the help of this command you can create individual architectural beams as a copy of roof framing.

You can activate these commands either in the **Shortcut menu** the *Roof framing / Convert to beams.*

9.8.10. Roof - Information

You can ask for different types of information about the selected roof.

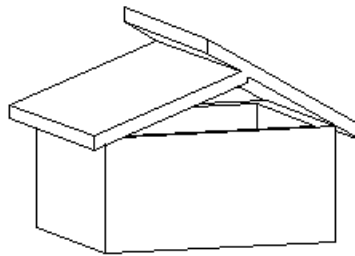
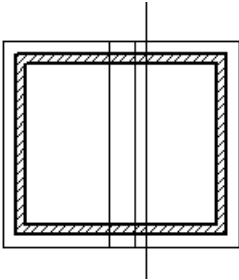
You can activate these commands in the **Shortcut menu**




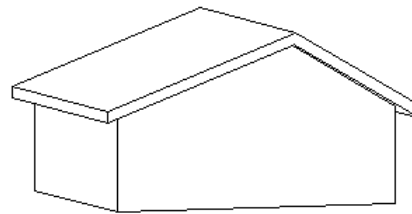
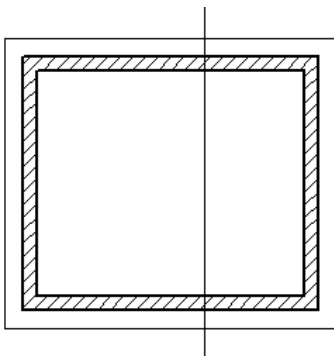
9.8.10.1. Intersection line

This command finds the points of intersection of the two selected roof planes and inserts an editing line on their virtual intersection.

- Select two roof planes to create the intersection line. The program will display the intersection line.



To join the planes by the intersection line move the nodes of both planes to the intersection line by using the  **Move, add, delete node** icon.



9.8.10.2. Level line - Outer - Inner

This command draws the level line of the roof at the given height respectively on the outer or the inner surface of the roof. This level line can be used for example when inserting a roof window at a given height.

- Select a part of the roof where you want to draw the level line.
- Specify the height of the level line relative to the current floor. The program displays the line at the specified height.

You can insert roof windows at the desired height by using the level line.

9.8.10.3. Querying height

The dialog box appearing when activating this command provides information about the height of a selected roof edge at a given point. The information can be embedded into Word or Excel by activating the **Copy to clipboard** command.



You can paste the text from the clipboard into the drawing by activating the *Text tool - Current text - Paste* button.

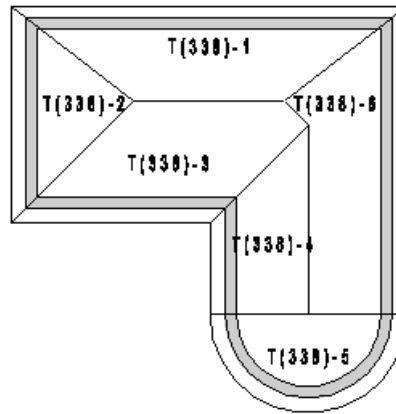
- Mark a roof edge at a desired point to define the height. The program displays the height of the top surface of the roof plane at the desired point, or
- Select the **BOTTOM** keyword to query the bottom surface of the roof plane. The dialog box thus appearing will display the height.

9.8.10.4. Show numbering

By activating this command the program automatically numbers each roof planes and displays an identification number by them.

The **Add - On menu – Quantity Take – Off - Building calculation** dialog box displays several types of information about the roof. The ID among them helps you to identify the roof where the framing object belongs.

This is a global command applying to each roof of the drawing.



9.8.10.5. Hide numbering

This command deletes the numbering of each roof planes.

9.8.10.6. Building calculation

The **Add On menu – Quantity Take Off - Building calculation - Roof+beams** command applied to a roof displays data about the roofs as well as the framing objects.



You can also obtain a building calculation list about a roof in *Word or Excel* from the *Add - On menu*.


The following example shows a table of lists and its corresponding table in Word format.

| Roof | ID | Type | Area | Elev. | Thickness | Edge from c... | Top material | Side |
|-------|-----|------|------------|---------|-----------|----------------|--------------|------|
| Floor | 1 | 2 | 31.779 ... | 1.987 m | 0.2 m | 0.5 m | Roof brown | Natu |
| 0 | 285 | 3 | 2.545 m2 | 2.7 m | 0.2 m | 0.2 m | Roof brown | Natu |
| 0 | 390 | 3 | 0 m2 | 2.7 m | 0.2 m | 0.2 m | Roof brown | Natu |
| 0 | 535 | 3 | 0 m2 | 2.7 m | 0.2 m | 0.2 m | Roof brown | Natu |

| Beam stru... | Width | Thickness | Area | Length | Material | ID |
|--------------|-------|-----------|-------|--------|--------------|----|
| Number | | | | | | |
| 1 | 0.15 | 0.1 | 0.015 | 0.6194 | Natural_pine | 1 |
| 1 | 0.15 | 0.1 | 0.015 | 0.6777 | Natural_pine | 1 |
| 1 | 0.15 | 0.1 | 0.015 | 3.82 | Natural_pine | 1 |
| 1 | 0.15 | 0.1 | 0.015 | 3.878 | Natural_pine | 1 |

| Total | Width | Thickness | Area | Volume | ID |
|---------|--------|-----------|--------|--------|----|
| Length | | | | | |
| 32.877 | 0.15 | 0.1 | 0.015 | 0.4932 | 1 |
| 3.74 | 0.16 | 0.1 | 0.016 | 0.0598 | 1 |
| 4.085 | 0.15 | 0.15 | 0.0225 | 0.0919 | 1 |
| 103.628 | 0.0573 | 0.0556 | 0.0015 | 0.1554 | 1 |

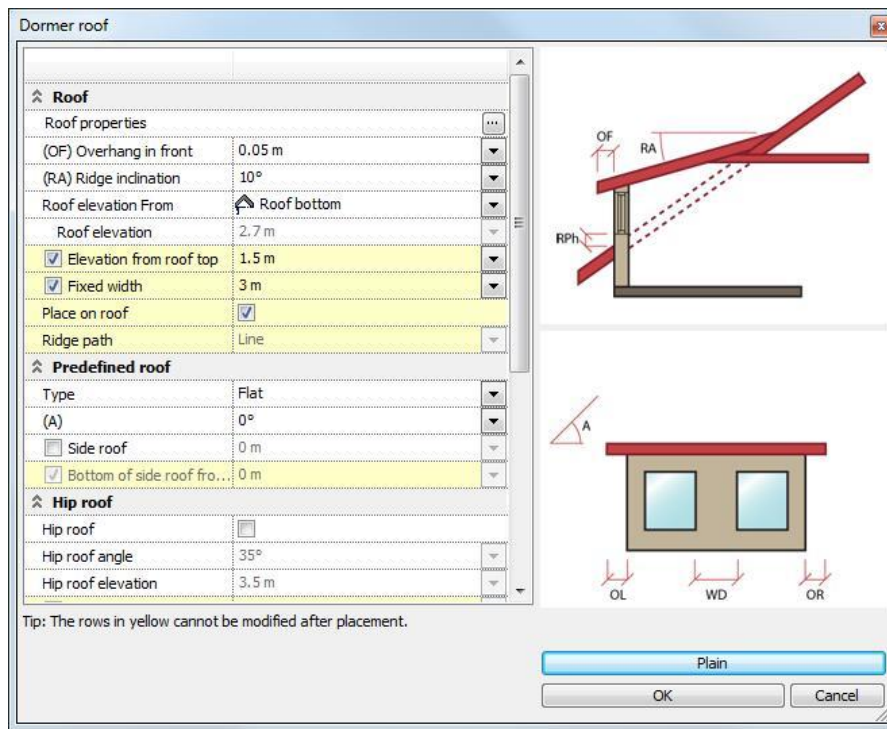
| | | |
|---|------------------|--|
| ARCHline^{XP} Visual Object Pascal | ROOF LIST | |
| c:\program files\archline.xp\2005\draw\manual_pro\teto1.pro | Date: 07.10.2004 | |

| | | | | | |
|---------------|----------------|---|------------|-------------|-------|
| | |  | | | |
| 98 | Automatic roof | | | | |
| Surface: | | | | | |
| 1 | | | | | 16.15 |
| 2 | | | | | 12.11 |
| 3 | | | | | 7.74 |
| 4 | | | | | 6.73 |
| 5 | | | | | 16.48 |
| 6 | | | | | 5.38 |
| 7 | | | | | 8.07 |
| 8 | | | | | 13.46 |
| Total: | | | | | 86.12 |
| Materials: | | | | | |
| Upper: | Roof_tile9 | | | | |
| Below: | Pine2 | | | | |
| Body: | Pine2 | | | | |
| List of beams | | | | | |
| Piece | Material | Length (m) | Width (cm) | Height (cm) | |
| 1 | Pine2 | 0.18 | 5.00 | 3.00 | |
| 1 | Pine2 | 0.23 | 5.00 | 3.00 | |
| 2 | Pine2 | 0.28 | 5.00 | 3.00 | |
| 1 | Pine2 | 0.66 | 5.00 | 3.00 | |
| 1 | Pine2 | 0.71 | 5.00 | 3.00 | |
| 2 | Pine2 | 0.76 | 5.00 | 3.00 | |

9.8.11. Dormer roof

With the help of Dormer roof tool you can create detailed dormer roof structures; you don't need to design all the details only to set the parameters. After setting up the setting you can position the dormer roof object in one single step into the roof structure.

After starting the Dormer roof tool, you will see the following dialog window.




The backgrounds of some rows will be shown in yellow. The rows in yellow cannot be modified after placement.

9.8.11.1. Roof

In the roof section of the dormer roof setting window you can set the details of the roof structure, used as the roof part of the dormer roof.

| Roof | | |
|---|-------------------------------------|---|
| Roof properties | | |
| (OF) Overhang in front | 0.05 m | ▼ |
| (RA) Ridge inclination | 10° | ▼ |
| Roof elevation From | Roof bottom | ▼ |
| Roof elevation | 2.7 m | ▼ |
| <input checked="" type="checkbox"/> Elevation from roof top | 1.5 m | ▼ |
| <input checked="" type="checkbox"/> Fixed width | 3 m | ▼ |
| Place on roof | <input checked="" type="checkbox"/> | |
| Ridge path | Line | ▼ |

Roof properties

You can set detailed settings for roof structure of dormer roof. You can use previously saved sets. To change settings please press the  button at the end of the row.

(OF) Overhang in front

You can set the overhang of the roof at the front plane of dormer roof. Please type a value or choose one from the drop-down list.

(RA) Ridge Inclination

You can set the inclination of the ridge (or at some specific cases, the angle of roof plane). Please type a value or choose one from the drop-down list.

Roof elevation from:

Please choose one from the drop-down list.

| | |
|---|-------------------------------------|
| Roof elevation From | Roof bottom |
| Roof elevation | Roof bottom |
| <input checked="" type="checkbox"/> Elevation from roof top | Lower roof pane |
| <input checked="" type="checkbox"/> Fixed width | Roof ridge |
| Place on roof | <input checked="" type="checkbox"/> |

Roof elevation

You can set the so called base height of the roof; this will specify its position in the 3D space. The value given will be used as defined by the setting previously made at “Roof elevation from” value.

Elevation from roof top

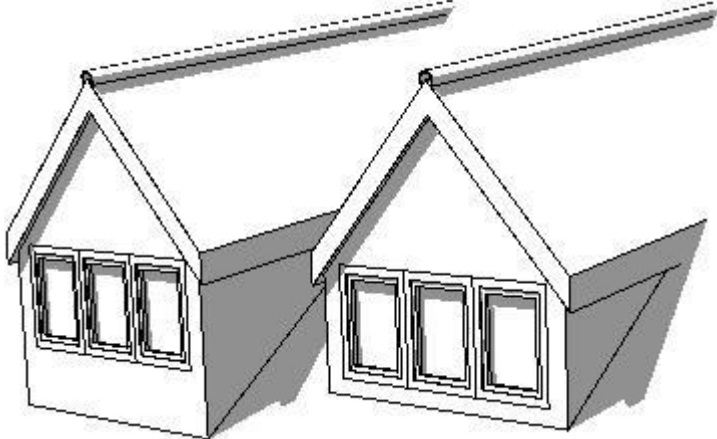
Enable the Elevation from roof top option to make the previously set roof elevation value measure from the top roof surface. When you disable this option the roof elevation value will be measured from the base level of the active floor.

Fixed width

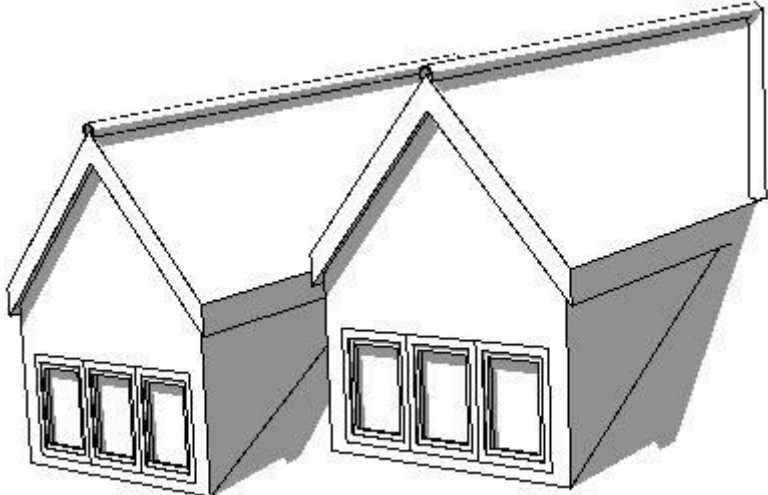
If you enable this option you will be able to give a value for the width of the dormer roof. This option can be used only for new dormer roofs and for predefined types. If you disable this option, you will be prompted to define the width graphically during the placement of dormer roof.

Place on roof

You can place dormer roof directly onto the surface of a selected roof plane. The option is available only when you enable and set the Fixed width option. The following examples are showing you the differences between enabled and disabled settings. If you enable this option the original roof and the dormer roof will be automatically joined to each other also.



Place on roof option disabled



Place on roof option enabled

Ridge path

You can choose from the drop-down list, and based on the setting you made you can design the path of ridge during placement. This option is available only when you disable the Place on roof option.

9.8.11.2. Predefined roof

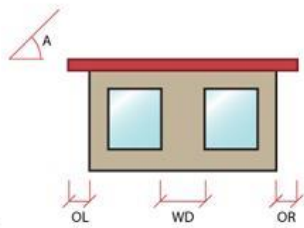
In the predefined roof section of dormer roof setting dialog window you can define the rules of how the dormer roof's roof structure will be projected into the original roof. You can see more or less setting if you choose one certain type of the predefined roof.

| Predefined roof | |
|--|------|
| Type | Flat |
| (A) | 0° |
| <input type="checkbox"/> Side roof | 0 m |
| <input checked="" type="checkbox"/> Bottom of side roof fro... | 0 m |

Type

You can set the type of dormer roof shape. Please choose one from the drop-down list or click on the picture you can see at the right bottom corner of the dialog window to change type.

| Predefined roof | |
|--|-----------|
| Type | Flat |
| (A) | Triangle |
| <input type="checkbox"/> Side roof | Pentagon |
| <input checked="" type="checkbox"/> Bottom of side roof fro... | Arc I |
| | Arc II |
| | Arc III |
| Hip roof | Arc IV |
| Hip roof | Arc V |
| Hip roof angle | Trapezoid |
| Hip roof elevation | Flat |
| <input type="checkbox"/> Hip elevation from roof to | Custom |

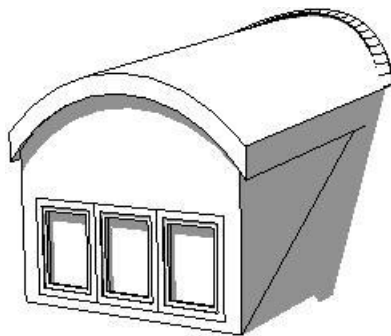


(A), (B), (E), (F), (V), (H) values

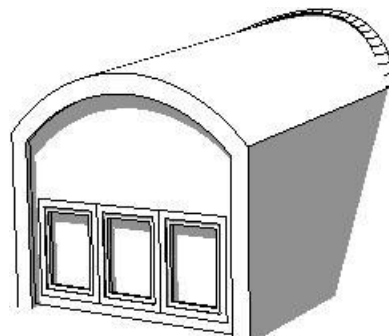
You can set the value, explained on the right side picture.

Side roof

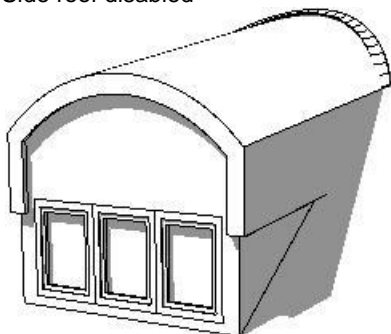
Set this option enabled to design side walls by roof planes. Also you can set the bottom position of the side roof plane.



Side roof disabled



Side roof enabled



Side roof enabled and value is set

Bottom of side roof from roof top

You can enable this option if you previously enabled Side roof option. In this case you can define the distance between the original roof's top plane and the bottom of side roof plane. If you disable this option the value given will be measure from the base level of the active floor.

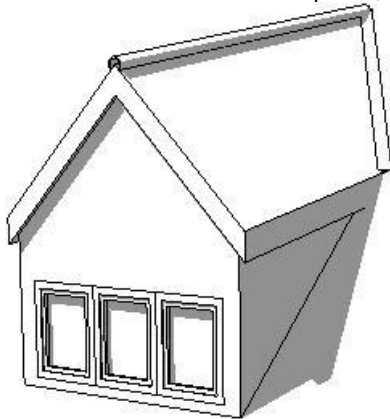
9.8.11.3. Hip roof

You can create hip roof in the roof structure of the dormer roof by using the settings of hip roof section in the dormer roof setting dialog window.

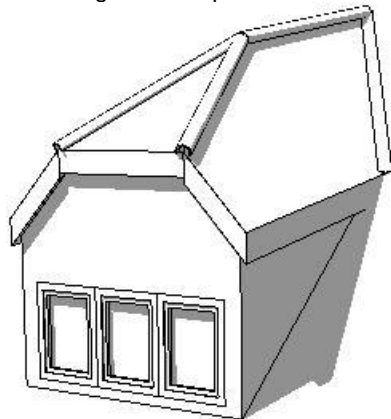
| ⌄ Hip roof | |
|--|-------------------------------------|
| Hip roof | <input checked="" type="checkbox"/> |
| Hip roof angle | 35° |
| Hip roof elevation | 3.5 m |
| <input checked="" type="checkbox"/> Hip elevation from roof to | 0.5 m |

Hip roof

You can enable to create a hip roof, based on the settings of the hip roof section.



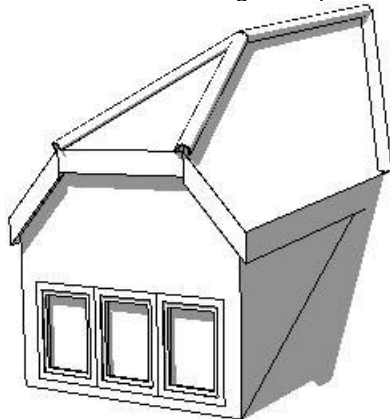
Dormer roof with hip roof



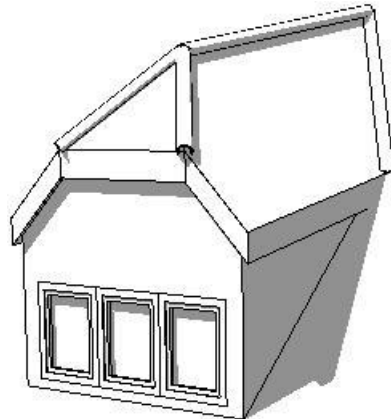
Dormer roof without hip roof

Hip roof angle

You can define the angle of hip roof.

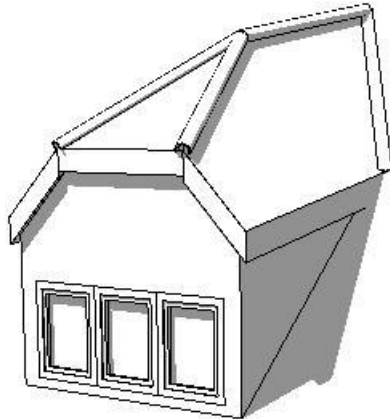


Hip roof with different angle values

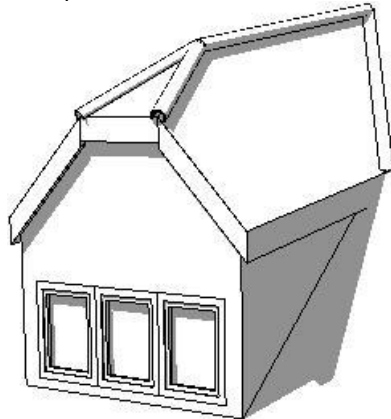


Hip roof elevation

You can set the elevation of the base height of the hip roof, measured from the base level of the active floor.



Hip roofs with different elevations




Hip roof elevation from roof top

If you enable this option the value given will be measure from the original roof's top plane. If you disable this option the Hip roof elevation value will be used.

9.8.11.4. Dormer roof settings

In this section of the dormer roof setting dialog window you can set detailed settings for the dormer roof.

| | |
|--|-------------------------------------|
|  Dormer roof | |
| (OL) Overhang in left | 0.1 m |
| (OR) Overhang in right | 0.1 m |
| Wall properties | ... |
| Side walls | <input checked="" type="checkbox"/> |
| Cut wall bottom | <input checked="" type="checkbox"/> |
| Hide walls on 2D | <input type="checkbox"/> |
| Window properties | ... |
| Number of windows | 3 |
| (WD) Distance between... | 0 m |
| Place windows centered | <input checked="" type="checkbox"/> |
| Place windows on inner side | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> (RPh) Parapet elevation. | 0.1 m |


(OL) Overhang in left

You can set the overhang of the roof at the left side of the dormer roof.

(OR) Overhang in right

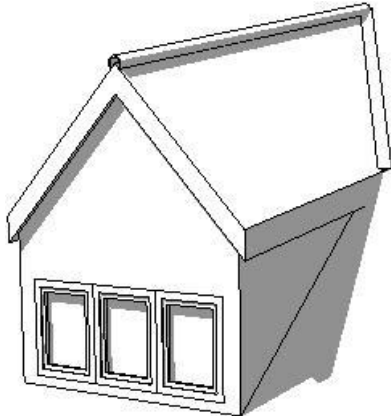
You can set the overhang of the roof at the right side of the dormer roof.

9.8.11.5. Wall properties

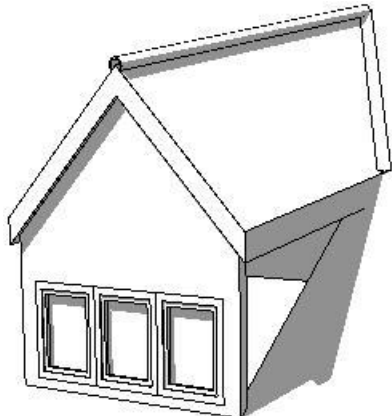
You can set the detailed settings of the side walls of the dormer roof. To change the settings please press  button at the end of the row.

Side walls

You can enable or disable side walls on 2D and in 3D.



Dormer roof with side walls



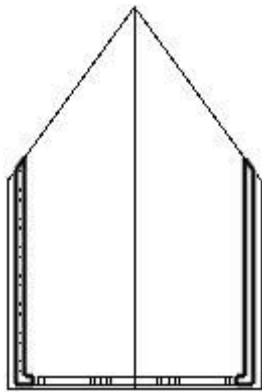
Dormer roof without side walls

Cut wall bottom

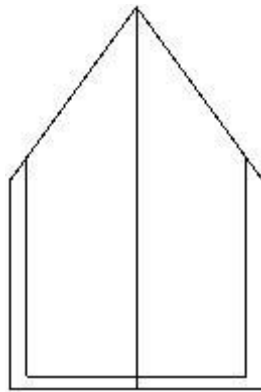
If you enable this option, the bottom of the side walls will be cut by the top plane of the original roof. Otherwise the settings of the wall properties will define the bottom of the wall.

Hide walls on 2D

Enable this option to hide wall symbols only on 2D. The 3D model won't change using this option.




Walls on 2D are visible



Walls on 2D are invisible

9.8.11.6. Window properties

You can change the setting of the windows of the dormer roof. To change the settings please press  button at the end of the row.

Number of windows

Here you can set the number of windows you want to place into the front wall of the dormer roof.

(WD) Distance between windows

You can set the distance between the windows of dormer roof.

Place windows centred

Enable this option to align windows into the middle of the dormer roof front wall. Otherwise the settings made in window properties dialog window will be used as the first distance of the first window on the left side.

Place windows on inner side

Enable this option to place the window to the inner or outer part of the dormer roof front wall

(RPh) Parapet elevation from roof top

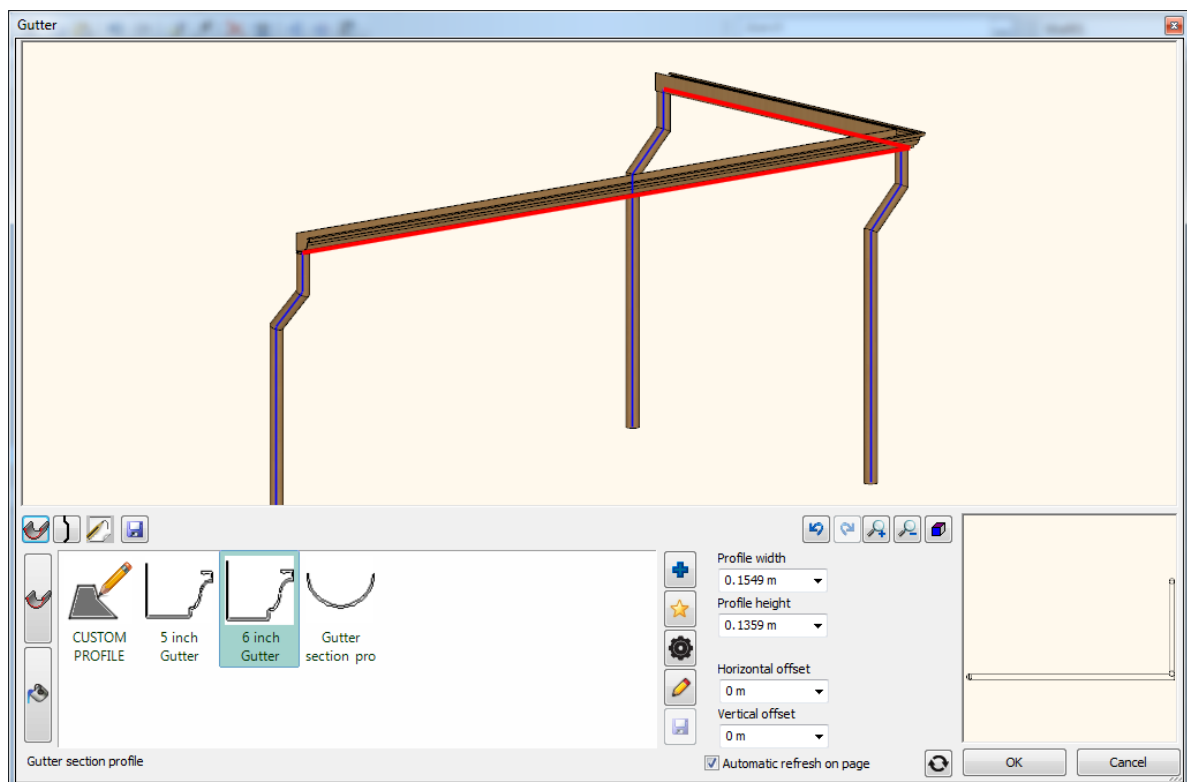
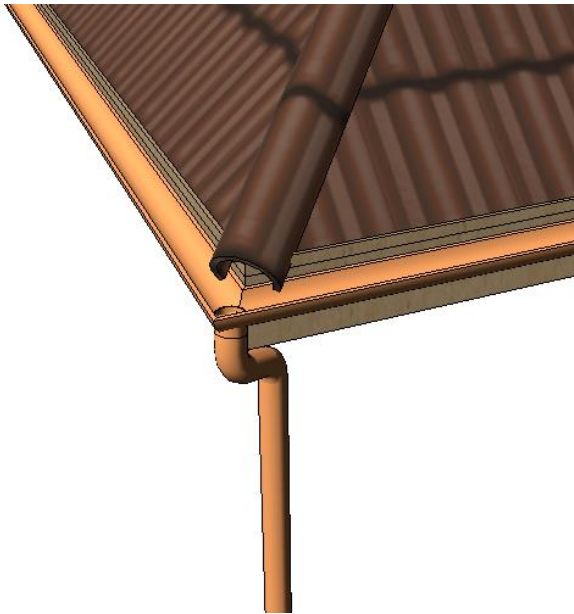
If you enable this option you can set parapet elevation measured from the original roof's top plane. If you disable this option, the parapet elevation will be measured from the base level of the active floor. This option is available only when you create a new dormer roof, and if you previously enabled Place on roof option.

9.8.12. Gutter and downspout

ARCHLine.XP supports the gutter and downspout design collecting rainwater from the roof.

Menu: Building > Outdoor Tools > Gutter

Menu: Building > Outdoor Tools > Gutter on Roof Edge

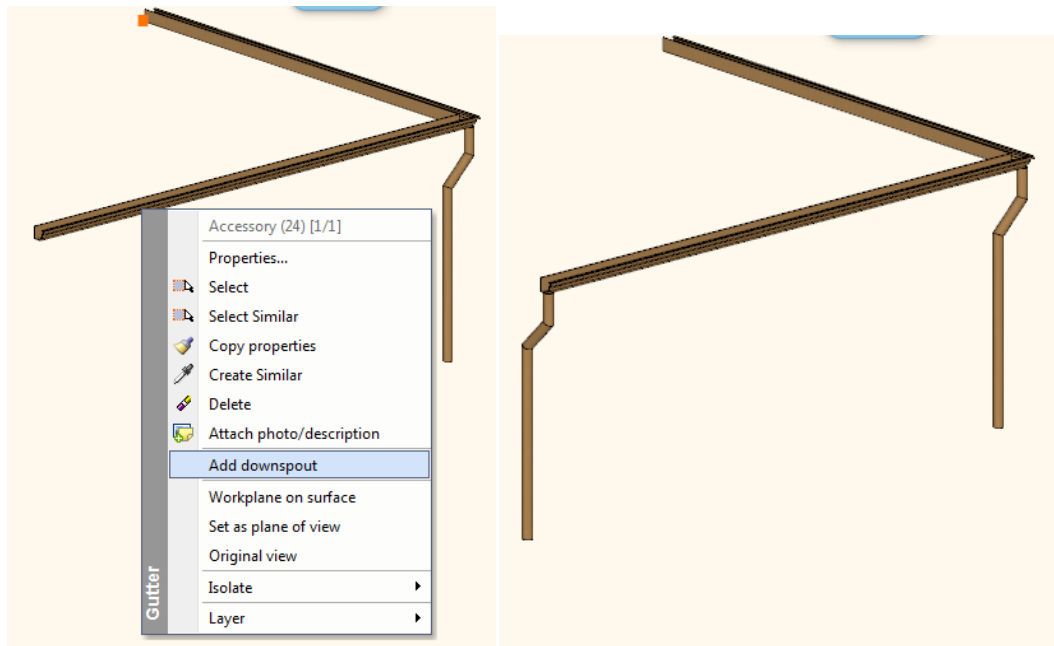


Gutter on Roof Edge

You can select the roof edges directly in 3D where the gutter will be aligned and later assign the points where a downspout will be installed.

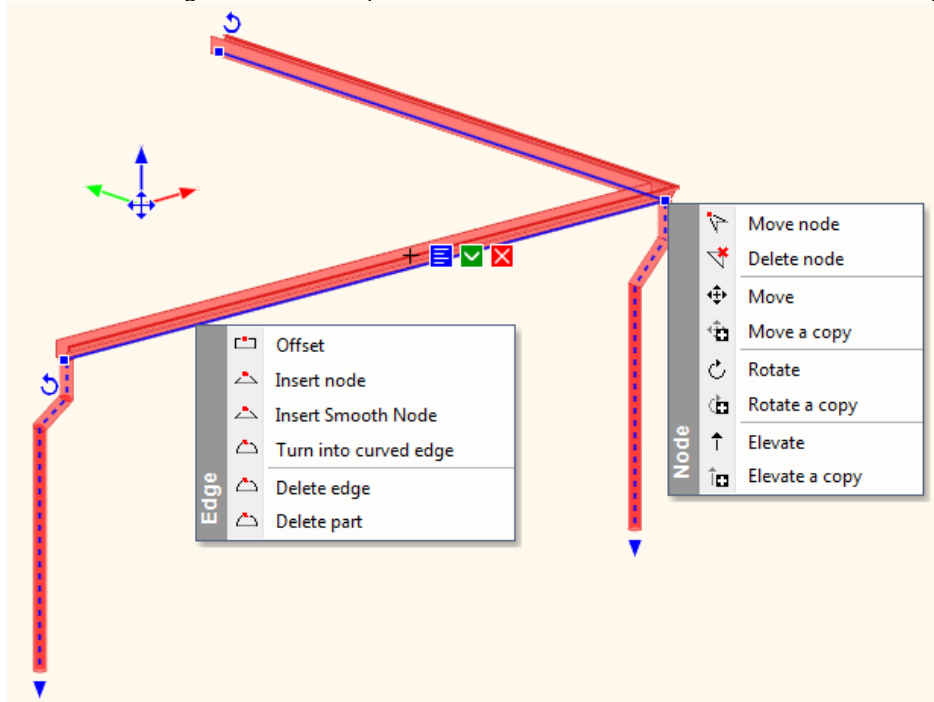
Downspouts

You can add the downspouts in 3D with the Add downspout command.



3D editing

You can edit the gutter and downspouts in 3D with the markers related to nodes and edges.



9.8.13. Roof Survey

Menu (Architecture): Building > Roof

Roof Survey is required in the following cases:

1. To replace the roof covering with a heavier tile;
2. Showing calculations for strengthening works for building regulations approval
3. Recommended alterations to truss rafters / other structural supports

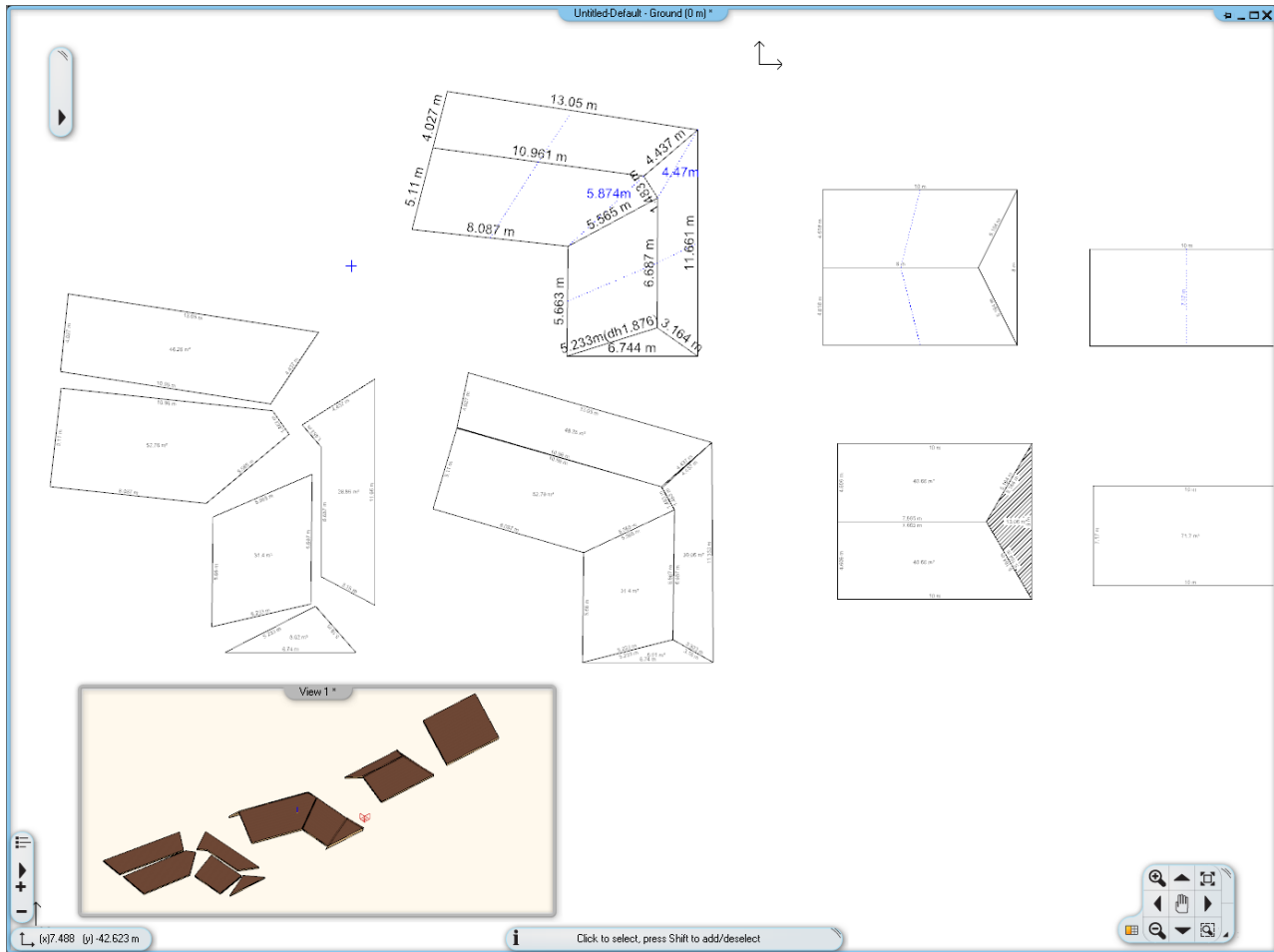
From a Structural point of view, if the existing roof tile covering is to be replaced with a new heavier roof tile then a full structural appraisal is required to ensure that the current roof structure is suitable to carry the increased loadings.



ARCHLine.XP provides a new set of commands to support roof survey. It is based on measured inputs of roof edges, parallel ridge and eave (if exists) and diagonals and for specific cases like single roof plane a height difference between ridge and eave. Roof Survey offers two outputs.

1. Create the model in 3D with the appropriate inclination angle, or
2. Place horizontally the roof planes near to each other

It displays all the measured length and calculates the plane area and exports it into XML output.



Steps of roof survey:

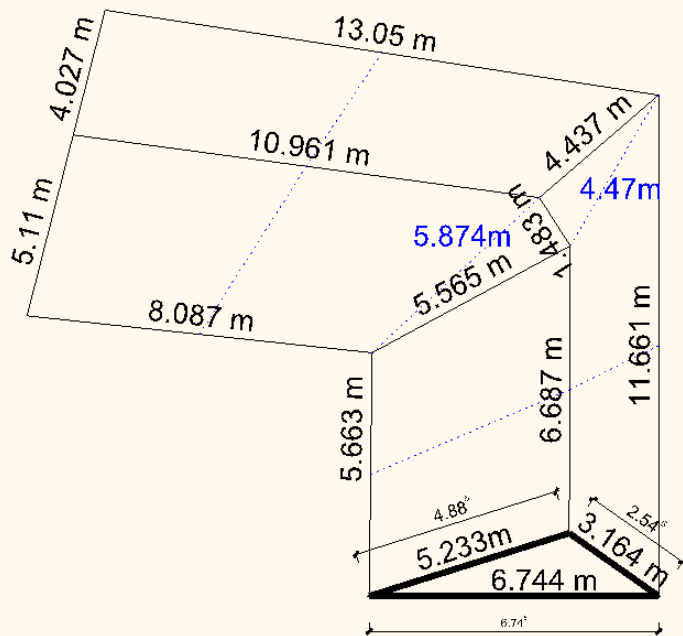
In the first phase you have to draw the roof plane using the measured length of roof edges like the figure below. There is no need to be precise with the roof estimated 2D drawing but it is very important to measure the real length as precise as possible.

The drawing below indicates the result of a surveyed roof with real roof edge annotations.

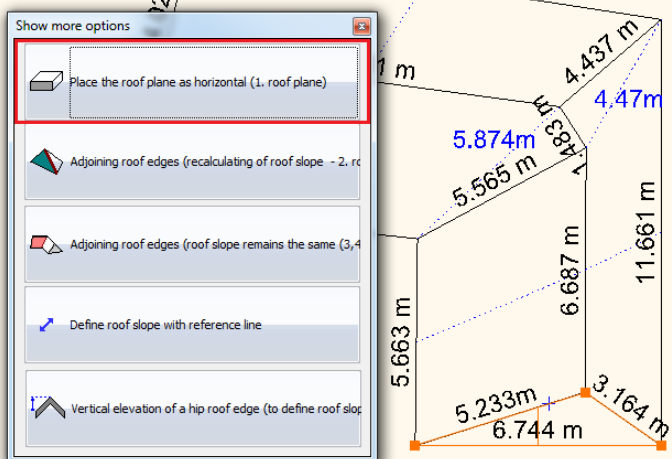
The triangle with bold lines displays the difference between the annotated length and the 2D drawing line.

9.8.13.1. First surveyed roof plane

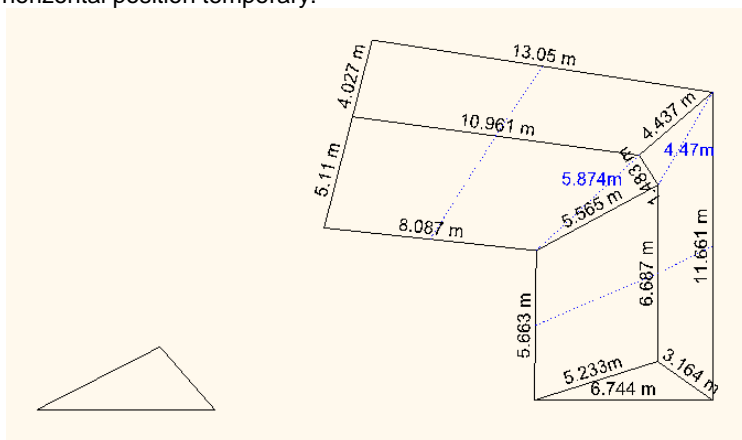
Choose a roof plane that contains a horizontal roof eave:



Click on the horizontal roof eave and define its length. Later click on the next edges one after another and enter their length. When you close the loop the following dialog displays:



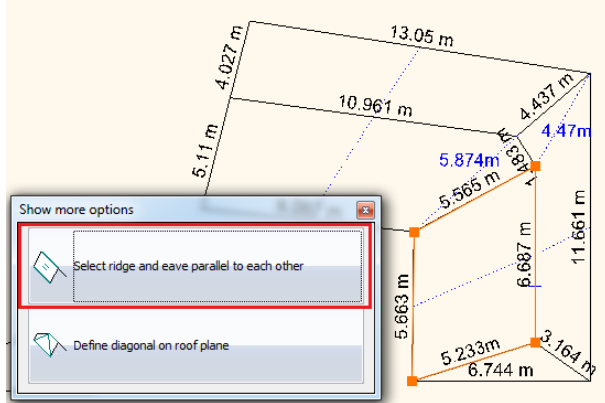
In case of the first roof plane choose the first option. As the roof plane inclination is unknown at this point you will place it in horizontal position temporary.



9.8.13.2. Second surveyed roof plane

The next roof plane to be surveyed must have a common edge with the previous one. So in this example the common edge will be the edge indicated with 5.233 m quote.

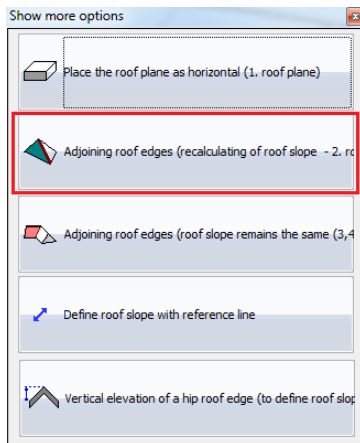
Click on the horizontal roof eave and define its length. Click on the next edges consecutively and enter their length. When you close the loop the following dialog displays:



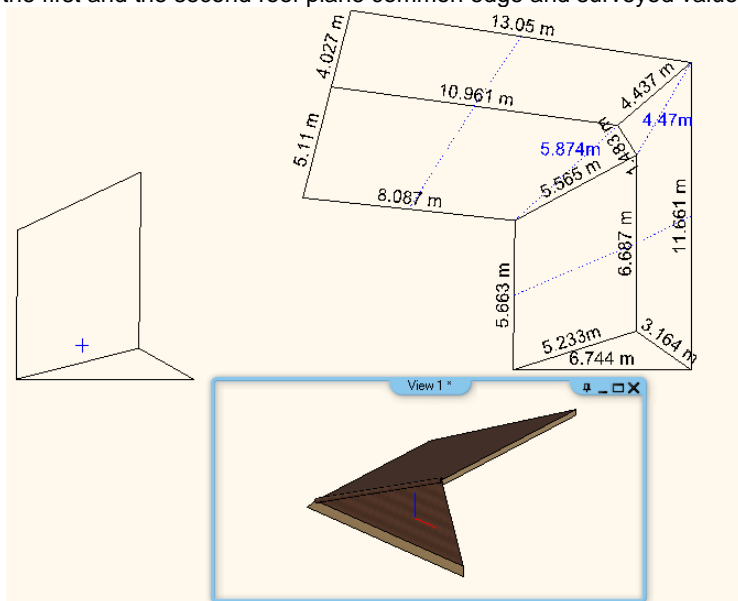
When the roof plane has only four nodes choose the first option. If you survey a roof plane containing more than 4 nodes you have to define additional diagonals on the roof plane to reconstruct the shape precisely. You have to measure the nodes number minus 4 diagonals. IT means if you have 5 nodes you need to add one diagonal, and if you have 6 nodes you have to measure 2 diagonals additionally, etc.

Select the parallel edges indicated with 5.663 m and 6.687 m quotes.

When you close the parallel edges selection the following dialog displays:



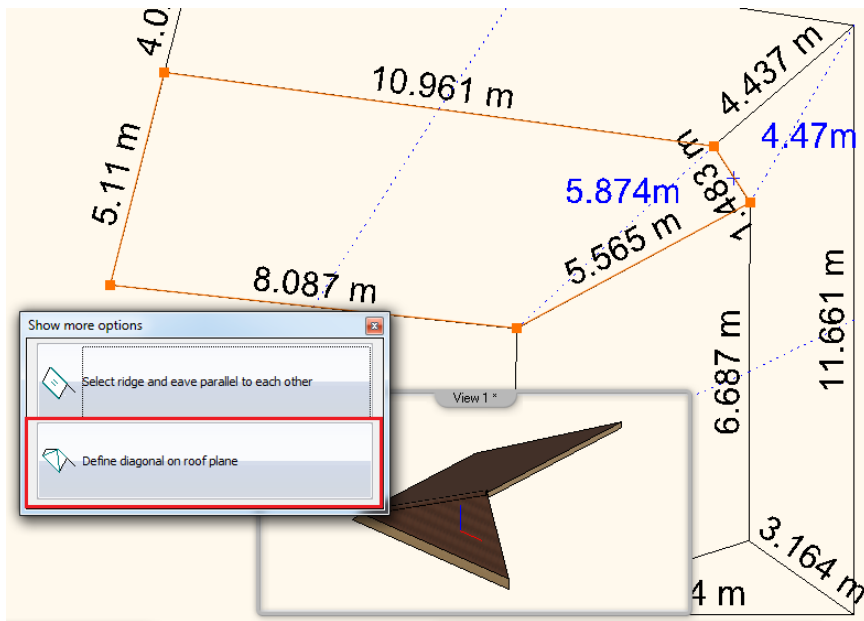
In case of the second roof plane choose the second option. The roof plane inclination is calculated as a result of the geometry of the first and the second roof plane common edge and surveyed values.



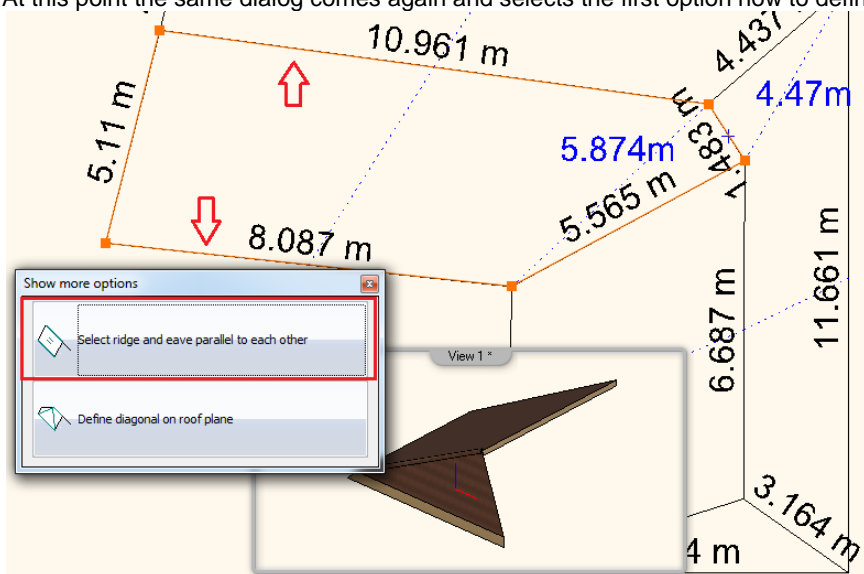
9.8.13.3. Next surveyed roof planes

The next roof planes must have a common edge with the previous one as well. So in this example the common edge will be the edge indicated with 5.565 m quote.

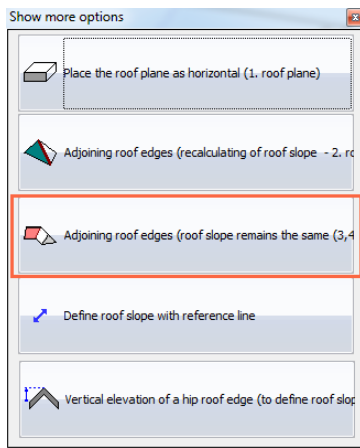
Click on the horizontal roof eave and define its length. Click on the next edges consecutively and enter their length. When you close the loop the following dialog displays:



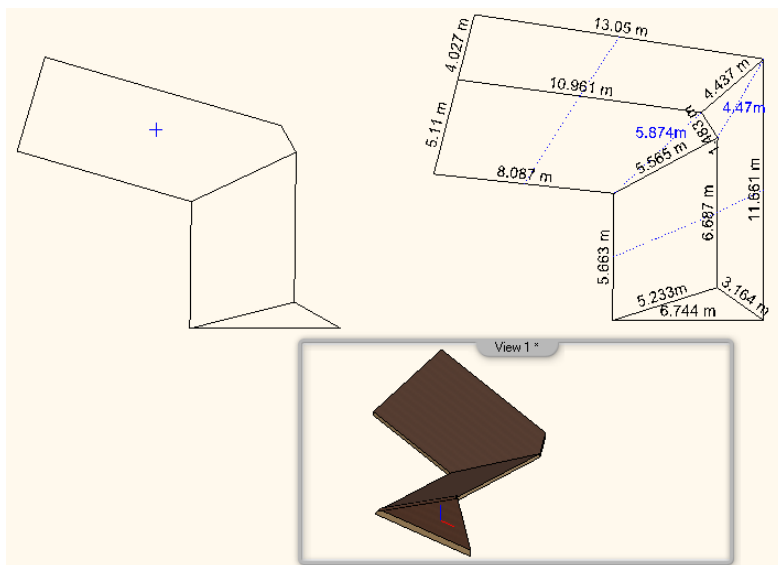
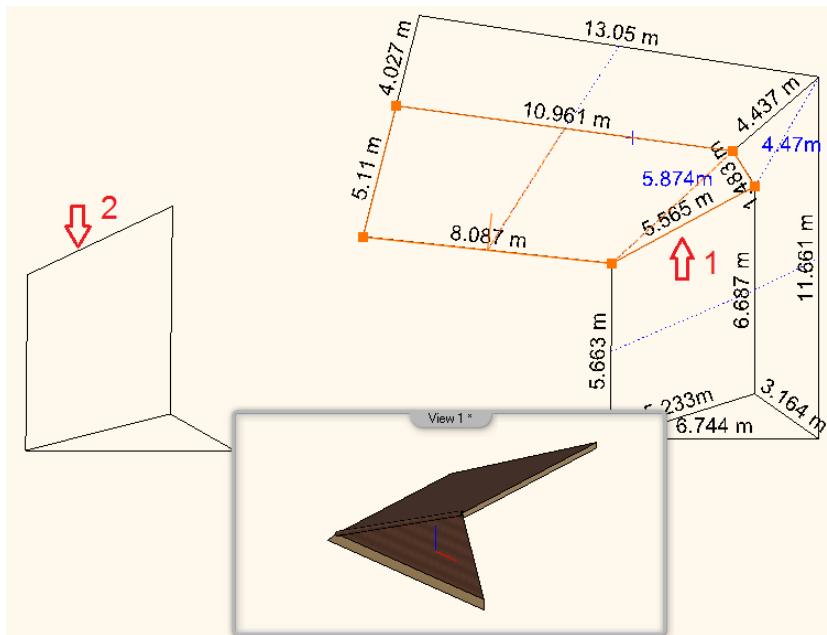
As the roof plane has five nodes you have to define one diagonal to complete the geometry. Choose the second option and click on the endpoints of the diagonal indicated with 5.874 annotation. Type this value and press ENTER. At this point the same dialog comes again and selects the first option now to define the parallel ridge and eave.



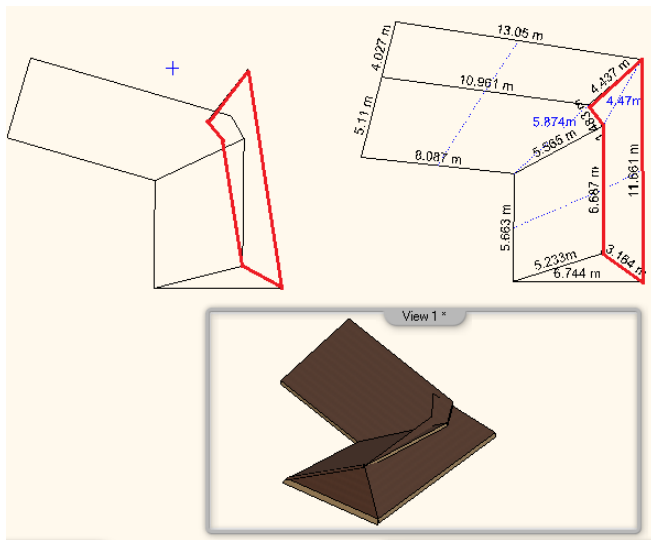
When you close the parallel edges selection the following dialog displays:



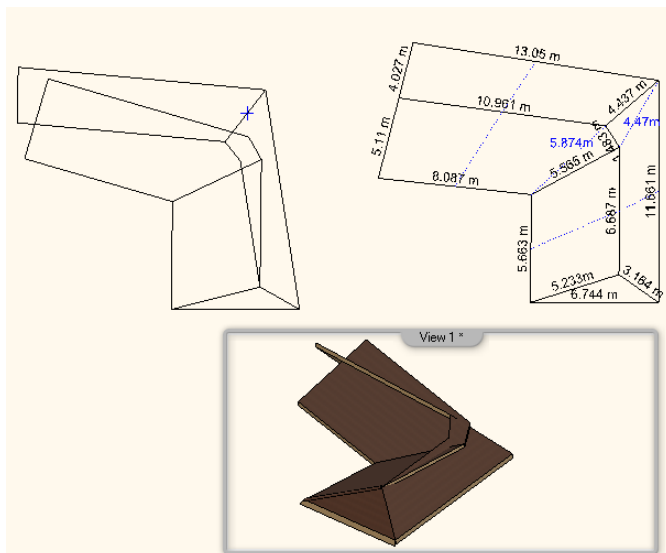
In case of the third or more roof planes choose the third option. The roof plane inclination is already calculated and the third roof plane will be adjoining using the same roof slope.



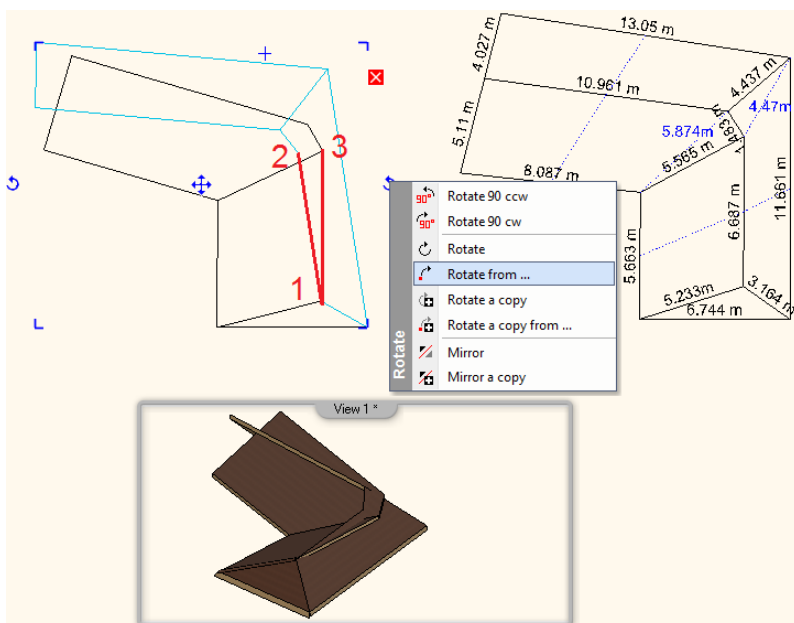
Note: At this point you cannot continue the survey with the next roof plane as the common edge is horizontal. Horizontal common edge means indefinite condition to go further with. The roof survey has to continue in anticlockwise direction returning to the first surveyed roof plane.



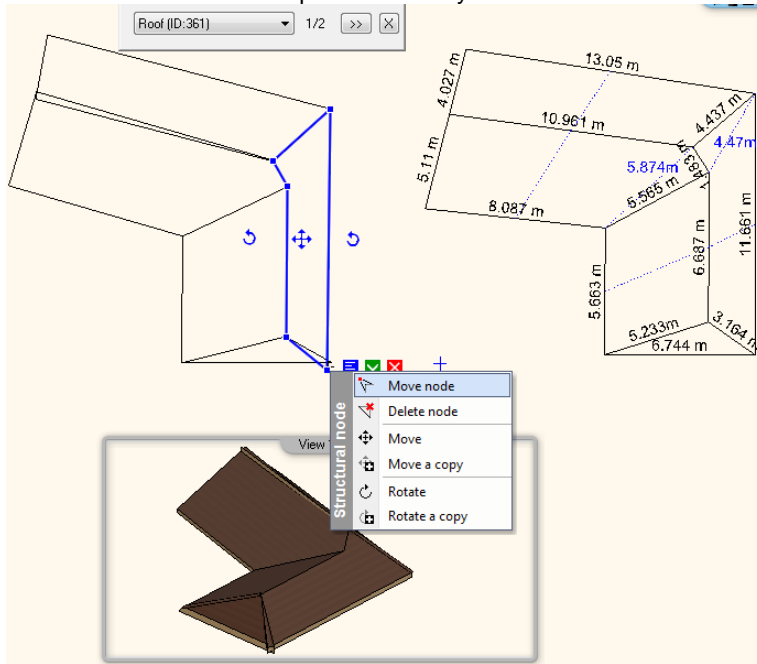
As you see the roof survey requires very precise input that is difficult to provide in most cases. For this reason the final result will contain some error in the geometry that need to be edited and corrected at the end.



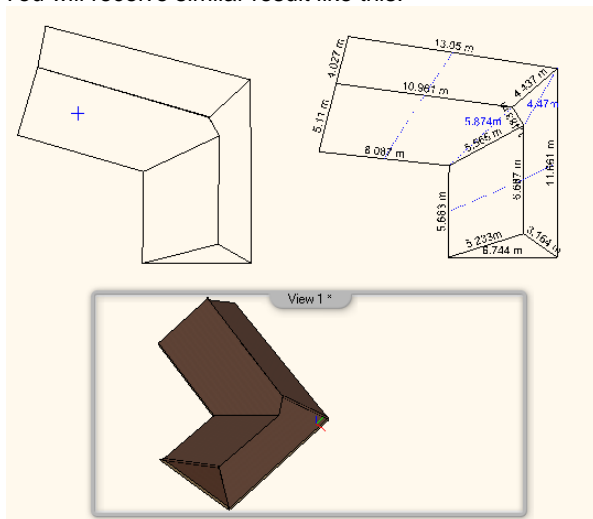
Select the roof planes to be rotated and click on the blue anticlockwise marker and select the Rotate from command and define the rotation graphically as indicated.



Move the roof nodes to complete the survey.



You will receive similar result like this:



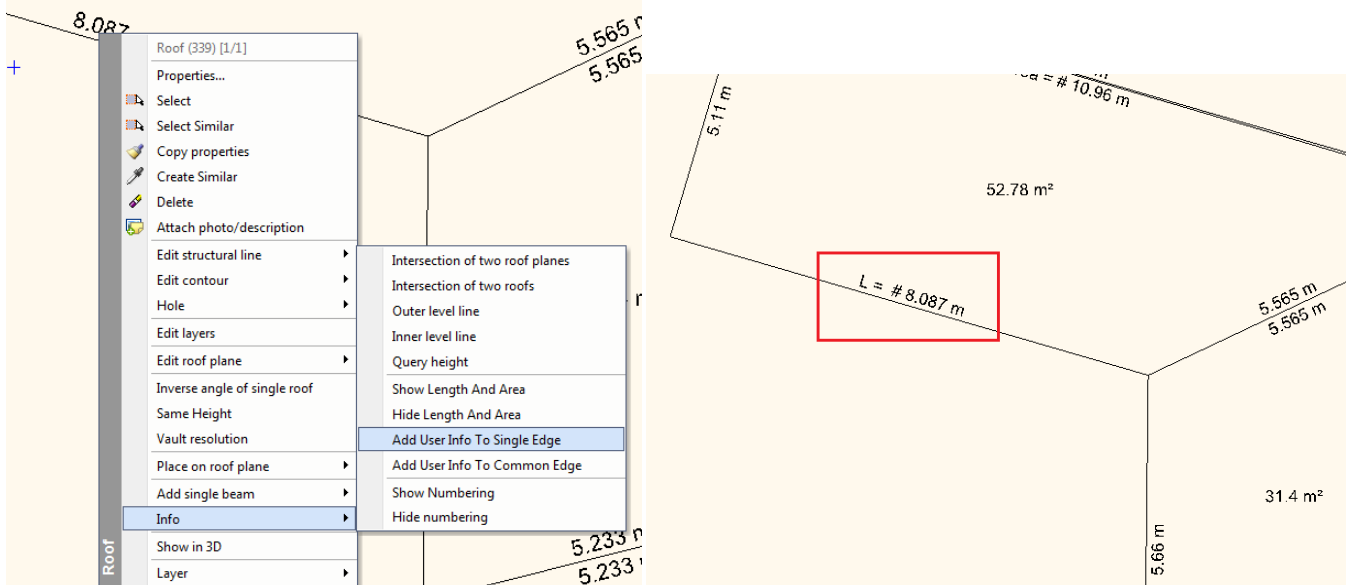
9.8.13.4. Display roof plane length and area

You can get length and area information with Show Length and Area command. Select the command and click on the roof planes consecutively.



9.8.13.5. Add custom text to annotations

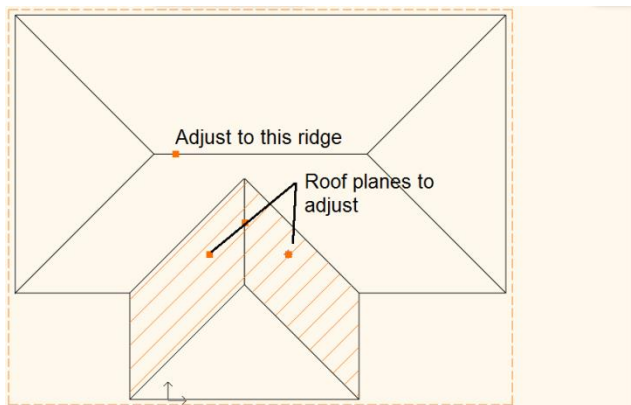
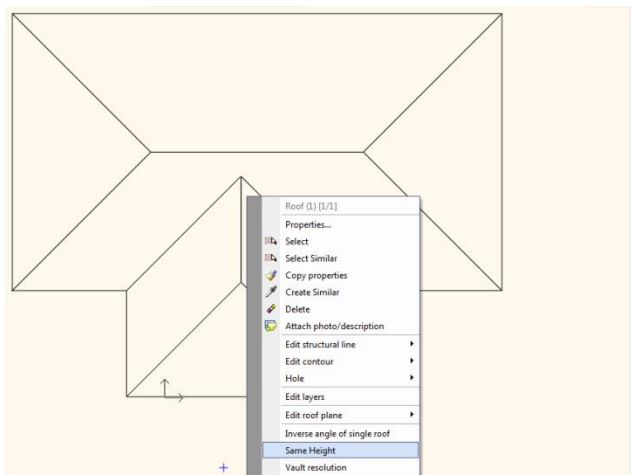
You can assign your custom text to roof single and common edges with Add User Info to Single Edge and Add User Info to Common Edge command. Select the command and click on the roof planes



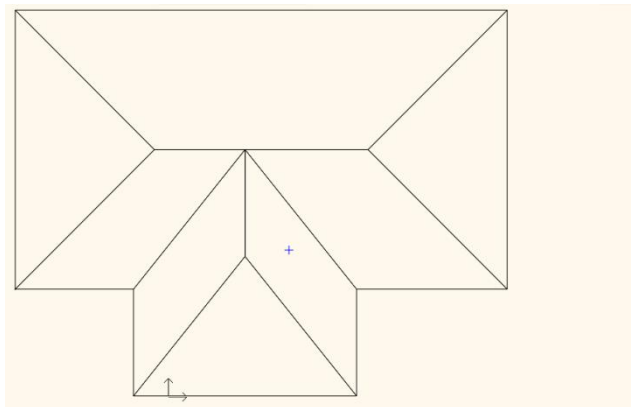
9.8.14. Same height

Pop Up Menu: Roof > Same height

The command adjusts the elevation of a ridge to another ridge. You have to select first the ridge to change its elevation and after the second ridge to pick up its elevation. Later click on the roof planes you wish to update.



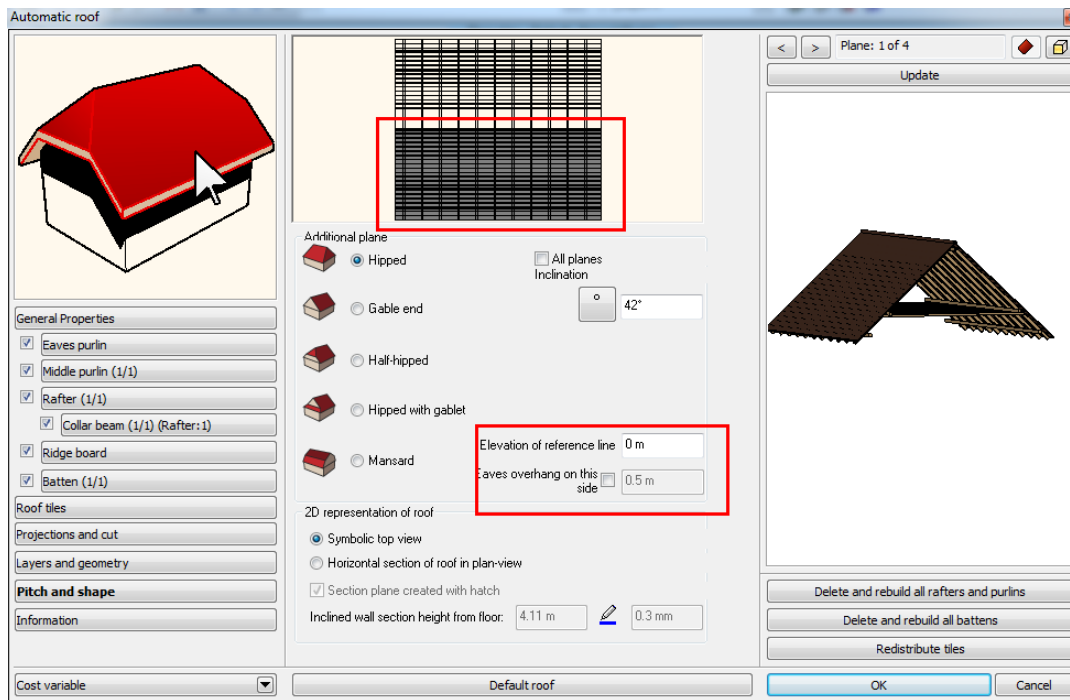
The result:



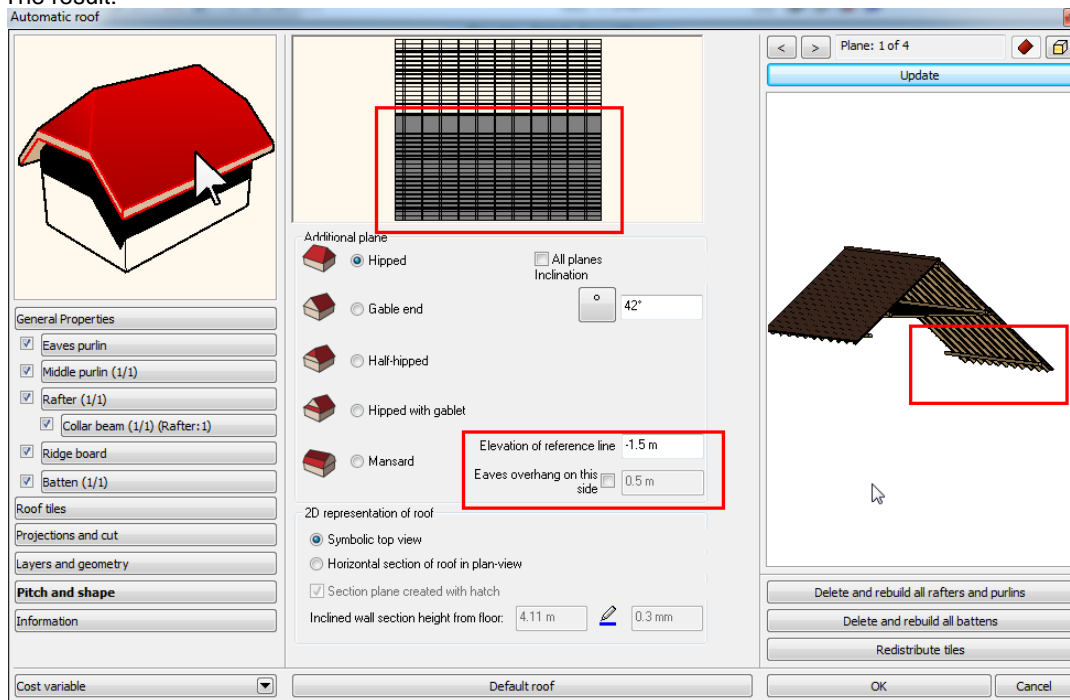
9.8.15. Asymmetric Roof: Different elevation

Property dialog: Roof > Pitch and Shape

The command enables to change the roof structural edge elevation separately. The rafter and the purlins are following the changes. The battens keeps its place if you wish to follow the rafter new position you have to press the "Delete and rebuild all battens" button.



The result:



9.9. Terrain

Introduction

You can define the terrain in several ways: with points, terrain contours, or by loading data from files. You have to regenerate the 3D model of the terrain upon each creation and modification.

You may add plateaus, roads and zones, or install building models and the constructed building on the terrain model. ARCHLine.XP® automatically calculates the amount of earthworks needed.



You have to define the terrain elevation values in **meter** all cases, independent that, which model unit is given.

9.9.1. Terrain properties

Before you create a terrain, specify its properties.

You can access these properties by right-clicking the Terrain tool -



Properties icon, or by selecting the **Building**

menu - Properties - Terrain command.

Any changes you make to terrain properties in the appearing dialog box will be valid for all terrains created afterwards.

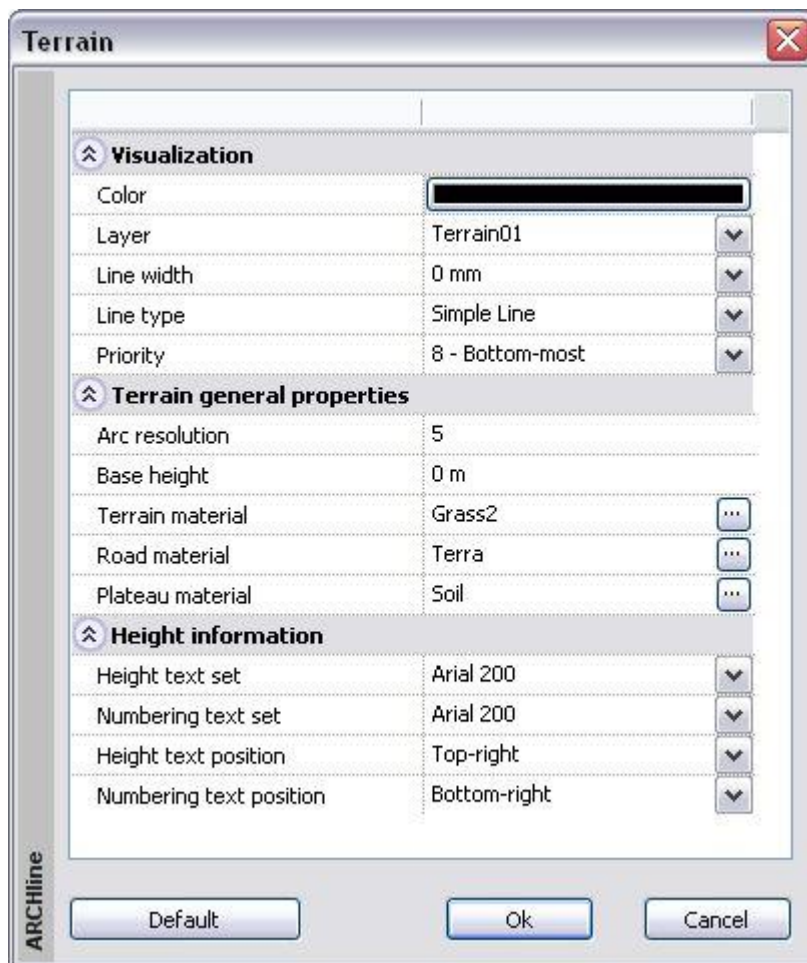
Visualization properties

As all other objects in ARCHLine.XP® terrain has colour, layer, line type, and line width and priority properties.



See:

- ❖ the description of *General properties* in Chapter 3.2.1 *Specifying general properties*,
- ❖ the description of *Sets* in Chapter 3.2.3. *Using sets of properties*.



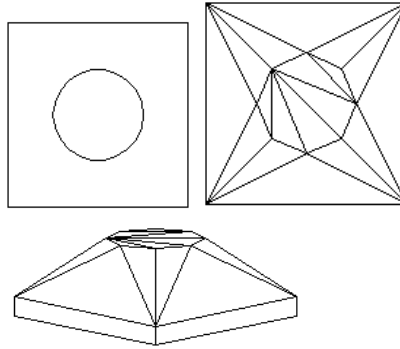
Terrain general properties

- ❖ **Arc resolution** – This value specifies the resolution at which the program displays arcs and splines that constitute the contours of the terrain when creating the 3D model.
- ❖ **Base height** – Specifies the base height of the terrain.

- ❖ Terrain material – Specifies the material of the terrain.
- ❖ Road material – Specifies the material of the road on the terrain.
- ❖ Plateau material – Specifies the material of the plateau on the terrain. Also, if you create a new zone, this will be the default material if other material is not selected.

Example:

The following schematic example shows how this function operates: Suppose the 2D drawing of the following terrain is available. The side length of the rectangle is 10 m, its terrain height is 0 m, the diameter of the circle is 5 m, its terrain height is 3 m:



Now, if you set *Arc resolution* = 8, you get the following top view and axonometric view of the 3D model:

You can see that the program divided the entire arc into 8 segments in the 3D model.

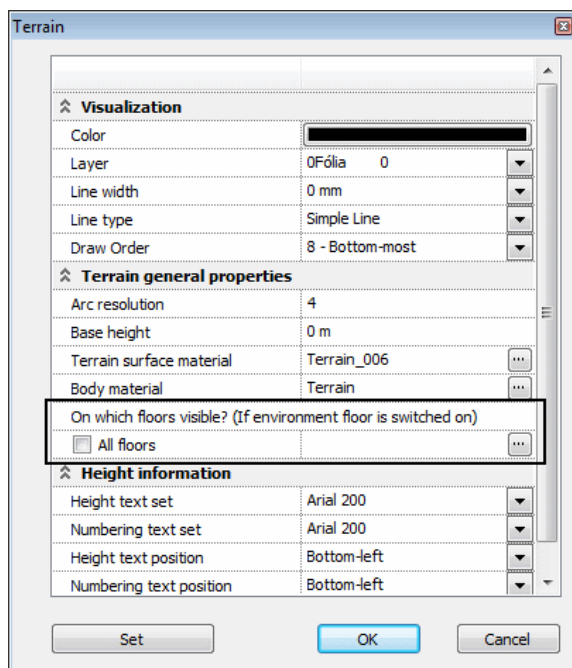
Height information

- ❖ **Height text set** – Specifies the text set used to display the elevation values of terrain points.
- ❖ Numbers text set – Specifies the text set used to display the numbering of terrain points.
- ❖ Height text position – Specifies the position of the displayed elevation value relative to the terrain point.
- ❖ Numbers text position – Specifies the position of the displayed numbering of the terrain point relative to the terrain point.

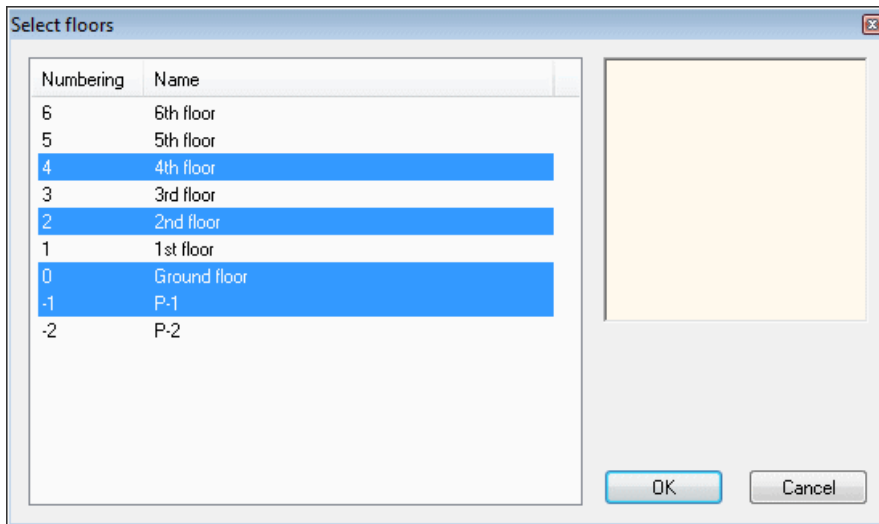
Different settings can be stored in sets.

9.9.2. Visibility on different floors

It is possible to define the visibility of terrain on the floor plan for each floor. This setting is available in the **Terrain** dialog by clicking **Modify...** in the shortcut menu.

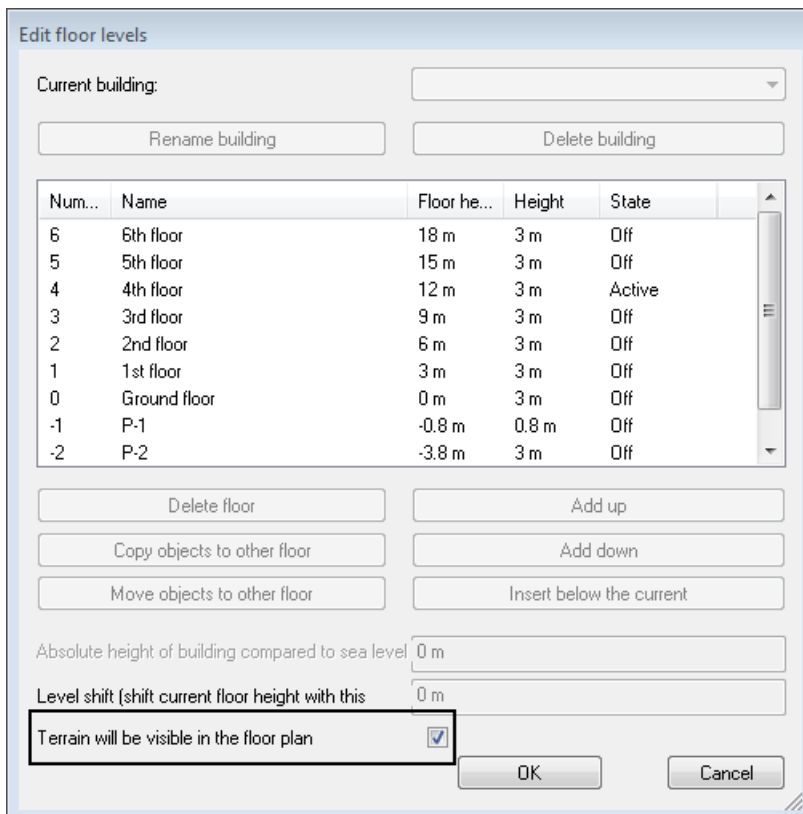


By switching the **All floors** checkbox on, terrain will be represented on each floor. By switching this checkbox off, you can use the ellipsis button to specify the visibility of terrain on each floor in the appearing dialog.



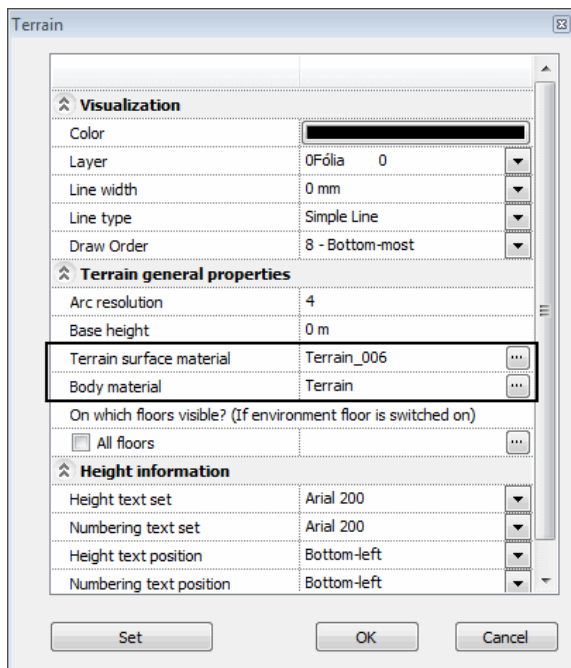
Use CTRL/SHIFT keys and mouse click for floor selecting/deselecting.

When you open a file for print layout and click **Floor**, the status of **Terrain will be visible in the floor plan** checkbox defines the visibility of terrain on the plot layout.



Terrain materials

In the Terrain properties dialog it is possible to define two materials for the terrain, one for the terrain surface and another one for the terrain body.

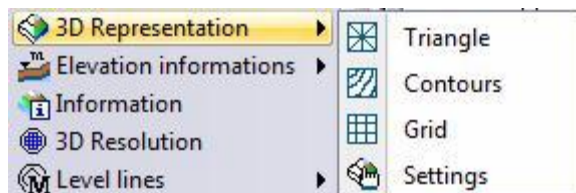


9.9.3. 3D representation

The terrain properties include its 3D representation.

You can define the way the program represents the terrain in 3D. These settings apply to all terrains. The options are the following:

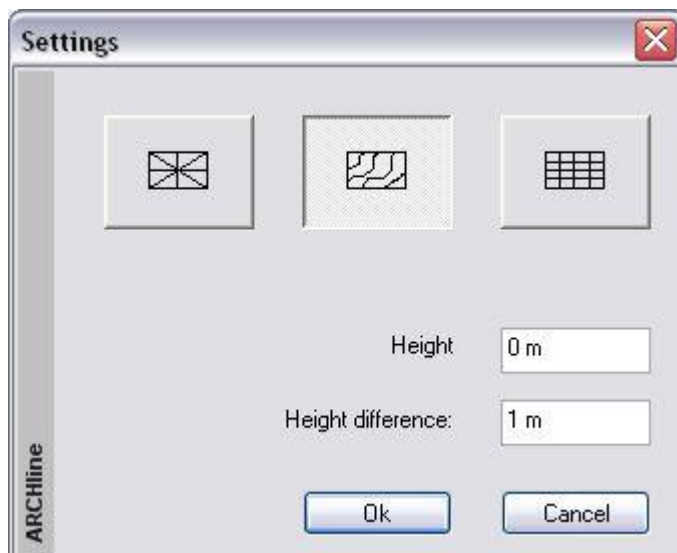
- ❖ Triangle,
- ❖ Contours,
- ❖ Grid.



The commands can be accessed from Toolbox menu and Terrain shortcut menu

Settings

You can specify the 3D representation of the model, and enter values in the appearing dialog box.





This representation cuts up the terrain into triangles. The model is created this way.



The terrain is represented by contours.

Height: Define the starting height of the terrain contours.

Height difference: Define the height difference between the contours.

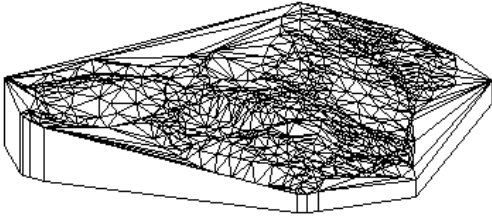
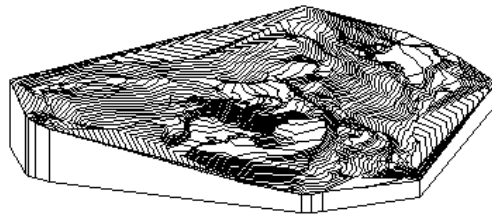
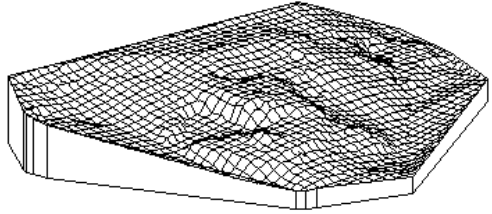


The terrain is represented by a grid, i.e. it is divided by horizontal and vertical lines.

Delta X / Y: Define the distance between the lines.

The 3D model of the terrain acquires the selected representation when, you build again the 3D model.

On the other hand, when you choose the following commands the program automatically applies the selected representation to the 3D model. Use the parameters specified in the Settings dialog box.

| | |
|--|--|
| <p>Triangle</p> <p>The program automatically displays the 3D model of the terrain by triangles.</p> |  |
| <p>Contours</p> <p>The program displays the terrain by contours in the 3D model.</p> |  |
| <p>Grid</p> <p>The program displays the terrain by a grid in the 3D model.</p> |  |

9.9.4. Opening and creating terrains

With the following commands, you can create a terrain by different methods:

- ❖ by loading data from files (TXT, XLS, DXF, DWG)
- ❖ with points
- ❖ with contours

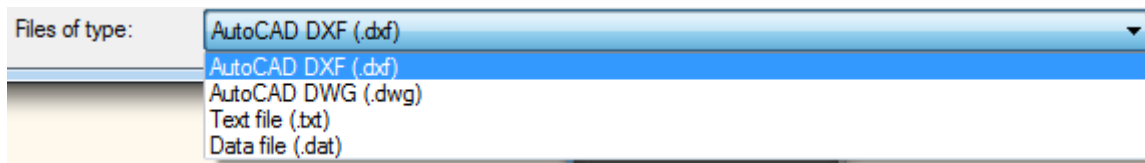


9.9.5. Terrain from file

For the creation of terrains it is possible to load terrain data from AutoCAD® dxf/dwg files or files including terrain point's data. These terrain points' data are mostly come from txt and xls files, or databases. Terrain point's data from geodetic survey are often stored in files with dat extension. In case of terrain points data, being in any file format, terrain points are defined by their X, Y and Z coordinates. Besides, input files can include the numbering of terrain points and notes, too. ARCHLine.XP® gives the possibility to load these files in.

- Click  **Terrain**  **Terrain from file** command to start the *Terrain Import Wizard* dialog.
- Click *Next* on the welcome page.

- First you have to choose a file including terrain data. Define the file format you wish to open, and then choose the terrain file to load in.

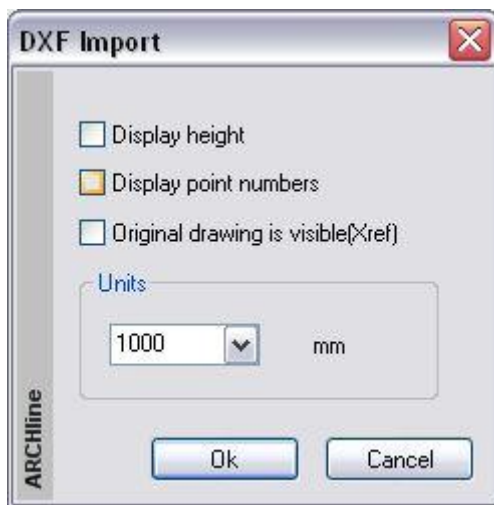


Depending on the terrain file format you import, the loading process can be different.

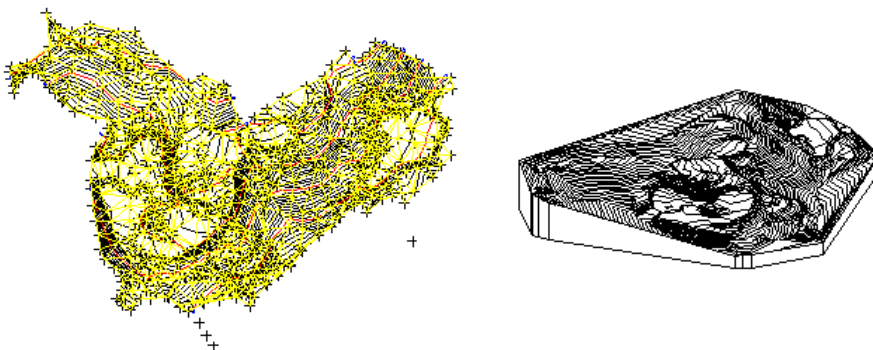
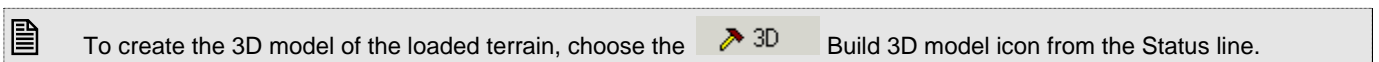
9.9.5.1. Loading terrain from DXF, DWG file

In case of opening a dxf or dwg file the program quits from the Terrain Import Wizard dialog and starts to load the terrain.

- Optionally you can display the elevation values and the numbering of terrain points.



- Specify the required DXF/DWG import options. The terrain will be loaded.



9.9.5.2. Loading terrain from points data

Terrain point's data can be loaded from Text files (*.txt or *.dat),

Points data in any file format should include the surveyed points defined by their X, Y and Z coordinates.

TXT file format includes semicolon separated columns for the X, Y and Z coordinates of the terrain points and another column for the numbering of terrain points.

```
No;X;Y;Z;
1;98;20;20.1;
2;64.5;49.5;8.2;
3;45.7;50;5.1;
```


DAT file format includes comma separated columns for the X, Y and Z coordinates of the terrain points and another column for the numbering of terrain points.

```
1,98,20,20.1,
2,64.5,49.5,8.2,
3,45.7,50,5.1,
```

Load a terrain file

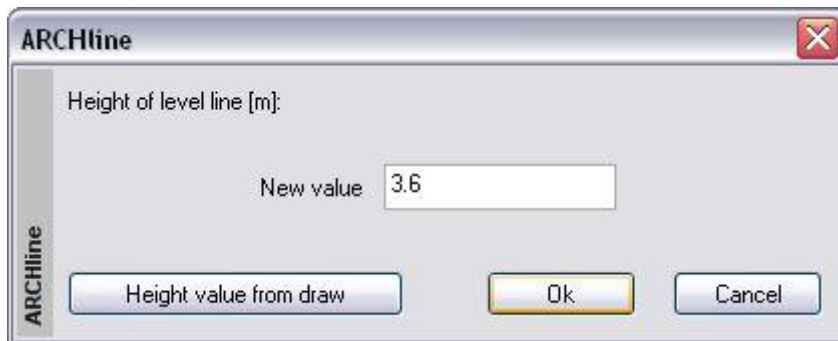
- Choose one file that includes the terrain data. The program tries to recognize the data source type and displays it under the file selection:

9.9.5.3. Create terrain by points or contours

With this command you can build up a new terrain with points or contours, or you can add new contours to existing terrains.

Creating a new terrain by points

- Use the **POPMENU** keyword and select the *Point* command in the *Profile definition* menu.
- Locate the point in the drawing and define its height.
- You can query the height from the design too, if you click on the existing object.



- Locate the other points in the drawing and define their height.
- **Enter** Ends definition of points.
- **Enter** Ends the construction of the terrain.
-



If you designated the terrain points in a raster grid, we suggest that before starting the command you should define grid spacing and turn on grid snap. When creating the terrain, you can quickly assign height by selecting the points in the grid one by one.

Creating a new terrain by contours

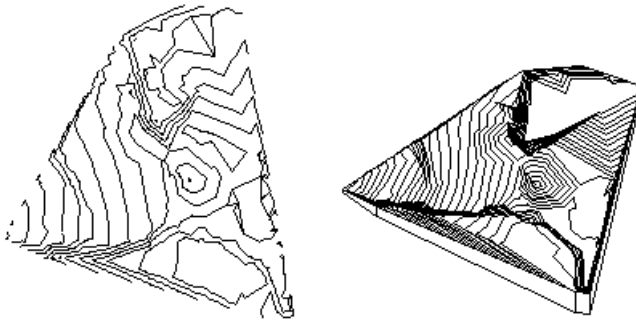
Terrain height remains the same along a contour. You can use this method in the case of a contour map or a key plan.

- Use the **POPMENU** keyword and choose from the *Profile definition* menu (any but the point command).



For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.

- Draw a contour and define its height.
- You can query the height from the design too, if you click on the existing object.
- Specify all contours and define their height.
- **Enter** Ends definition of contours.
- **Enter** Ends the construction of the terrain.




You can combine the two methods.

Example:

If you have a contour map on paper, to create the terrain model the quickest possible way, use the following method:

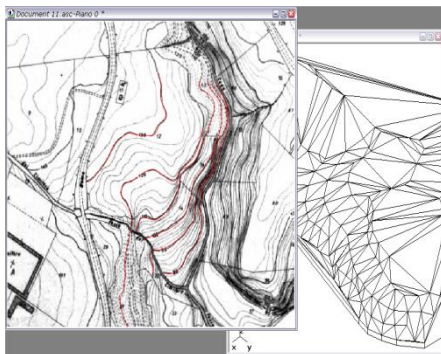
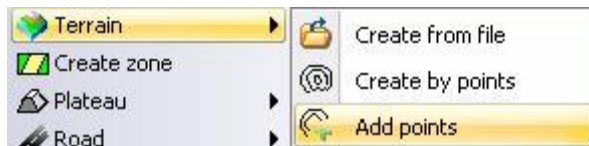
- Scan the map and save it as an image file.
- Load the image file by using the *Drafting menu - Raster image* command.
- You can calibrate the overlay so that it is fit to scale: Adds-on menu – Raster image Calibration – Calibrate raster - new.
- Use the Adds-on menu - Raster image Calibration - Raster to vector command.
- Turn off the overlay.

Now you have the vector image of the contour map.

- Click  Create by point
- Choose the *By chain* command (Open or Closed) in the *Profile definition* menu.
- Click on the contours one after another while defining their height.

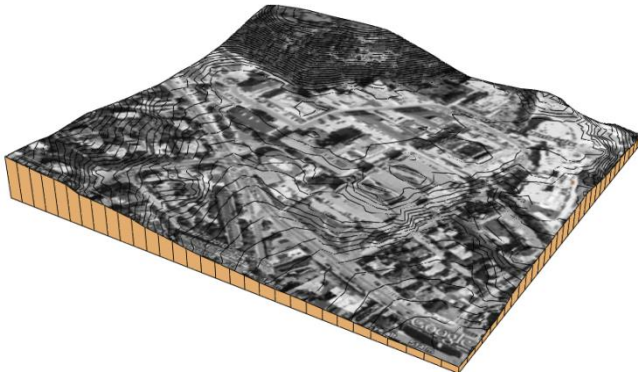
The program recognizes open or closed chains, assigns their height and creates the terrain model.

Adding a new point or contour to the terrain



- Select the *Add Points* command and select the terrain to which you wish to add a new contour.
- Specify the new point/contour by using the **POPMENU** keyword in the command line.
- Define the height of the point/contour.
- Insert additional point/contours, or
- **Enter** Ends the command.

9.9.5.4. Terrain import from Google Earth



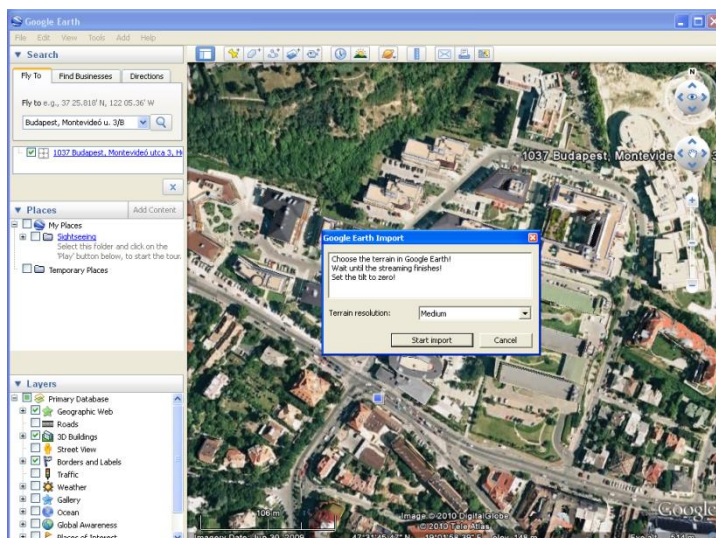
With ARCHLine.XP® it is possible to import terrain from Google Earth.



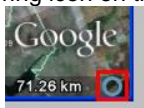
For using of this function you need to have Google Earth 4 or newer version installed on your computer. It can be downloaded and installed for free from <http://earth.google.com/>. Also, for Google Earth you need a live internet connection.

Terrain import from Google Earth in ARCHLine.XP® works as follows:

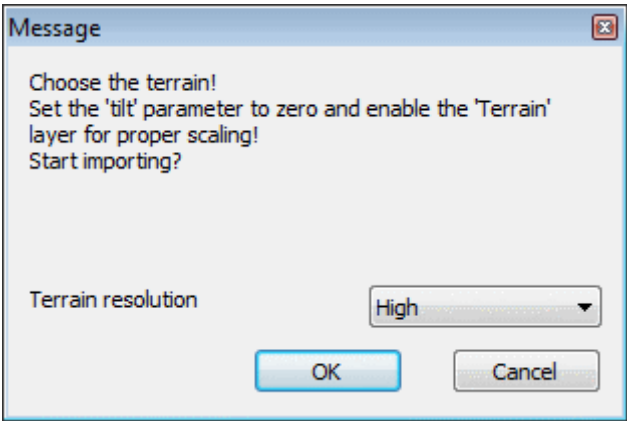
- Click *Building menu – Terrain – Import from Google Earth* command. ARCHLine.XP® starts Google Earth application. Before importing a small dialog appears with some instructions. Click Yes button to start the import or click No to cancel it.



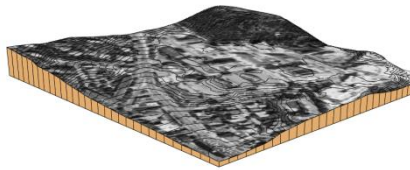
- Navigate to the desired position in Google Earth. Use mouse scroll for zooming, left mouse button for panning the map or use the search field to look for an exact address. You can find further information about using Google Earth in the help or on <http://earth.google.com/intl/hu/userguide/v5/> web page.
- Wait until the completion of downloading the whole terrain part. (Downloading of a terrain part is completed when the small ring icon on the bottom-right corner of Google Earth window doesn't spin.)



- Only maps in top view can be processed correctly in ARCHLine.XP®. In case of tilted map view please use the SHIFT+UP arrow key combination to achieve the correct view.
- Before importing, set the desired terrain resolution in the appearing message box (low: 24x24, medium: 32x32, high: 64x64 terrain points) and then click **OK** for starting the import. Please wait until ARCHLine.XP® has finished downloading the map and creating of terrain.



Downloaded map on the floor-plan

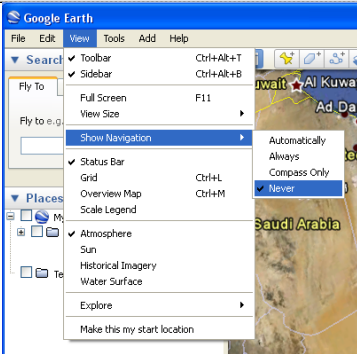


in 3D

The downloaded terrain appears on the floor plan and in 3D and then it works like other terrains.



ARCHLine.XP® places exactly the same image what you see in Google Earth on the surface of the terrain. If you find disturbing navigation buttons or texts on the surface of the terrain, you can eliminate those by switches in the View menu of Google Earth.



9.9.6. Creating and modifying plateaus and roads

You can map plateaus, building sites and roads on the finished terrain. You can obtain information on the earthworks necessary for their creation in the *Add-On menu – Quantity Take-Off-Building calculation* dialog box.

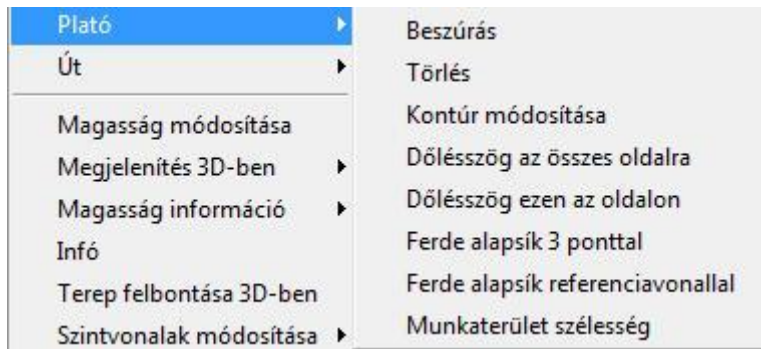
In the following example we have created a plateau (building site) and a road in the terrain. The list shows the amount of earth to be backfilled and excavated for the building site. We defined the width of the backfill (work area); therefore the list displays the volume of backfill. The list defines the amount of earth to be backfilled and excavated also in the case of roads. In addition, it displays road width and the material of the road.

| Terrain volume | ID | Plus volume | Minus volume | | |
|----------------|----|-------------|--------------|--------------|---------------|
| 3947900.401m3 | | | | | |
| Area | | | | Reload width | Reload volume |
| 1 | 7 | 161.82m3 | -130.531m3 | 1 m | 23.536m3 |
| Road | | | | Road width | Material |
| 2 | 19 | 339.183m3 | -0.1996m3 | 6 m | Terra |

The plateau is plane, but you can modify it's inclination.

The commands can be accessed from the Terrain tool and Terrain shortcut menu:

Plateau Road



9.9.6.1. Create and delete plateau

You can create a plateau or delete the selected plateau. The program cuts the required parts of the terrain, or completes and fills in the missing areas according to plateau height.



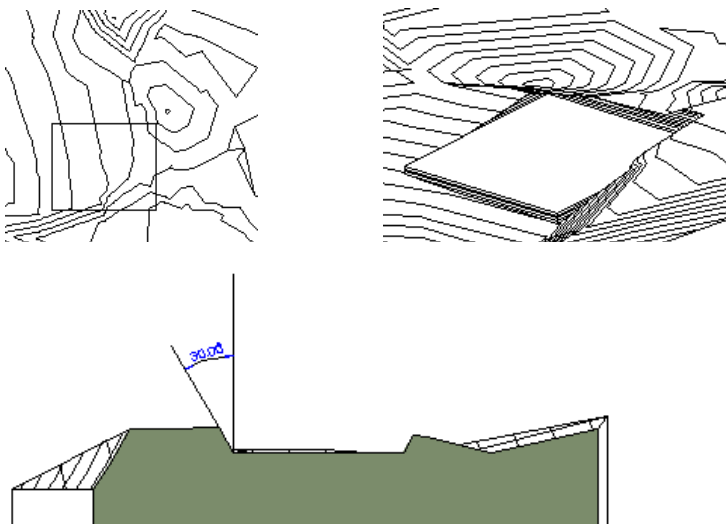
Creating a plateau

- Select the terrain.
- Specify the contour of the plateau by using the *Profile definition* tool in Toolbox.



For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.

- Define the height of the plateau.
- Specify the angle of the slope (relative to vertical).




Deleting a plateau

- Select the terrain.
- Select the contour of the plateau you want to delete.

The program restores the original terrain by deleting the selected plateau.

Modifying plateau height

You can modify plateau height with the  *Modify terrain heights* command.

9.9.6.2. Modify plateau inclination



Modify slope on all side

The command modifies the angle of the slope (relative to vertical).

- Select the slope the angle of which you want to modify by clicking its contour line.
- Enter the new value of inclination in the dialog box. **Ok**.



Modify slope on this side

The command modifies the angle of the slope (relative to vertical) one by one.

- Select the slope the angle of which you want to modify by clicking its contour line.
- Enter the new value of inclination in the dialog box. **Ok**.

Sloped plateau for existing plane plateau

The plateau by default is plane, but you can modify its inclination using the Shortcut menu commands:

Slant base by 3 points

Give three points of the terrain and define its height.

Slant base by reference lines.

Define the reference line of the plateau and the inclination angle.

9.9.6.3. Modify plateau contour

Using this command you can modify the contour of the horizontal plateau.

- Select the plateau you wish to modify.
- Modify the contour of the plateau with the commands of the *Edit Profile tool* displayed in the Toolbox (e.g. move nodes, round off).
- **Enter** Ends the command.

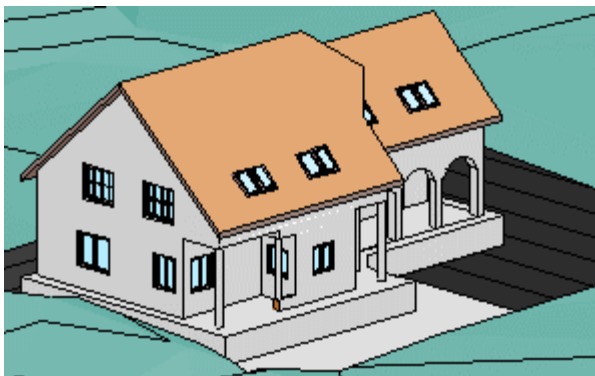


See the description of the *Edit Profile tool* in Chapter 8.9.9 *Editable profile*.

9.9.6.4. Plateau - Work area width

In the **Terrain shortcut menu** you can define the work area.

The work area indicates the wide band in the plateau-defined trench that has to be backfilled after the building has been constructed.



- Right-click the plateau, which originally you added to calculate excavation, and select *Plateau - Work area width* from the shortcut menu.
- Define the work area width (band), which has to be backfilled after construction from the edge of the plateau towards the inside.

The program calculates the volume to be backfilled accordingly. You can query this data in the *Add - On menu – Quantity Take – Off - Buildings calculation* dialog box. It has no 3D representation.

Example

For the construction of the building indicated above, the following quantitative data are available before defining the work area width of the plateau:

| Terrain volume | ID | Plus volume | Minus volume | | |
|----------------|----|-------------|--------------|--------------|---------------|
| 3947900.401m3 | | | | | |
| Area | | | | Reload width | Reload volume |
| 1 | 7 | 161.82m3 | -130.531m3 | | |

We see that the width of the area to be backfilled and its volume are zero for the moment. Now if we define a work area width of 2 m, the parameters will be the following:

| Terrain volume | ID | Plus volume | Minus volume | | |
|----------------|----|-------------|--------------|--------------|---------------|
| 3947900.401m3 | | | | | |
| Area | | | | Reload width | Reload volume |
| 1 | 7 | 161.82m3 | -130.531m3 | 2 m | 43.867m3 |

As we can see, the program displays the specified work area width (width of area to be backfilled) and the volume of backfilling for the building site (plateau) in question.

9.9.6.5. Road

With this command you can create or delete the trace of a road.

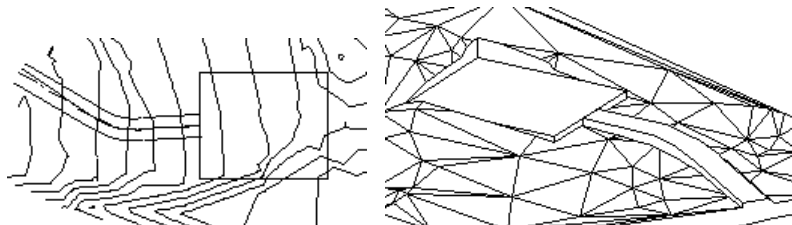
The program cuts the required parts of the terrain, or completes and fills in the missing areas according to road height.

Creating a road

- Select the terrain.
- Specify the points of the road. Doing so you define the axis of the road.
Enter Ends definition of the road.
- Specify road width.
- One by one assign the height to the specified points of the road.

Option:

| | |
|--------------|---|
| SHIFT | You can define the road (axis) by shifting it by a given distance from the trace. |
|--------------|---|




Deleting a road

- Select the terrain.
- Choose the trace of the road you want to delete.

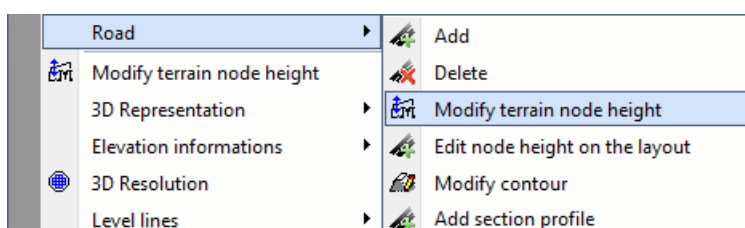
The program restores the original terrain by deleting the selected road.

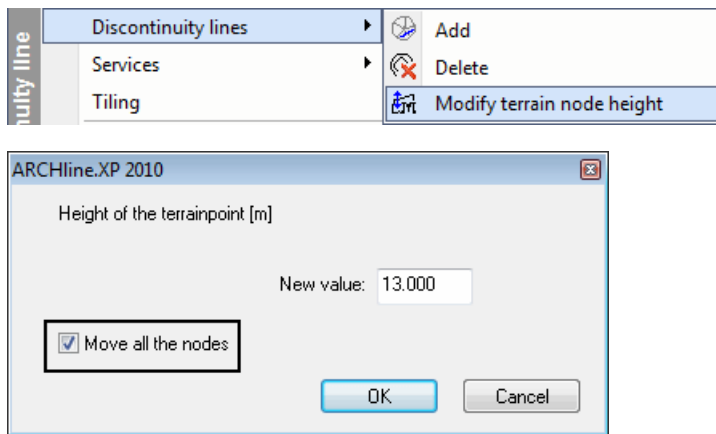
Modifying road height

You can modify road height with the  *Modify terrain heights* command.

9.9.7. Vertical shift of road/discontinuity line

When setting node height of a road/discontinuity line, modification of the height of all points can be executed by switching the **Move all the nodes** option on.

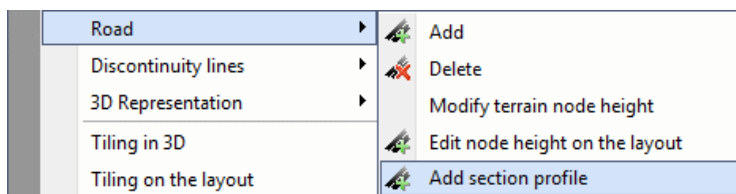




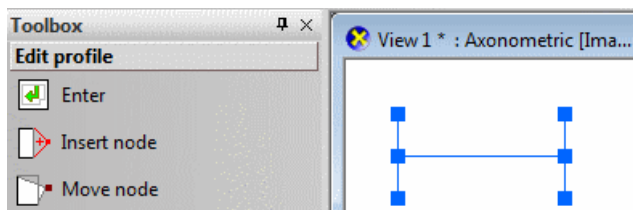
In that case all points are shifted vertically by the relative change of height of the selected road node.

9.9.8. Profile section definition of road

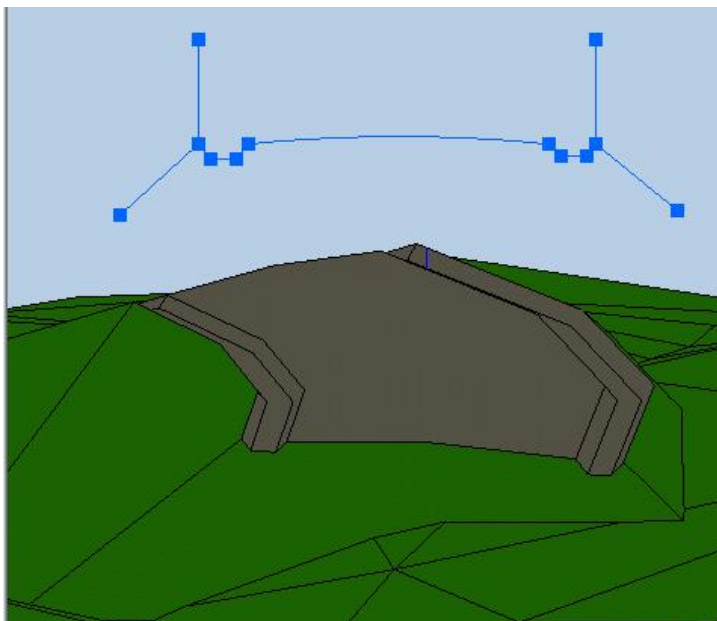
Section profile can be added to roads by the **Add section profile** command.



Using this command you can temporarily place the section profile on the screen and then you can use the **Edit profile** commands to modify road section. The road cuts out the surrounding terrain according to the section profile.

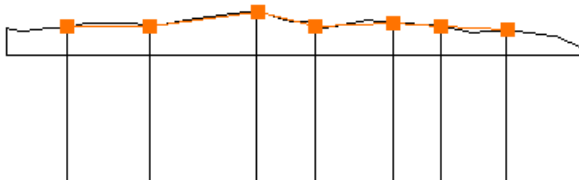
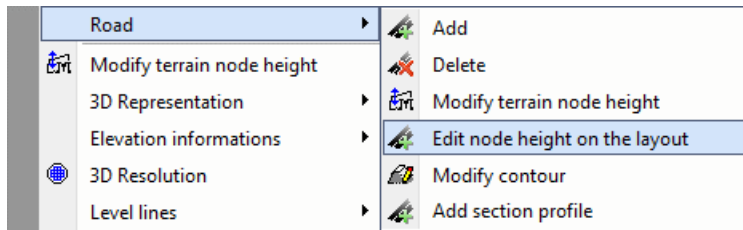


Six nodes appear by default as an H letter. The upper and lower nodes define the slant angle above and below the road surface, respectively. You can only move these nodes. The line between the middle two nodes defines the profile of the road top surface. Here you can add/delete nodes.



9.9.9. Road node height edition on layout

Using the **Edit node height on the layout** command you can place the layout of the vertical section of the road on the screen and then you can use the **Edit profile** commands to modify nodes.



9.9.10. Terrain zone

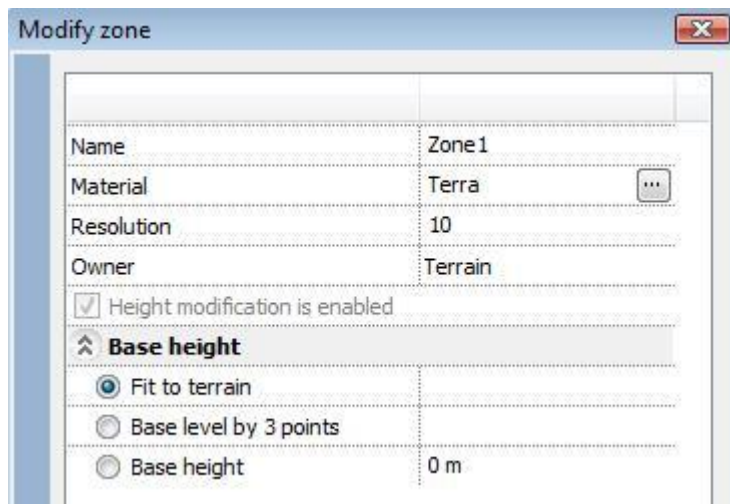
Zones are special areas inside a terrain by which you can gain information about bigger areas. In addition to this you can use zones to modify a terrain in a similar way as you do it with the plateaus.

Create zone

- ❖ There are different possibilities to define a zone; by polygon, rectangle or point inside a closed polygon, etc.
- ❖
- Select a terrain to an area of which you want to assign a material.
- Specify the profile of the new area by using the *Profile definition* tool in the *Toolbox*.



For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.



- Define the name of the zone and assign a material
- Choose the zone type:

Fit to terrain

On the selected area the zone fits to the height of the terrain. Only its material representation can be different from the terrain.

Base level by 3 points

Slant zone can be created. Fits the terrain points to the plane defined by three points.

Base height

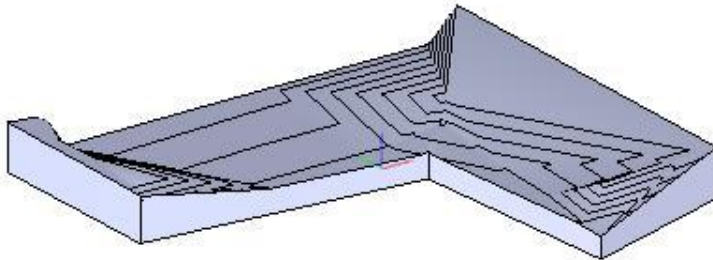
On the area of the zone elevates the terrain points to the specified height.

Ok close the dialog.

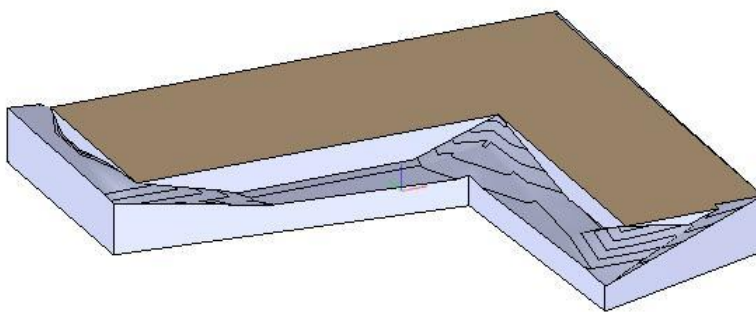
The difference between plateau and zone is that a zone fits the terrain points to the specified heights but no operation is performed on the solid.

The following example shows the difference between zone and terrain when a plain surface is created on the original terrain:

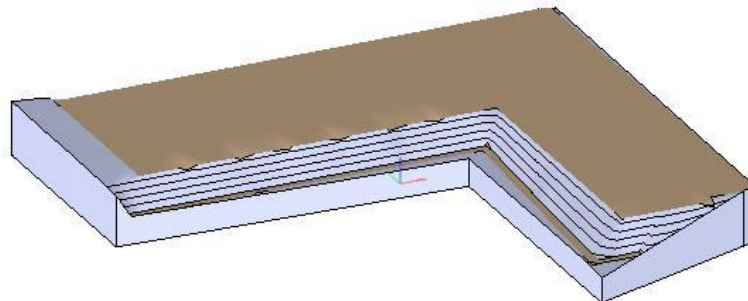
Original terrain:



Terrain with plateau

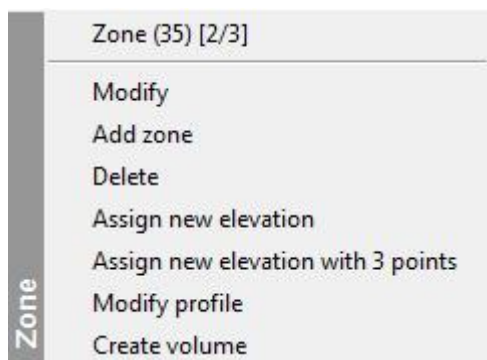


Terrain with Zone



Modify zone

From the shortcut menu you can choose the following commands:

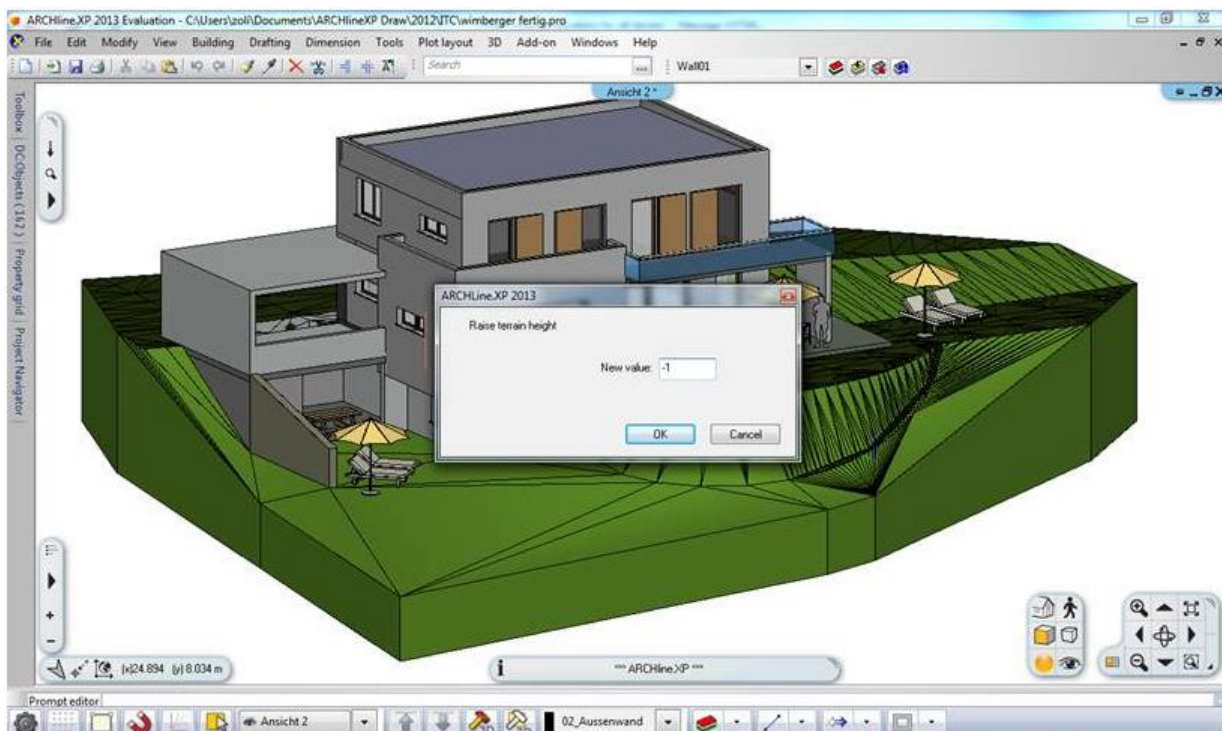
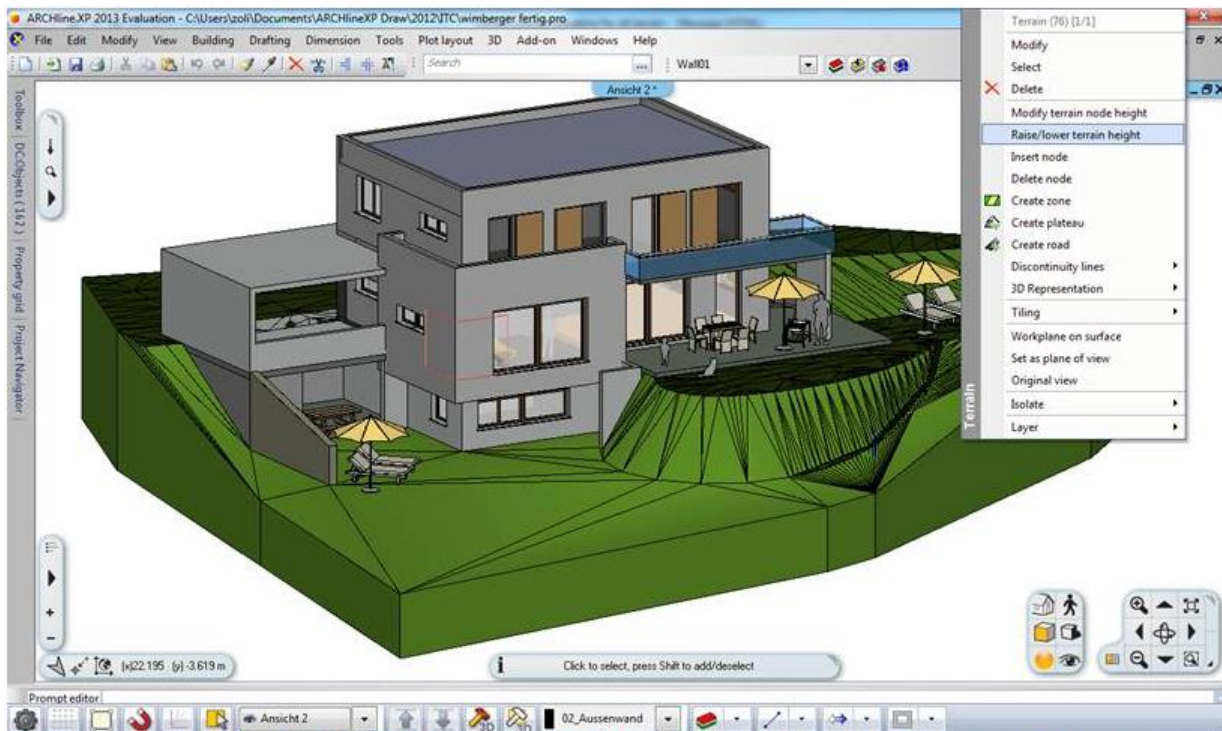


A zone can be modified similarly to the plateau.
New zone can be added to a zone.

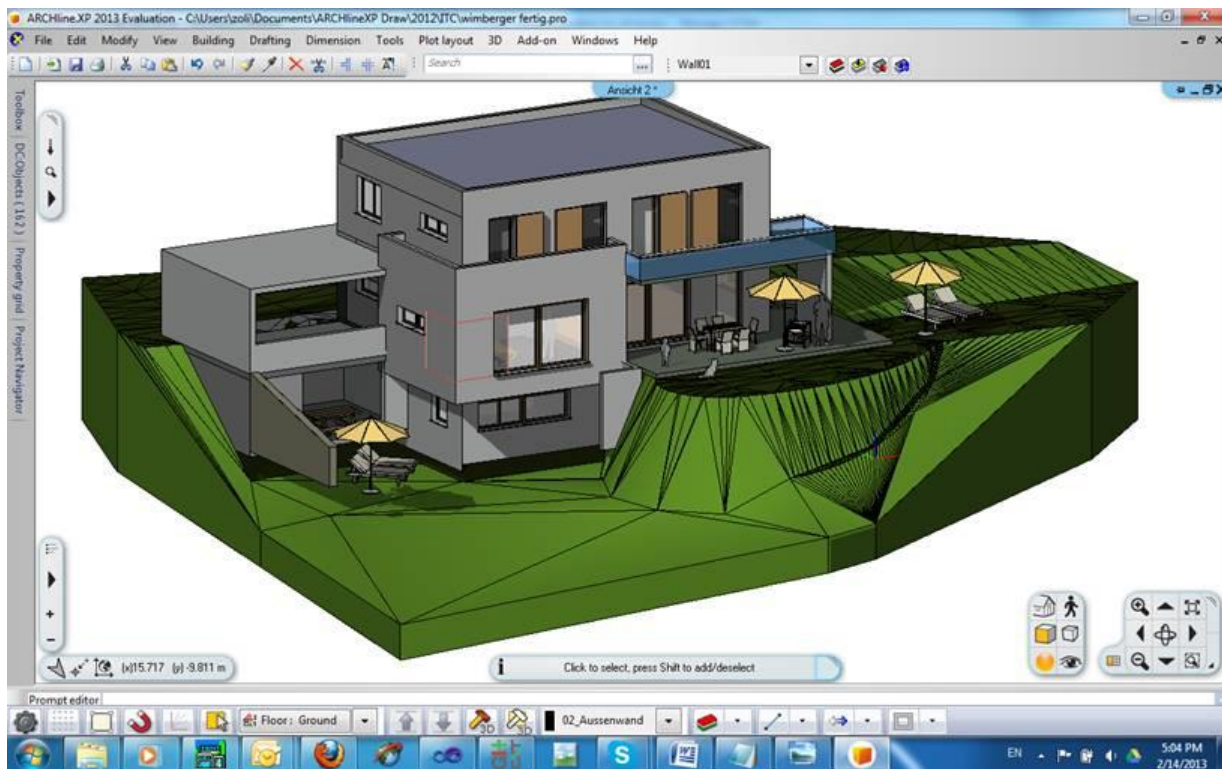
9.9.11. Terrain change elevation for all terrain points

Pop Up Menu: Terrain > Raise/lower terrain height

The command helps to raise or lower all terrain points except the Zone and Plateau in one step.



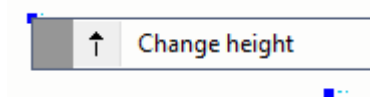
The result looks similar like that:



9.9.12. Terrain 3D commands

Zone, plateau, road and discontinuity line definition and modification is available in 3D. When you use a terrain command in 3D, there is no automatic switch to the floor plan.

Modify and **Select** shortcut menu commands are available in 3D window, too. **Change height** marker command is available for changing the height of each terrain point in 2D/3D windows.

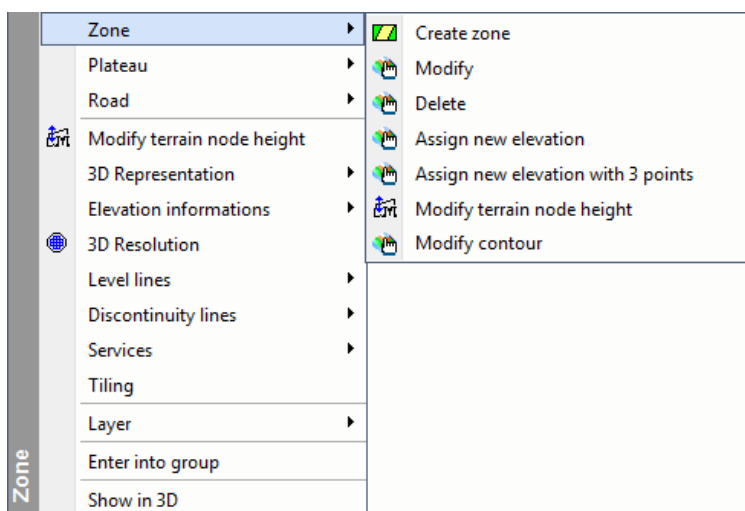
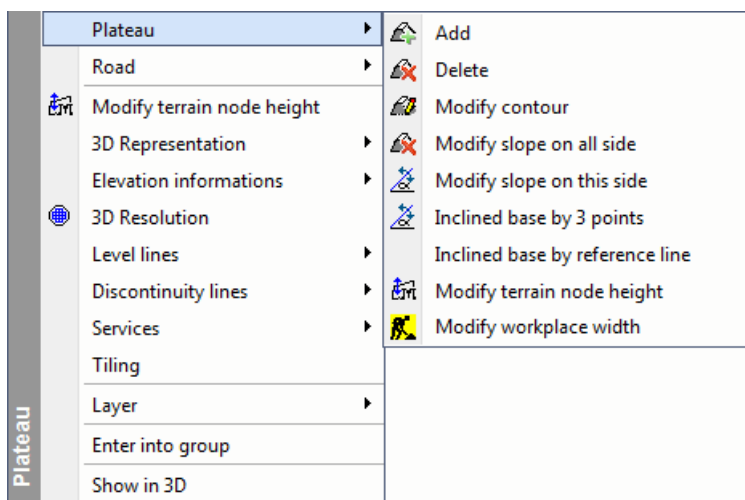
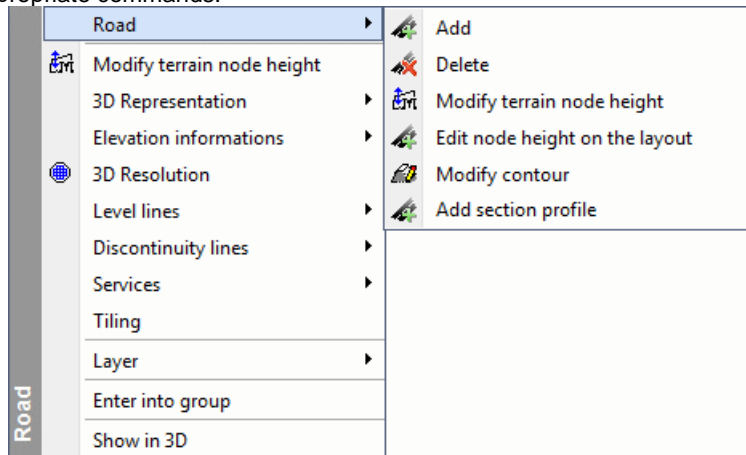


Terrain shortcut commands are rearranged:

| | |
|---------|----------------------------|
| Terrain | Modify |
| | Select |
| | Delete |
| | Modify terrain node height |
| | Insert node |
| | Delete node |
| | Zone |
| | Plateau |
| | Road |
| | Discontinuity lines |
| | 3D Representation |
| | Tiling in 3D |
| | Tiling on the layout |
| | Workplane on surface |
| | Set as plane of view |
| | Original view |
| | Show |
| | Layer |

Terrain subtype recognition

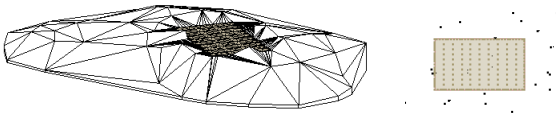
When going over the terrain with the mouse cursor, terrain subtypes (road, plateau, and zone and discontinuity line) are recognized automatically in 2D/3D windows. Depending on the recognized terrain subtype, the appearing shortcut menu includes the appropriate commands.



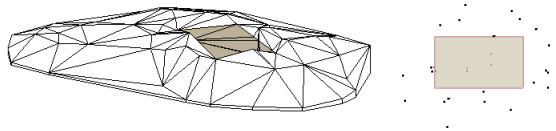
Terrain zone

When creating a zone, instead of adding new points to the terrain inside the contour of the zone, zone contour is added to the terrain as discontinuity line. Compared to the previous versions, this enables a better zone representation, as especially at the border of the zone.

Previous zone representation:



New zone representation:

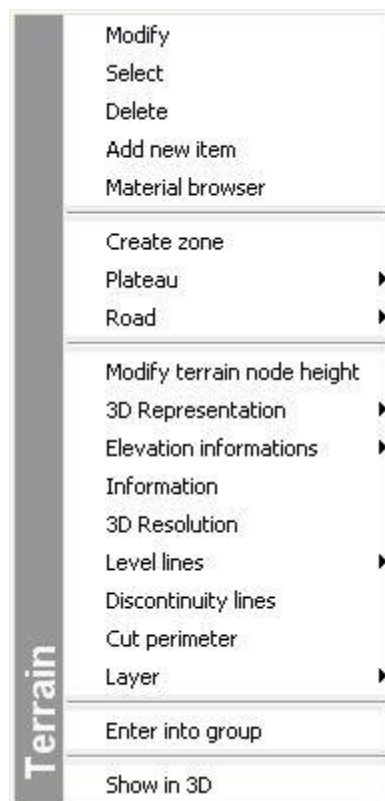
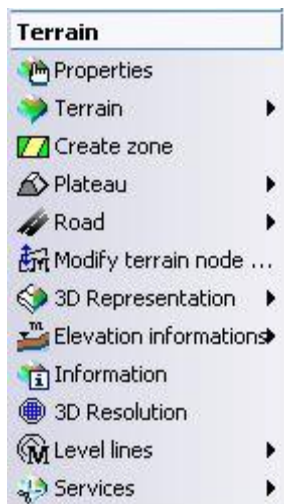


9.9.13. Modify terrain

Clicking on the terrain the *Property manager* visualizes the terrain property or clicking on the terrain *Shortcut menu – Property* command the *Terrain properties* dialog box appears. You can modify the terrain property.

You can access additional modifying commands:

- ❖ In the  *Terrain Tool*:
- ❖ In the *Shortcut menu*:



9.9.13.1. Modify terrain heights

With this command you can modify:

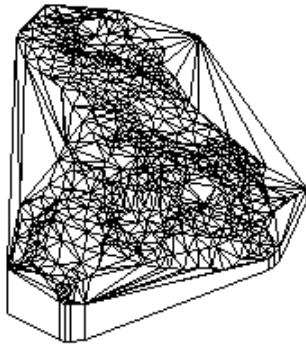
- ❖ a point of the terrain,
 - ❖ a horizontal plateau, or
 - ❖ road height.
- Select the object of the terrain the height of which you wish to modify.
 - Define the new height in the dialog box. **Ok**.
 - Select further objects, or
 - **Enter** Ends the command.

9.9.13.2. Terrain resolution in 3D

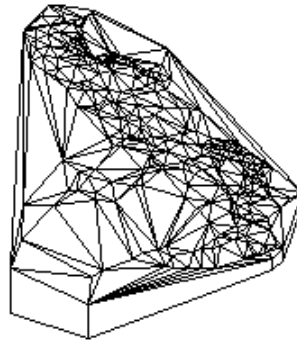
You can modify terrain resolution. The smaller value you define, the more detailed the resolution will be.

- Select a terrain to modify its resolution.
- Specify the new value (≥ 1).

If the number defined as the value of resolution is n , the program will cover the terrain with cubes having edges the length of which equals n . Points of the terrain falling within the same cube are merged into one point and their height is calculated by means of weighting. The program reconstructs the model from the points thus defined.



Original terrain




The same terrain at a higher resolution

9.9.13.3. Automatic contours

For better understanding of terrains with contour-lines, certain contour-lines should be outlined.

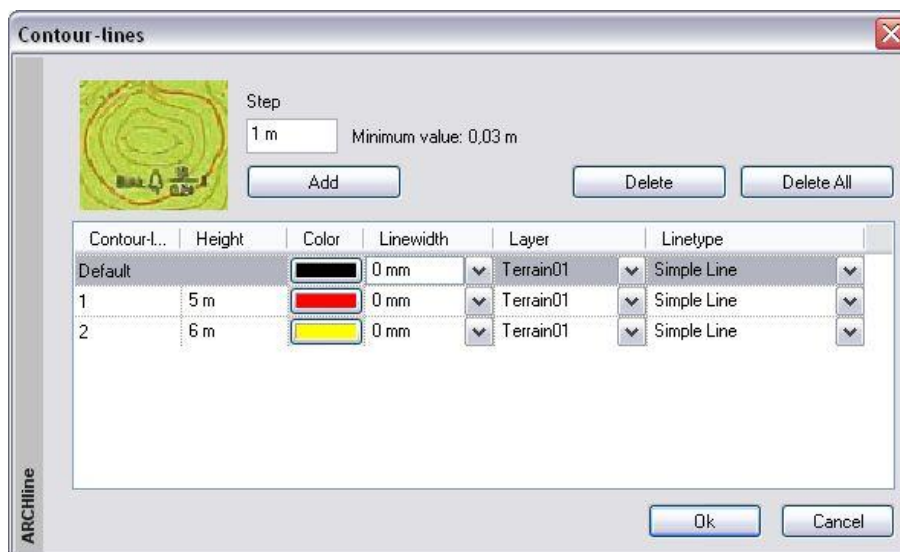
For example, when the step height between the contour-lines is 1 m, you might want to display every fifth contour-lines by red colour, and every tenth contour-lines by yellow colour.

In ARCHLine.XP® it is possible to solve the above mentioned task, namely the program can display certain contour-lines, depending on the height differences, with different colour, line width and line type.

- Select the  *Automatic contours* command. You can select this command when the 3D model of the terrain exists already.

The command adds new contour-lines or modifies the properties of the existing ones, depending on the specified step heights. This results in a more precise display on the floor plan, without any effect on the 3D model.

This command is useful when the terrain is defined by terrain points. In that case there are no contour-lines on the floor plan. With this command you can add contour-lines to such terrains.



In the appearing dialog you can specify:

- ❖ the step heights and
- ❖ the general properties: colour, line width, line type and layer of the contour-lines.

If you place the contour-lines on different layers, you will be able to hide or show certain contour-lines.

The *Step* parameter defines the height difference between the adjacent contour-lines. Each table row represents a contour-line.

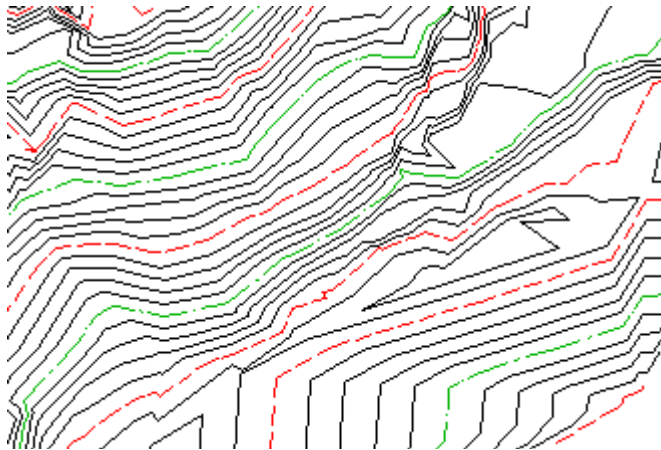
The height parameter of the default contour-line is equal to the step parameter; therefore you cannot enter its height parameter in the table. You can set its general properties.

- Click **Add** button to add a new contour-line to the table.
- Set the contour line properties.
- Only the multiple of step value is accepted here as height parameter.
- Click *Delete* button to delete an unnecessary contour-line.
- You can delete all contour-line definitions, except with the default contour-line, by clicking *Delete All* button.
-

The contour lines settings are saved into the Support/TerrLines.xml file so next time the program will remember to the previously defined parameters.

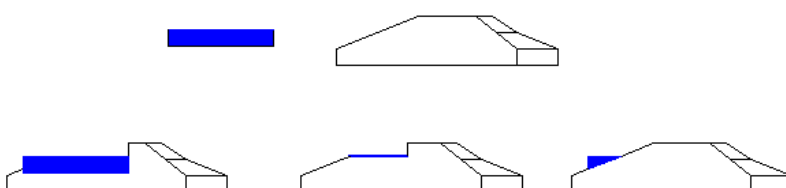
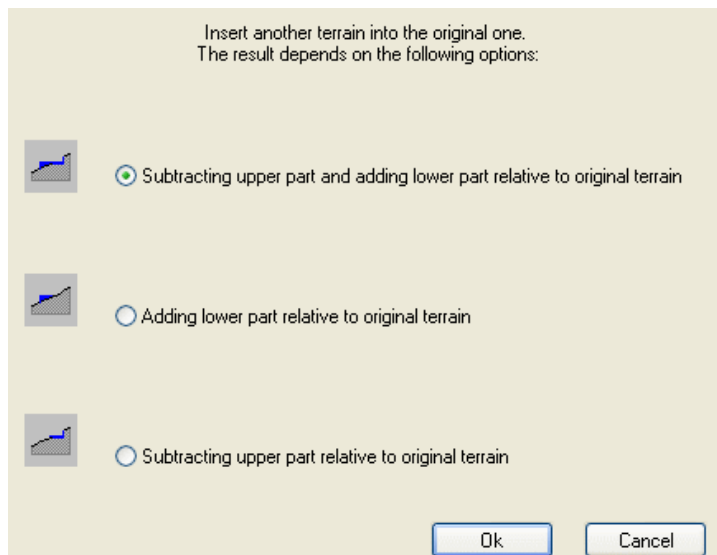


Changing the value of step will change the height values of all contour-lines proportionally, too.





9.9.13.4. Insert sub-terrain

The command inserts the selected sub-terrain into the original terrain. The result depends on the following operations:



The sub-terrain can be a road or plateau, or even a fully designed garden.

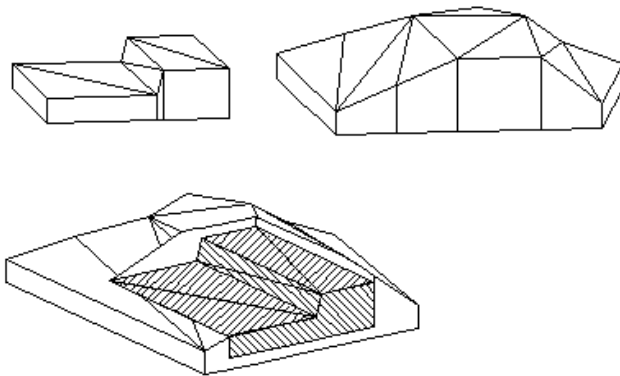
The structure is modelled by a terrain each height point of which - as is the case with the terrain - must be specified. So practically speaking, the sub-terrain is a pre-constructed terrain which you insert into the original terrain by using this command.

The sub-terrain is not identical to the road and the plateau you create with the  **Road** and  **Plateau** icons. Sub-terrains are a lot more sophisticated objects:

When you apply the **Road** function, the shape of the road will be fixed.

When you apply the **Plateau** icon, the foundation of the building will be horizontal. If you create a terrain as a sub-terrain and insert it into the original terrain, you obtain a much more complex configuration. You can freely alter its contour and it can also have an inclined surface.

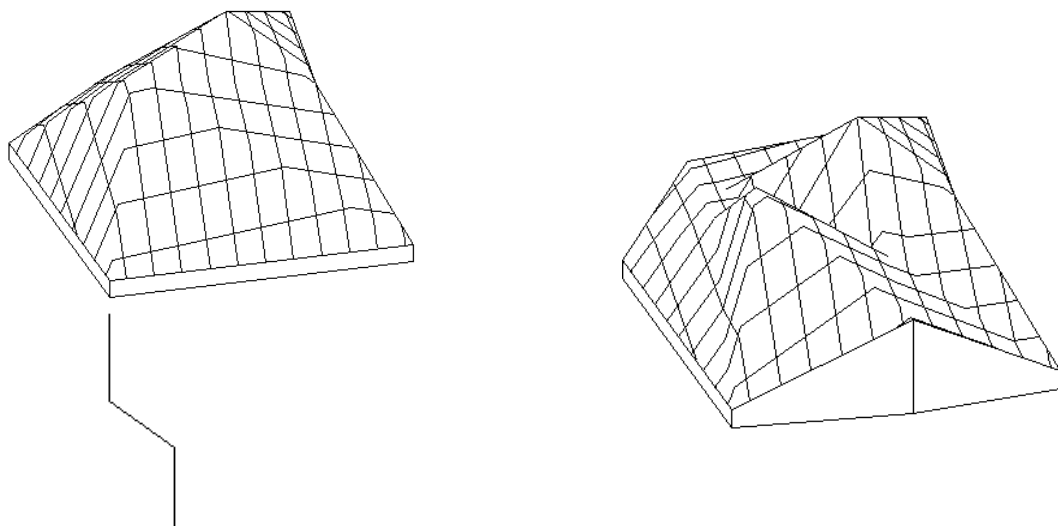
- Select the terrain you wish to use as a part of another terrain.
- Specify the origin of the selected terrain.
- Select the target terrain.
- Insert the sub-terrain into the target terrain by its origin.
- **Enter** Ends the command.



9.9.13.5. Discontinuity lines

You can define edges by a chain of lines specifying the height of points in the chain. The program automatically cuts up the terrain into smaller triangles along the created discontinuity line. The inserted discontinuity lines gain significance in the case of e.g. roads, clefts, and pipes.

- Select the terrain in which you wish to draw a discontinuity line.
- Specify the first node of the chain of lines that defines the discontinuity line.
- Define the other nodes, then
- **Enter** Ends definition of the chain of lines.
- Define the height of the discontinuity line.
- Select the nodes of the discontinuity line to which you want to assign different heights and specify their heights. **Enter**.
- Define another discontinuity line in the terrain, or
- **Enter** Ends the command.



9.9.13.6. Area with other material

You may select an area of any terrain by contour and assign its material. The areas appear in accordance with their assigned material in the 3D model of the terrain.

So for example you can display lakes, rivers, and woods in the terrain.

- Use the Terrain Tool – Zone command

9.9.13.7. Terrain hatch

With this command you can display the terrain in colours on the floor plan. The colours indicate *different heights*, or *inclinations*.

- Select the terrain on the floor plan to which you want to assign colour hatches.
- The **Terrain properties** dialog box pops up.

Different heights

If the **Colour by inclination angle** option is *turned off*, the colours indicate the *different heights* of the terrain. You can set the following properties:

- with **Delta X** and **Y** the properties of the hatch grid in the x and y direction,
- **Division**, with which you set the height spacing of the grid.
- the **colour** of terrain hatch. The colours indicate the areas of the terrain that have *different heights*.

Different inclinations

If the **Colour by inclination angle** option is *turned on*, the colours indicate the areas of the terrain that have *different inclinations*.

Settings

If you click the *Settings* button, in another dialog box you can assign various colours to areas of the terrain that have different inclinations.

| | | | |
|----|-----|----------|-----------------------------|
| 1. | 10° | 7 orange | <input type="checkbox"/> No |
| 2. | 25° | 9 brown | <input type="checkbox"/> No |
| 3. | 35° | 1 red | <input type="checkbox"/> No |
| 4. | 90° | 0 black | <input type="checkbox"/> No |

Ok Cancel

9.9.13.8. Modify base height

With this command you can modify the base height of the terrain. This change has no effect on the contour heights of the terrain.

- Select the terrain you wish to modify.
- Define the new value of the terrain base height in the dialog box. **Ok**.



Original value



-30 m

9.9.13.9. Modify material

With the **Material browser** command you can modify the material of the selected terrain object (plateau, road).

- Select the terrain object the material of which you want to modify.
In the **Material** dialog box then displayed choose the new material. **Ok**.
Enter Exits the command.

9.9.13.10. Elevation information

With commands in the submenu you can display or hide terrain information on the drawing.



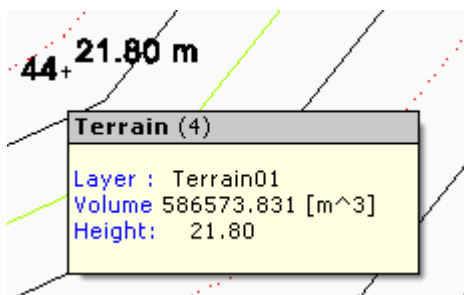
Query height

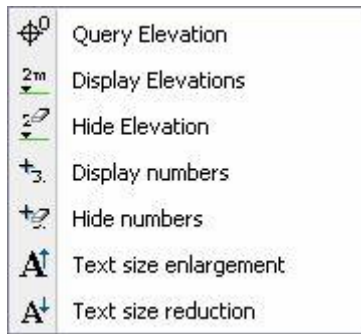
You can query the height of a given point of the terrain and insert its value in the drawing.

- Select the terrain the height of which you wish to query at a given point.
- Click on the point to query its height.
OK Insert the value of the height in the drawing, or
Cancel Do not insert the value of the height, exit the command.



Terrain height of a terrain point is displayed in the tooltip when you go over the terrain point with your mouse.





- ❖ **Display elevations** – Displays the elevation values of the terrain points.
- ❖ **Hide elevations** – Hides the elevation values of the terrain points.
- ❖ **Display numbers** – Display the numbering of terrain points.
- ❖ **Hide numbers** – Hides the numbering of terrain points.
- ❖ **Text size enlargement** – Increases the font size of the displayed information.
- ❖ **Text size reduction** – Decreases the font size of the displayed terrain information.

9.9.13.11. Information

You can gain information about roads, plateaus, zones of an existing terrain in a dialog in tables.

I

In the title of the dialog the ID of the terrain is displayed in bracket. In the top right part of the dialog you can read general information about the terrain. You can use the *Road*, *Plato* and *Zone* tabs to switch between tables with information about the appropriate parts of the terrain.

With the *Add Parameter* and *Delete Parameter* buttons you can add/delete columns to the tables so you can add your own information (for example notes) to each table row.

With the *Save to Excel file* button you can save the whole list in an XLS file, which can be viewed right after exporting the file if you use the View output file option.

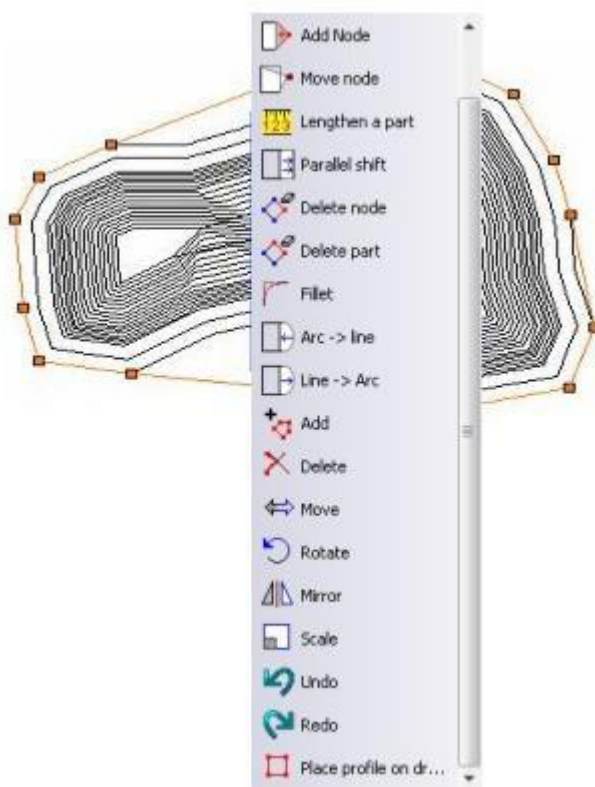
Close the dialog with the OK button after you finished with the modifications

9.9.13.12. Cutting perimeter


With this command you can erase unneeded parts of the terrain. If the form of the terrain on the floor plan is concave, as default the program displays the terrain in its entire convex form in 3D.

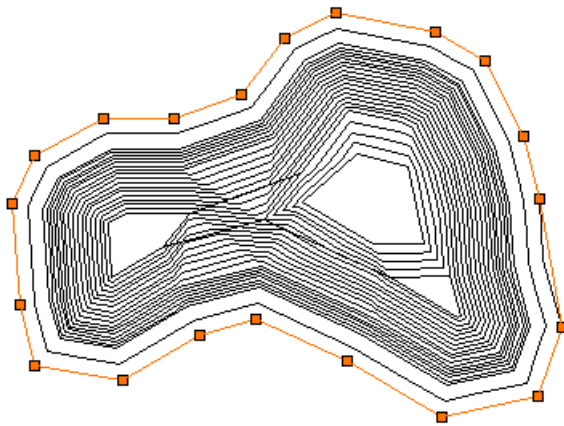
You can specify the contour by which you cut the 3D model, so that the unnecessary parts created by the bordering concave parts are erased.

- Right-click the terrain on the floor plan. In the appearing shortcut menu select the *Cut perimeter* command. Then the contour of the terrain appears:

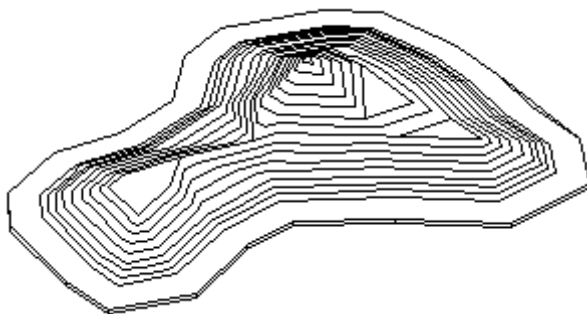


Using the *Edit Profile* tool you can quickly modify the contour of the terrain, so for example

- With the  **Add node** icon you can select a segment of the contour profile and insert a new node. Doing so, you can adjust the convex form of the terrain to its concave form on the floor plan.



If you regenerate the terrain after modification, it will be displayed in a concave form also in the 3D model.



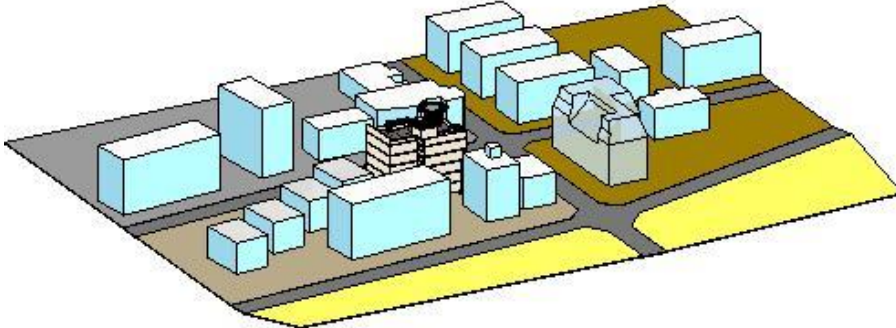
See the description of the *Edit Profile* tool in Chapter 8.9.9 *Editable profile*.

9.10. Concept 3D

Introduction

In ARCHLine.XP® there is a possibility to determine the volume of the building in visual form. In big densely populated towns with thick built-up areas it is important to maximize the volume of the building according to the regulations.

In ARCHLine.XP® you can determine the biggest floor space available for the building, on the base of this the biggest volume, which is suitable for the local building up regulations (like maximum height and solar access) can be determined in a simple way.



Using the volume you can create walls, slabs, and curtain walls with a single click on the surfaces.

9.10.1. Creating Building volume

Command for creating and editing a Building Volume is in the Toolbox menu *Terrain* in the main menu *Building/ Terrain*.

The basic contour and height of the building volume

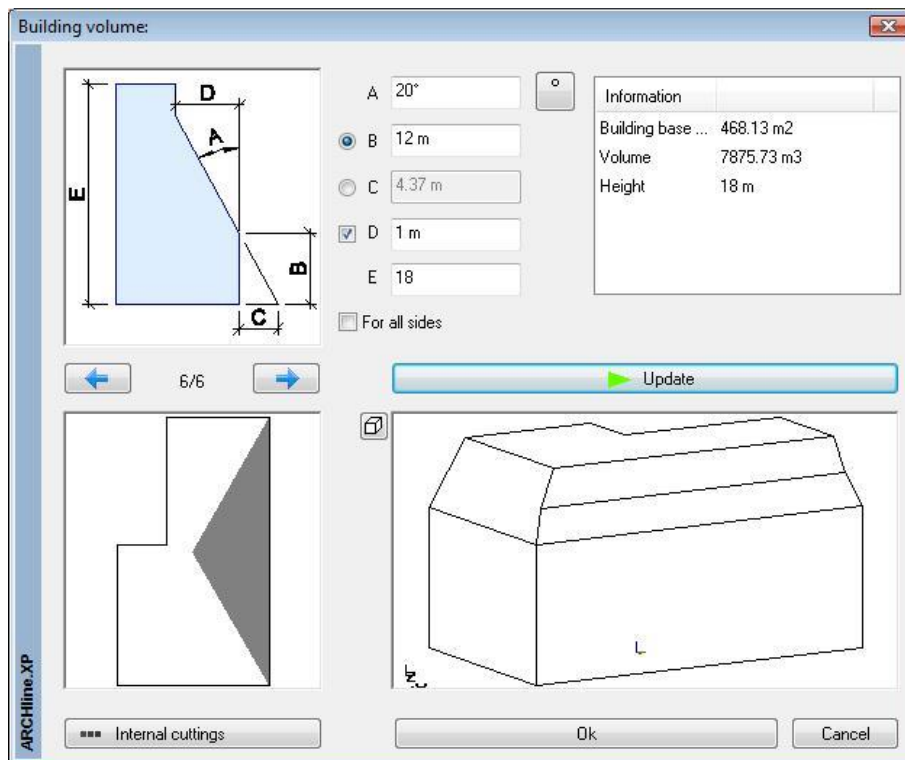
First you have to draw the basic contour of the building volume, so that polygon from which the building volume will rise. Use the proper commands from the *Profile definitions* on the left side.

You can determine the maximal height of the building volume with value or graphically. It depends on that you started the command from the floor plan or from the 3D window.

Later you can modify this value.
Then the *Building volume* dialog window appears.

The volume of the building

In the Building volume dialog window you can detail the rule system referring to the surfaces border the building volume control.



Parameters

The left side picture helps to understand the meaning of parameters.

- A** The angle of selected plane compared to perpendicular. You can determine the angle value between 0 and 89 degree. In case of giving false value, the field's colour will be red. The angle counts from the line determined in B.
- B** The frontal height of the selected side: If you use this option, the C option can't be reached.
- C** Shifting the starting line of oblique limiting on the base plan: If you use this option, the B option is not definable.
- D** Inside perpendicular limit: You can use the option independently. You can determine with its help such building volume limits, which can't be definable in any other way.
- E** The maximum height of the building volume: Here you can see and modify the value of height determined at building volume base contour.

For all sides

After switching on the option all sides of the refreshed volume model change according to the selected A-B-C-D-E values.

Information list

These information help to get a picture continuously from the designing volume model according to the geometry information.

Select sides

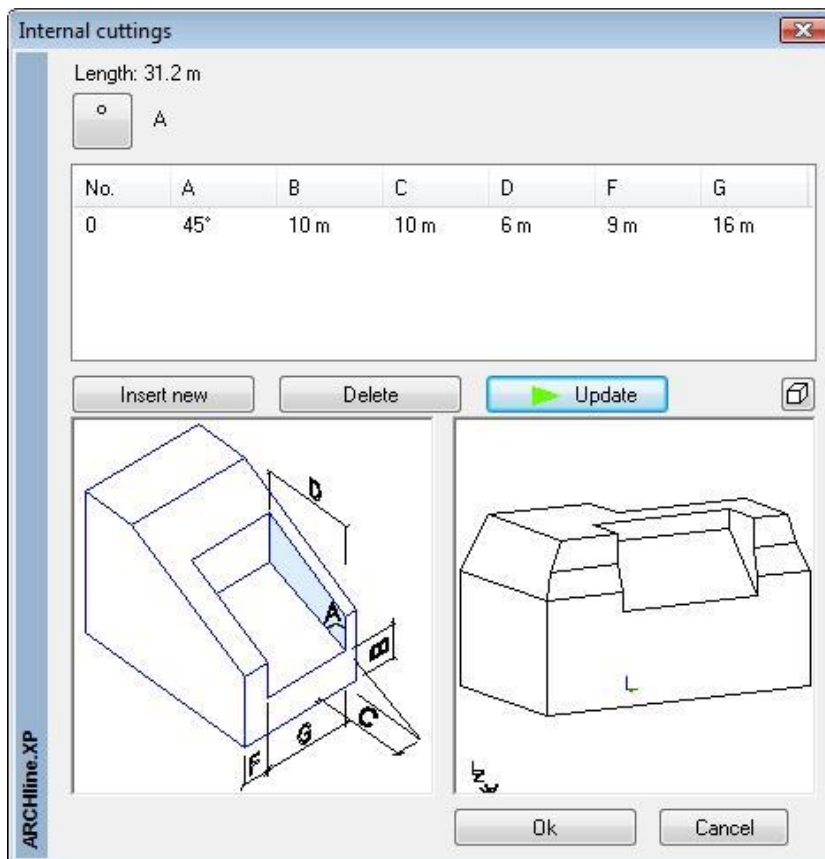
The sides of the polygon by creating base contour determine the sides of the volume model, which is lifted out from this. You can see the simplified plan of the volume model in the top view window. The selected side appears as a grey area. You can select between the sides with the button above the window. The numerical value shows how much sides exist and which one is selected now. 8/8 means, that there are 8 sides and the last one is selected. You can also select in the window if you click on the proper side.

Preview

You can look at the changes during the drawing in the pre-view window. Each new change in the drawing can be transformed to the Pre-view window by clicking on the *Update* button.

Internal cuttings

If you use the internal cuttings, you can graphically determine complex rules. In the appearing dialog window you can determine detailed limits on the selected side.



You can make a new rule with the *Insert new* button, so even periodic structures can be determined. The explaining figure helps with determine different rules and you can follow the changes on the actual volume model as well by clicking on the *Update* button.

Parameters

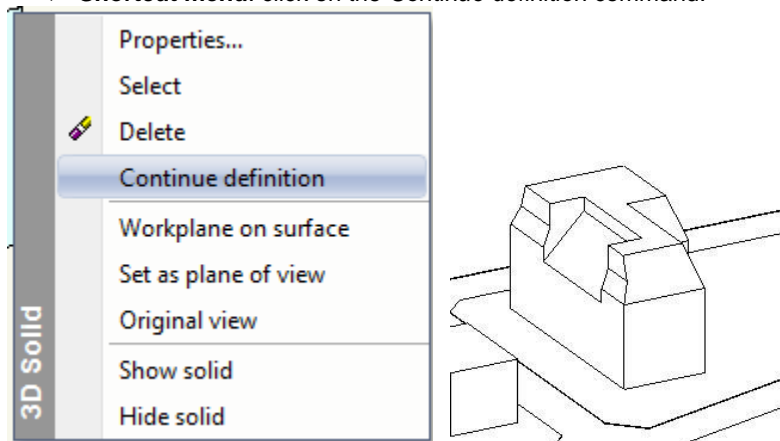
- A** The angle of the new cutting compared to perpendicular.
- B** The base height of the new cutting compared to the base line of the selected side. After the changing the C value is refreshed automatically.
- C** The value of shifting the base line of the new cutting plane compared to the base line. After the changing the B value is refreshed automatically.
- D** The depth of the new cutting compared to the perpendicular plane of baseline.
- F** The left side base plane of the new cutting. The limiting surface of the two side's vertical cutting is perpendicular to the vertical plane of the base line.
- G** The width of the new cutting. This value determines also the place of the perpendicular limiting on the right side.

9.10.2. Editing volume model

According to the preferences the volume model is ready, and it appears in the 3D window.

You can modify or edit the volume model from:

- ❖ **Shortcut menu:** click on the *Continue definition* command.



Building volume dialog appears where you can continue defining of the rules.

9.11. Objects and profiles

Introduction

ARCHLine.XP® has several *categories* (.oli) within the *Object directory* where you can select the object type.

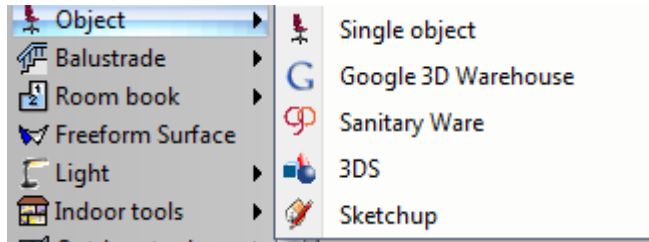
All types have alterable parameters, the value of which you can modify.

This way, you can insert the same object with various parameters into the drawing, without increasing the size of the directory.

However, there never can be such an objects directory, which for example contains all individual pieces of furniture. Therefore the program provides the possibility of creating individual objects by using the *Solid modeller*.





The icons of the  Object tool allow you:



- ❖ To select, insert, and modify objects
- ❖ To save 3D objects to the objects directory
- ❖ To create and insert sprites (objects that have no width)
- ❖ To save profiles to the profiles directory

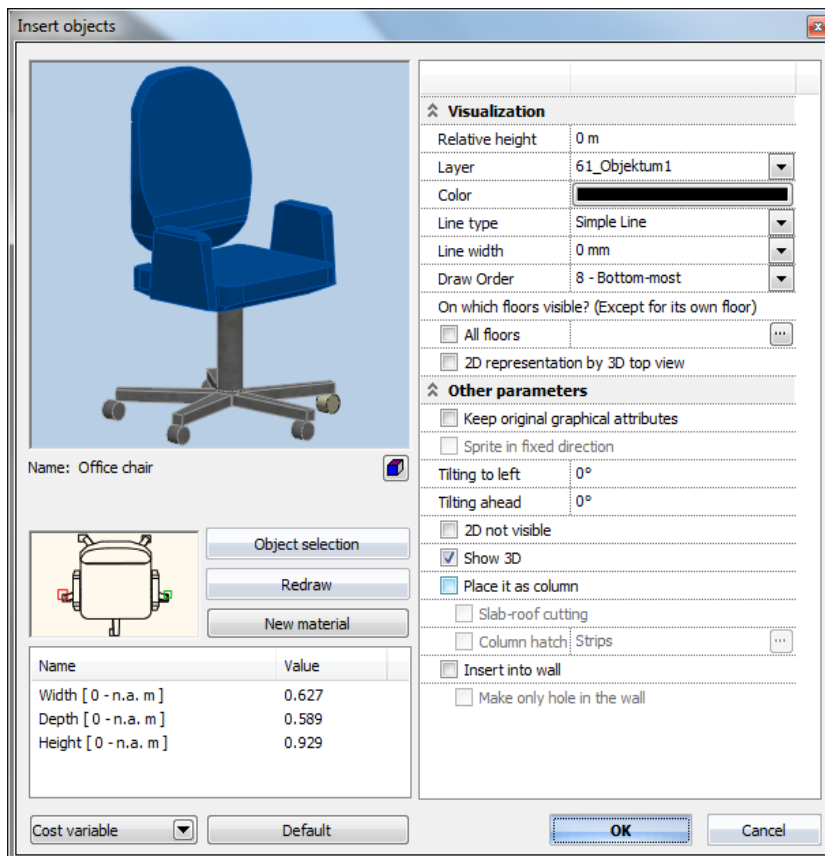
9.11.1. Object properties and placement

You can select, set the properties of and insert objects in various ways in the program:

- ❖ By the  icon in the  **Object tool**
- ❖ With the Building menu - Place Object command
- ❖ In the Design center, for the detailed description of which see Chapter 2.16.9. *Design center*.

Once you have selected an object and set its properties, you can place it in the drawing by using different options.


Modifications you make to any object properties in the appearing dialog box will apply to objects you insert afterwards.



We discuss object properties in the following order:




- ❖ Selecting object type
- ❖ Main parameters
- ❖ General properties
- ❖ Attributes of placement
- ❖ Placement

9.11.1.1. Selecting object type

- Choose a category and a type within that from the list in the objects directory. Then the floor plan symbol, the 3D representation and the geometric parameters of the selected type appear in the dialog box, these you can modify as required.
- If you keep clicking the  icon above the lower list to the left, you can specify whether you wish to display the objects in the selected category by name, by 2D view, or by 3D image.

3D image

- If you click the other icon above the lower list to the left, you can define whether you want display the 3D image of the desired door/window type

 in wireframe mode,  in hidden line mode, or  with shading in the window.

9.11.1.2. Main parameters

When you double-click the value, you may modify the parameters of the selected object. In the case of user-defined objects you may only modify the size of the bounding box of the object.

| Name | Value |
|---|---------------|
| Length [0.01 - n.a. m] | 1.8 |
| Width [0.01 - n.a. m] | 1.9 |
| Height [0.01 - n.a. m] | 0.5 |
| Bottom height [0.01 - n.a. m] | 0.2 |
| Height of back of bed [0.01 - n.a. ... | 0.9 |
| Backside material | Textile3 |
| Upper side material | Textile2 |
| Base material | Textil-denim1 |



If you switch on the *File menu - Options - Other - Range of parameter values*, the program will appear at main parameters the validity range of parameters. This will help at value determining.

Materials

For each object you can specify at least one material:

In the case of *objects with defined parameters* of ARCHLine.XP®, you can alter the material properties by double-clicking the name of the material in the *Main parameters*. With a click on the name, the **Material** dialog box pops up, where you can select the appropriate material display.

| Material | Value |
|----------|---------|
| 1 | FarbePc |
| 2 | Buche1 |

In the case of *user-defined* objects (created with the solid modeller), you can specify each material of the object in the *Material* field below the main parameters of the object.

Once you have modified the parameters of the selected object type, click the **Redraw** button to see the modified object in the window.



When you set the main parameters, the program verifies the specified values on the basis of various internal criteria. If a value fails to meet the criteria, after clicking the *Redraw* button the program informs you that the values cannot be accepted and restores the original settings.

Therefore we suggest that if you alter more parameters you should click the *Redraw* button after each value definition so that the program can instantly indicate if it accepts the specified value or not.

9.11.1.3. General properties

As all other objects in ARCHLine.XP®, objects have colour, layer, line type and line width properties, too.



See:

- ❖ the detailed description of general properties in Chapter 3.2.1 *Specifying general properties*,
- ❖ the description of sets in Chapter 3.2.3. *Using sets of properties*,
- ❖ the description of cost variables in Chapter 3.2.4. *Assigning variables*.

Keep original layers

You can apply this function when you want to display objects whose various parts you placed on different layers. By selecting this option you can insert all parts of the object in the layers you defined for the object.

9.11.1.4. Attributes of placement

Sprite in fixed direction

This setting concerns sprite position. Sprites are objects that yet have no width practically they are 2D planes. By default, sprites are always displayed in front view, regardless of how you rotate the figure or set the perspective. As a result of this feature, they are like real solids.

When you do not always need to see the selected sprite (people, cars, plants, etc.) in front view, turn on the **Sprite in fixed direction** option. In this case they will be rotated together with other 3D solids, so from a certain angle you will only see a surface that has no width.

Relative height

You can set the elevation of the object relative to the active floor.

Rotate at position

You can define the angle at which you rotate the object when inserting. This rotation also affects the floor plan. If you do not specify the rotation angle here, you may still do that when you insert the object.

Interactive length

This option allows you to define the length of the object graphically when inserting.

- Specify the starting point, then drag the mouse pointer in the appropriate direction and define the endpoint of the object.

Place on terrain

You may place objects not only in architectural drawings and floors, but also on terrains.

- After closing the dialog box select a terrain whose height you query.
- Insert the selected object.

The program places the object on the terrain at the height of the queried point.

3D insert

Choose this command if you want to insert the selected object in 3D. In this case, after closing the dialog box the 3D drawing area is automatically activated, where you can fit in the object.

Fix arch. object in 3D

If you rendered the object to an architectural object with the **Modify menu - Lock object in 3D** command, this option is automatically turned on. By turning it off, you can deactivate the command. You cannot turn on this option in the dialog box.

By locking objects you can assign 3D images to architectural objects which are independent of their 2D drawing. This way you can easily create detailed 3D views without displaying them in the 2D drawing.

2D not visible

In many cases you only need to display objects in 3D, but not in the floor plan. That's what the *2D not visible* button is for. When turning on this option, the object will be indicated on the floor plan by dotted lines, which are hidden in print.

Show 3D

If you deactivate this command, the object will only be displayed in the floor plan, but not in the 3D model.

Place it as column

If you choose this option, the program will insert the object as column. This means that it will be created like those

structural objects you insert with the  **Column** icon in the **Beam tool**.

The difference is that with the Column icon you can create objects defined by a profile, whereas here you can insert objects.




See Chapter 9.2.1. *Column*

If the Place it as column command is turned on, you may activate the *Slab-roof cutting* and the *Column hatch* options.

Slab-roof cutting

The command functions the same way as in the case of walls.

Turn on the option:

If the *Wall-slab-roof cutting* option is activated in the  Build 3D model dialog box, the slabs and roofs that you selected for cutting will cut the objects placed as column together with the wall. The result is independent of the object being a part of the wall or not.

Example

Cutting is unnecessary in the case of chimneys for example, or when the column extends to the top of the slab (where the slab consists of beams) and is connected to another object there, e.g. rafter.

Column hatch

Turn on this option to indicate the object placed as column with hatches in the floor plan. Click the button to select the required hatch in the dialog box displayed.



See Chapter 11.7.1 *Hatch properties*.

Insert into wall

This command automatically inserts the object into the wall by cutting out its place in the wall. Thus the program does not display wall hatch and wall contour 'behind' the column in the floor plan. If you deactivate the option the program restores the original status.

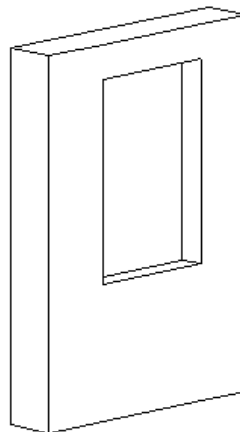
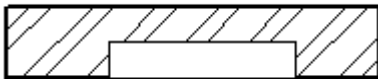
Make only hole in the wall

The command automatically inserts the object into the wall, but removes the object from the wall in the 3D view, that is it only makes a hole in the wall. This option is only enabled when the *Insert into wall* command is turned on.

With this method you can easily create air holes, flues, service ducts, or even wall niches.

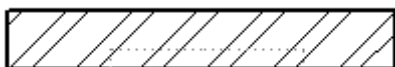
When calculating wall parameters, the program subtracts the thus created 'column places' from the volume of the wall.

Example:



To create a wall niche, place the object of the required shape in the wall using the *Make only hole in the wall* option. This object is then cut out of the wall, so any customized wall niche can be easily created.

If you do not wish to display the wall niche in the floor plan, activate the 2D not visible option, too:



9.11.1.5. Tilted objects

Objects can be placed on a sloped surface. It can be useful when there is a need of placing objects on sloped slab, ramp or terrain.

Tilting properties can be set in two ways:

❖ Numeric:

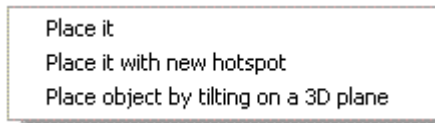
In the object properties dialog. You have to specify the tilting in two directions:

| | |
|-----------------|-----|
| Tilting to left | 5° |
| Tilting ahead | 10° |

Sometimes it is hard to specify the correct tilting angles, for example in case of a spiral ramp. In this case it is better to use the second way:

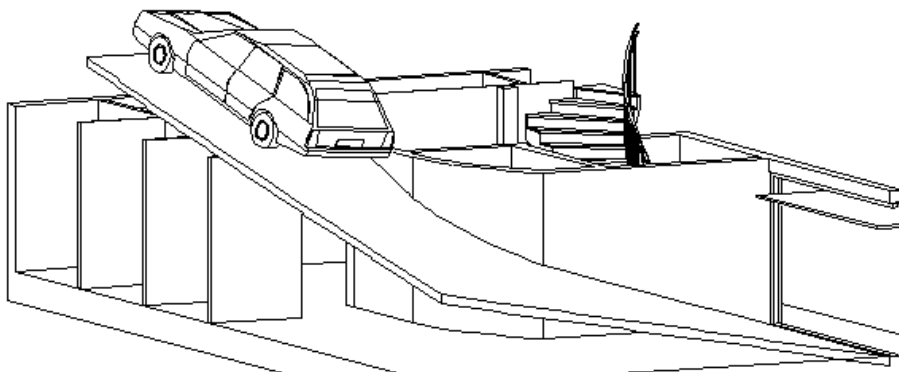
❖ **Graphic**, by selecting a 3D plane:

- Activate the 3D window.
- Select the object from the design center, press and hold down your right mouse button, and drag the object to the 3D window.
- Select the *Place object by tilting on a 3D plane* command from the appearing list.



- Select a plane.
- Place the object. Rotate it, if necessary.
In the Object dialog you can check the tilting properties.

| | |
|-----------------|------------|
| Tilting to left | 20.460699° |
| Tilting ahead | 11.016762° |



9.11.1.6. Placement

Once you have selected the appropriate object and set its properties, click **OK** to close the dialog box. You may place the objects both in the floor plan and in the 3D view:

Placement in 2D:

- Place the object in the drawing by its hotspot. If you want to rotate the object but have not defined the angle in the dialog box, you may still do it by selecting the keywords in the command line.

Options:

| | |
|-------------------|--|
| XANGLE | Define the rotation angle. Enter . Place the object in the drawing. |
| GRAPHIC | Define the centre of rotation, and specify the tip of the angle graphically. |
| NEXT | The next reference point of the object will be active. |
| PREVIOUS | The previous reference point of the object will be active. |
| DEFHOTSPOT | You can select from the picture the proper reference point. |
| LENGTH | You can determine the length interactive. |

Placement in 3D


If you turned on the *3D position* option in the dialog box, the program will automatically activate the 3D drawing area where you can fit in the object.

- Select a plane where you place the object. The appearing workplane signs the selected plane.
- Insert the object, or choose from the 3D point definition options in the **POPMENU**.

Option:

| | |
|---------------|---|
| SSOLID | Choose this option if selection of the plane is ambiguous. Click on the solid whose plane you want to specify for placing the object. |
|---------------|---|



If the 3D window was active before selecting the  *Place object* command, the object will automatically be placed in the 3D view, even if you do not activate this option.

9.11.2. Creating objects

In the objects directory of the program you find several objects grouped in different categories: furniture, roof structures, plants, etc. In many cases you may need to create other objects, for which you have various options in the program. You can

- ❖ create custom objects,
- ❖ create object assemblies, or
- ❖ Define sprites.

The objects created can be saved to the objects directory of the program in the specified category. Later on you may modify three main parameters (width, height, depth) and the material of these objects.

Object and group names with special characters

When objects and groups are created, the following special characters can be used:

Space,

& ! @ \$ % + = () [] { } ' ; , ~


The following characters cannot be used:

\ ? | > < : / * “

9.11.2.1. Define custom object

Basically, this command is like the **Define custom door/window** command.

In this case you also have to create the 3D solid of the object first. After you have selected the 3D solids, the program automatically creates:

- ❖ the 2D symbol of the door/window based on the top view of the selected object, and
 - ❖ the 3D group, to which it assigns the four bottom corner points of the bounding rectangle as reference points.
- Create the 3D model of the object with the solid modeller.
 - Select the  **Define custom object** command:
 - Select the 3D objects, and then complete the selection with **Enter**.
 - In the appearing dialog box select the 2D and 3D group created by the program.
 - Specify the name of the object.
 - **OK** Closes the dialog box.

The program displays the name of the object and asks if you want to save it. The program saves the new object to the specified category in the *Objects* directory.

9.11.2.2. Define custom object from 3D model

Before using this command, you have to create the 3D solid of the object and make other preparations. The complexity of designing 3D models ensures a great deal of freedom in definition.

Preparatory steps:

- ❖ Construct the 3D model of the object.
- ❖ Create a 3D group of the model.
- ❖ Create the 2D symbol of the object if you wish to use a special symbol for its 2D representation.

Use of the  **Define custom object from 3D model** command:

- ❖ Select the 2D and 3D group already created.

1. Creating a 3D model

- Using the solid modeller, create the 3D solid of the object.

2. Creating a 2D symbol of the object

- Draw the 2D symbol of the desired object in the appropriate size using geometric objects (line, arcs, etc.). The program will display this symbol every time you insert the object.

Group definition:

- Create the 2D group with the **Tools menu - 2D group - Create** command.

- Select the objects of the 2D symbol and define the reference points. You need four points for this method whose sequence of definition is important. You have to define the lower left, lower right, upper right, upper left points in the same order.
- Assign a name to the group in the appearing dialog box.



You find an example of 2D symbol definition in Chapter 9.3.4. *Define custom door/window*.

3. Creating a 3D group

- Create the 3D group with the *3D menu - Group in 3D- Define object* command:
- Enter the name of the group. The name of the 3D group can be identical with the one you defined for the 2D group.
- Select the solids that form the new object.
- Specify the reference points of the 3D group in the same order as you defined the reference points of the 2D group (lower left, lower right, upper right, upper left).
If the four bottom corner points of the bounding box enclosing the solid are the reference points, simply select the **ENTER** keyword.

When creating a 3D group the 2D symbol is automatically created, this is the top view of the 3D model. It is not always identical to the symbol of the object, that's why it was necessary to create its own symbol.



4. Using the Define custom object from 3D model icon

- Select the 2D group in the dialog box that you want to use as the symbol of the object in the floor plan. You may choose the group you created or the one offered by the program.
- Select the appropriate 3D group.
- Enter the name of the object.
- **OK** Closes the dialog box.

The program displays the name of the object, and asks if you want to save it. The program saves the new object to the specified category in the *Objects* directory.

9.11.3. Sprites in photorealistic view

About sprite

Sprites make the program suitable for adding plants, people and cars to the 3D representation without slowing down the representation but providing a photorealistic view. For this we need the photo of the objects. From these photos the definition of sprites can be done very quickly, so you can easily extend your object library. Opposed to the RPC objects, sprites don't have spatial effect; they are only planes with zero thickness. They look the same from all viewpoints. In many cases they can be used very well.

9.11.3.1. RPC objects in ARCHLine.XP®

ARCHLine.XP® uses the LightWorks rendering engine. Since RPC technology is supported by LightWorks products, ARCHLine.XP®. users can enjoy the benefits of the new technology, without sacrificing rendering performance. Extensive ready-to-use RPC object files are downloadable from different image-based content suppliers (like ArchVision) and users can use it in ARCHLine.XP®.

In the Oli directory there is an oli file named *ArchVision.oli*. This file includes some RPC objects.

The ArchVision object library refers to files with **rpc** or **lwi** file name extensions found in the **\Oli\ArchVisionObj** subdirectory of ARCHLine.XP® installation directory. RPC objects work only with these files; each object refers to a file with lwi or rpc extension.



Rpc/lwi files are not saved into project files. If you move a project to another machine, RPC objects will not appear.

9.11.3.2. Creating your own RPC object library

Users can also create their own RPC object library in the following steps.

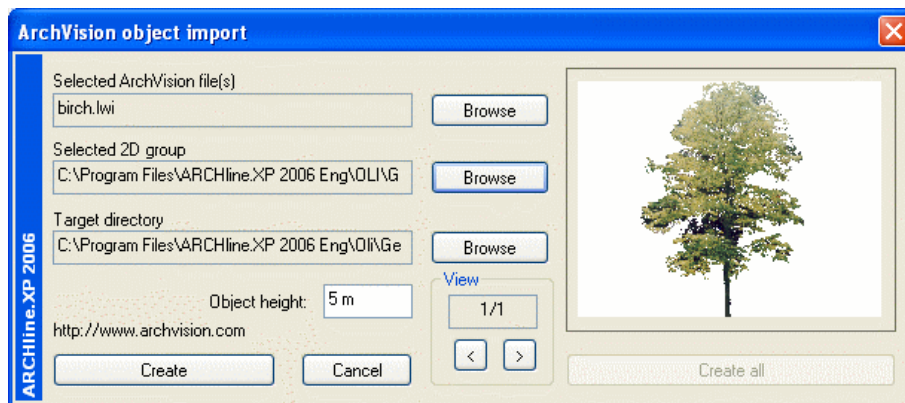
Acquire your rpc or lwi files

- Acquire your own image-based files with **rpc** or **lwi** file name extension from your image-based content supplier. Currently the biggest supplier of RPC files is ArchVision (www.archvision.com).
- Put these files into the **\Oli\ArchVisionObj** subdirectory of ARCHLine.XP® installation directory.

! Please note that the appropriate **rpc** or **lwi** files need to exist in the **\Oli\ArchVisionObj** subdirectory, otherwise the objects cannot be seen on the rendered image.

Import your rpc or lwi files

- Use the Tools menu - Accessories - RPC object editor to open the **ArchVision object import** dialog.



- Use the *Browse* button on the top to select the appropriate rpc or lwi file you put into the **\Oli\ArchVisionObj** folder. The image of the selected file will appear on the right side of the dialog. With the use of CTRL button multiple file selection is available. In this case you can use the arrow buttons on the bottom for viewing the images.
- Use the *Browse* button in the middle to select the desired 2D group found in the Oli\Group directory you want to assign to the object. This 2D group will represent the object on the floor plan. Here you can select only one 2D group from the existing group libraries. In case of multiple rpc/lwi file selection you will assign this 2D group for all objects, thus you will have same 2D symbol for all.
- Use the *Browse* button on the bottom to define the target category (oli file) in the object library you want to save the object into. You can either select from the existing user-defined object libraries or create a new one.
- Set the object height in the input field. The object(s) will be represented in 3D view with this height.
- Click *Create all* button to create all objects and close the dialog. In case of multiple object selection click *Create* to create only the selected object, then you can continue with the rest.



From users' point of view files with **lwi** extension are handled the same way as files with **rpc** extension.

9.11.3.3. Sprite creation

Sprites make the program suitable for adding plants, people and cars to the 3D representation without slowing down the representation but providing a photorealistic view. For this we need the photo of the objects. From these photos the definition of sprites can be done very quickly, so you can easily extend your object library. Opposed to the RPC objects, sprites don't have spatial effect; they are only planes with zero thickness. They look the same from all viewpoints. In many cases they can be used very well.

For the definition of a sprite you have to do the following steps:

Image preparation

Before starting the sprite definition, you have to make preparations with the photo of the object:


- The image must be in bitmap (.bmp) format.
- Crop the image by a rectangle shape to include only the necessary parts of the object. The reference point will be the bottom-left corner of this image.
- Convert the image background colour to white.

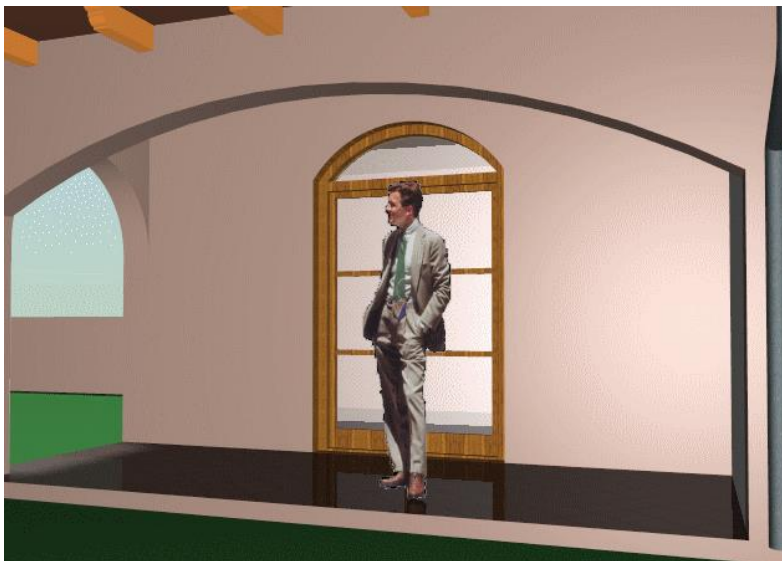


2D group definition


- Create a 2D symbol to use it for the 2D representation of the object on the floor plan.
- Save this symbol as a group.

Fast sprite definition

- Click the Objects tool-  Sprite definition icon.
- Select the image you have prepared in the previous steps.
- Specify the oli file where you want to save the object.
- Select the prepared 2D symbol of the object from the Groups category.
- Specify the name of the sprite.
- Specify the real height of the sprite.



Sprite placement

Once you have completed sprite definition, you can place the new object in the drawing using the  **Place object** icon. The rendered photo of the sprite becomes visible if you display the model in the photorealistic view.

Sprite properties

In the *Insert objects* dialog box the parameters of the selected sprite appear: its width and height.

These are static values that only provide information on the main parameters.

If you turn off the *Sprite in fixed direction* option, the sprite will not rotate with the other 3D solids, but will always face the viewer, so it cannot be seen that it has no width.

9.11.4. Modifying objects

You can modify

- ❖ the properties and
- ❖ the position and display of the objects created.

Modifying properties

You can modify the properties of the object if you

- ❖ click on the object and use the Properties tool, or
- ❖ select the **Properties...** command in the Shortcut menu, or
- ❖ use the *Copy properties* command.

The *Insert objects* dialog box appears, displaying the current values of the selected object. The selected object will acquire the new values according to the changes you make in this dialog box.



For a description see Chapter 9.11.1. *Object properties and placement*.

Modifying position and display

Users have several options to modify objects.

- ❖ You can use the hidden mode when inserting objects into the wall,
- ❖ You can move objects in 3D.

Let's see the detailed description of the commands:

9.11.4.1. Hide wall outline

When you insert an object into the wall to handle it together with the wall, the part of the wall within the display of the object is hidden. If you want to make this part visible, but still have the object as part of the wall, you may use the **Hide** or **Show** options. Using these commands you can hide or show the part of the wall that falls within the display of the object.

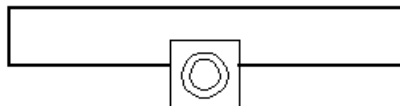
- Select in the command line what you wish to do with the contour of the object:

Options:

| | |
|-------------|---|
| HIDE | Hides the selected part of the wall falling within the display of the object. |
| SHOW | Shows the hidden part of the wall contour. |

HIDE:

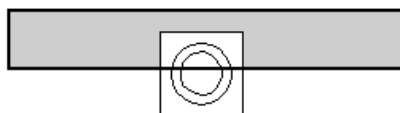
- Select an object that will hide the given wall from the point of clicking.
- Select the other endpoint of the hidden part.
- Repeat the command to hide another part, or
Enter Ends the command.



In this figure you see a chimney which is not part of the wall, but hides the relevant part of the wall as the **HIDE** option is activated.

SHOW:

- Select an endpoint of the hidden part of the contour to make it visible.
- Repeat the command to show other parts, or
- **Enter** Ends the command.



In the above figure you see a chimney inserted into the wall (the chimney is part of the wall), which overlays the wall, but the wall contour is displayed as the **SHOW** option is activated.

9.11.4.2. Move object in 3D vertically

You can set the elevation of architectural objects in the Properties dialog box of the object concerned.

In many cases however, it is easier to set height in the 3D view by moving the inserted object to the desired elevation point.

For example, it is easier to adjust the height of a projected roof to an automatic roof in the appropriate 3D view than in the floor plan.

With this command:

- ❖ You can move a **window**, **door** or **roof window** in the 3D view. The 2D symbol of the object will automatically be updated according to the modification.
- ❖ You can move roofs, slabs, and objects vertically in the 3D view, or
- ❖ You can alter the **height of the wall's top** while leaving its base line intact.



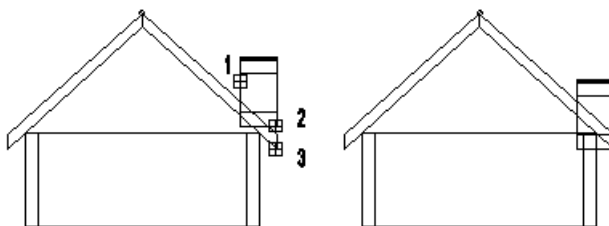
In order to make these modifications as easy as possible, use the front view.

- Select a 3D object whose elevation, or, in the case of wall, the height of the wall's top, you wish to modify.
- To move, select a reference point on the object.
- Define the new location of the reference point.
- Repeat the commands to move further objects, or
- **Enter** Exits the command.

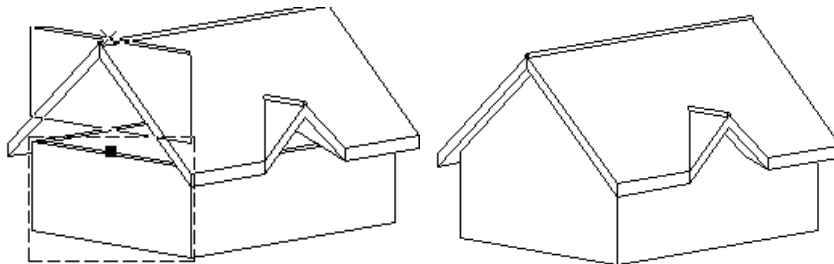
Option:

| | |
|----------------|---|
| STEP | Defines the elevation step. |
| POPMENU | Use the 3D point definition pop menu options |

Graphical definition of the elevation of the projected roof:




After roof projection and modification of wall elevation:



9.11.4.3. Copy object properties

With this command you can ascribe the properties of an object to another object. Using this method, there is no need to modify each property of each object one by one, you only have to select the appropriate object then ascribe its properties to the other objects.

You may also activate this command:

- ❖ By right-clicking the object and choosing the *Copy properties* option in the appearing *Shortcut menu*, or
- ❖ With the **Edit toolbar** -  *Copy properties* icon.



For a description, see Chapter 8.5.2. *Properties of object groups - Copy properties*.

9.11.5. Creating profiles

The use of profiles is manifold in ARCHLine.XP®. You can apply them in:

- ❖ creating wall or slab profiles,
- ❖ defining columns or beams by profile,
- ❖ defining the section profile of roofs,
- ❖ defining the section or ending of roof beams,
- ❖ defining the profile of decoration objects, defining the balusters and the rail of balustrades, etc.

In addition to profiles offered by the program you may also create new profiles. You can save these to the specified category in the profiles directory and use them any time afterwards.

According to their application, there are two profile types:

- ❖ Closed profiles and
- ❖ Open profiles

9.11.5.1. Closed profile

Users can create and save closed profiles. When the program asks you to define a closed profile while performing a task, you may select the created profile in the profiles directory.

- Enter the name of the new profile.
- Create the profile using the *Profile definition* tool in the *Toolbox*.
For example, if you have already drawn the profile, you can select it with the *Point of profile* command.
- Define the reference point of the created profile.
- The program displays the dimensions of the profile and offers to save the profile created.
- **Yes** Saves the new profile to the specified category in the Profiles directory.

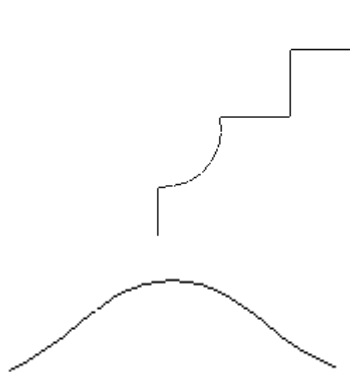


For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.

9.11.5.2. Open profile

Users may create and save open profiles. When the program asks you to define an open profile while performing a task, you may select the created profile in the profiles directory.

- Enter the name of the new profile.
- Define the contour of the profile using the *Profile definition* tool in the *Toolbox*.
- For example, if you have already drawn the profile, you can select it with the *Select an open chain* command.
- Define the reference point of the created profile.
- The program displays the dimensions of the profile and offers to save the created profile.
- **Yes** Saves the new profile to the specified category in the Profiles directory.



When using the profile, for example in the case of the projected roof by free profile command:

- In the appearing *Profile definition* tool select the *Select from list* option.
The Insert profile dialog box pops up.

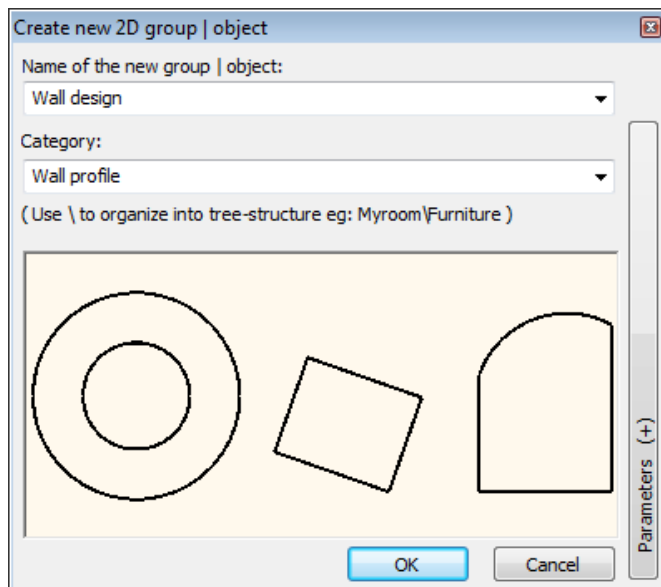


For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.

9.11.5.3. Multiple profile

Users can create and save multiple profiles. When the program asks you to define a profile while performing a task, you may select the created profile in the profiles directory.

- Define closed profiles with the *Profile definitions* commands.
- Close the definitions by pressing **Enter**.
- In the *Create new 2D group/object* dialog enter the name of the new profile and select/create a profile category.
- Click **Ok** to save the profile in the library.



For a description of the *Profile definition*, see Chapter 8.9. *Specifying profile*.

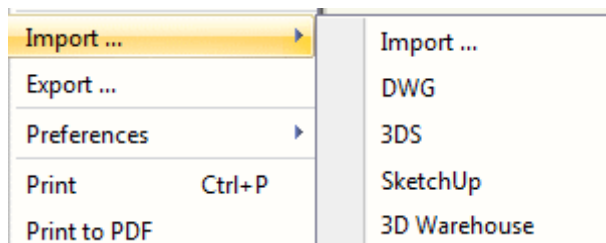
9.11.6. 3D Warehouse

Google 3D Warehouse™ is a free Google service by which anyone can download and use web-published 3D models for free. 3D Warehouse™ is a continuously growing database of models which can be represented in the projects with different textures. There is a wide range of models, including buildings, furniture, cars, people and many other objects. With the help of 3D Warehouse™ models it is easy to furnish a flat in your design project because you can download a lot of furniture models and furnish a virtual flat spectacularly as soon as you finished with the designing of walls, slabs, doors and windows, stairs etc.

ARCHLine.XP® is integrated with Google 3D Warehouse™ web portal. This integration means that the selected model can be inserted directly into an ARCHLine.XP® project and ARCHLine.XP® object library.

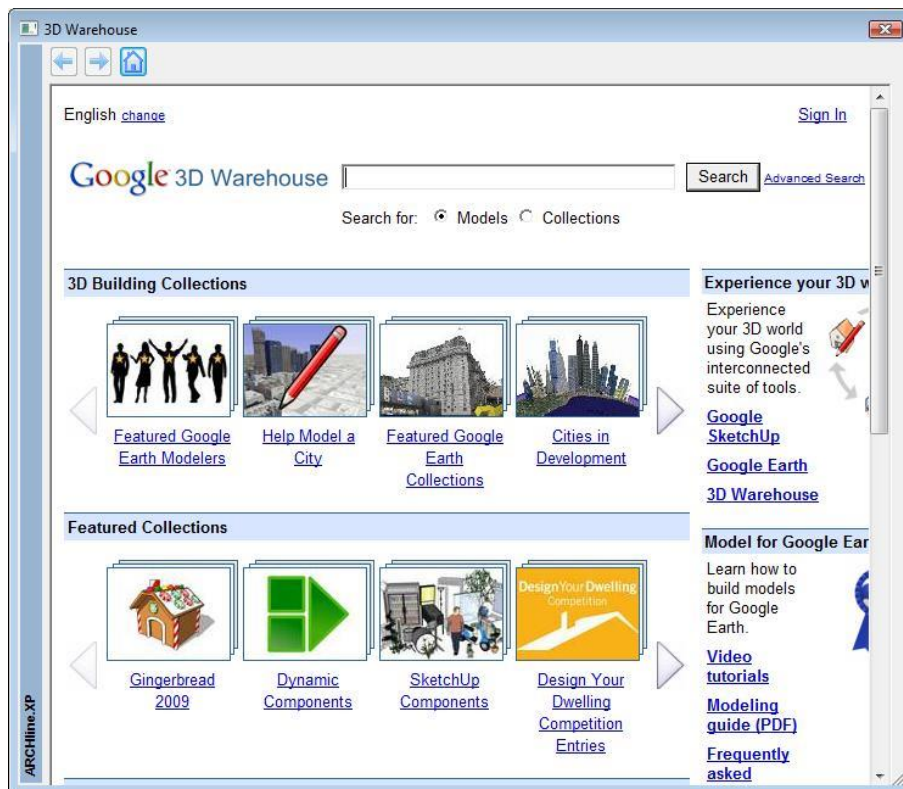
How to use

The command, which can be used in a 2D and 3D window, too, is available in the *File menu - Import* submenu:



Please note that you need a live *internet connection* to use this command!

The 3D Warehouse command pops up a browser window that is connected directly through the internet to the Google 3D Warehouse web portal.



On the web portal you can search for models or collections.

Use English keywords like table, chair, bed, sofa, curtain, lamp etc., if you want to search for models. If you look for collections, use Ikea, SmartFurniture, Whirlpool etc. keywords.

As soon as you found the requested object, click the Download Model button.

Armchair



The program downloads and converts the selected model into ARCHLine.XP® format and then asks you to place it. At placing the model, its two dimensional symbol is created automatically.

After placing it, the model will be stored in the object library of ARCHLine.XP® called "Warehouse" and can be used or modified later.

Textures used on the surfaces of the placed models can be freely modified.



Please be aware that in some cases the models are published with wrong scaling factors in the 3D Warehouse database, for example with the ratio of 1:10 or 10:1 compared to their real dimensions. Such scaling problems can be solved by the 'rescaling' command that is available in the shortcut menu if you click on the object with right mouse button.

9.11.7. Furniture by photo

Using the Furniture by photo tool you will be able to use parts of photos in your design as surfaces of real 3D objects.

Create an object in 4 steps

The idea of making a furniture by photo consist 4 steps.

Load photo

Define orthogonal surface

Save orthogonal image as material

Define an object with the material on its surface



How to snap a surface:

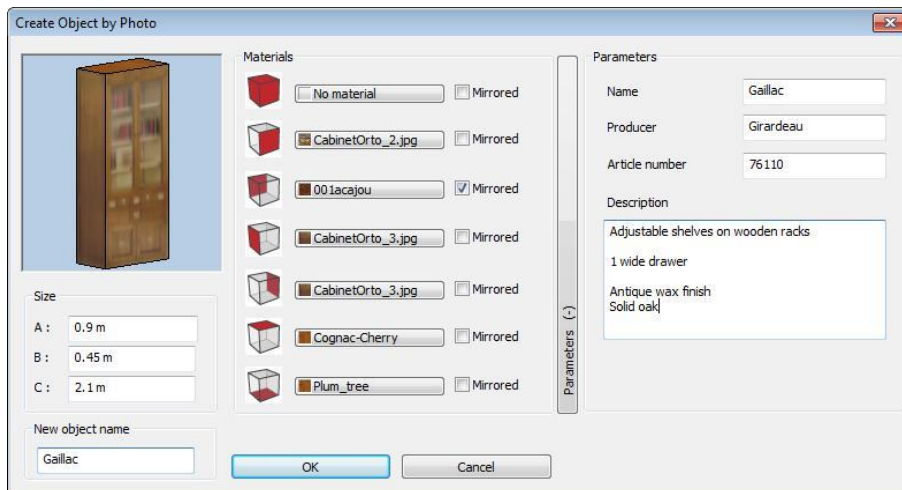
- Load the photo of the furniture
- Set 4 corners of one orthogonal surface on the photo. Accept definition and the surface will appear as an orthogonal image.



- Repeat previous steps to snap more surfaces.
- Save orthogonal images as materials using Save as material command in the image pop menu.



- Create a new furniture using Object by photo tool.



Preview

Here you can see the preview of the actual settings. The preview makes it easy to control the changes you make during the design process.

Size

Set the A, B, C size for the object. Type the size into the field, and when you click into another field you will see the change in the preview window.

New object name

Type the name of the object. This name will be applied when you save the finished object into a library.

Materials

You can set materials to each sides of the object here. Click on the material button and select one in the appearing material browser.

Mirrored

Use this option to flip the selected material horizontally.

Parameters

Click on Parameters button to expand the parameters panel. Here you can type additional data of the object you design.

Name

Enter the name of the object here.

Producer

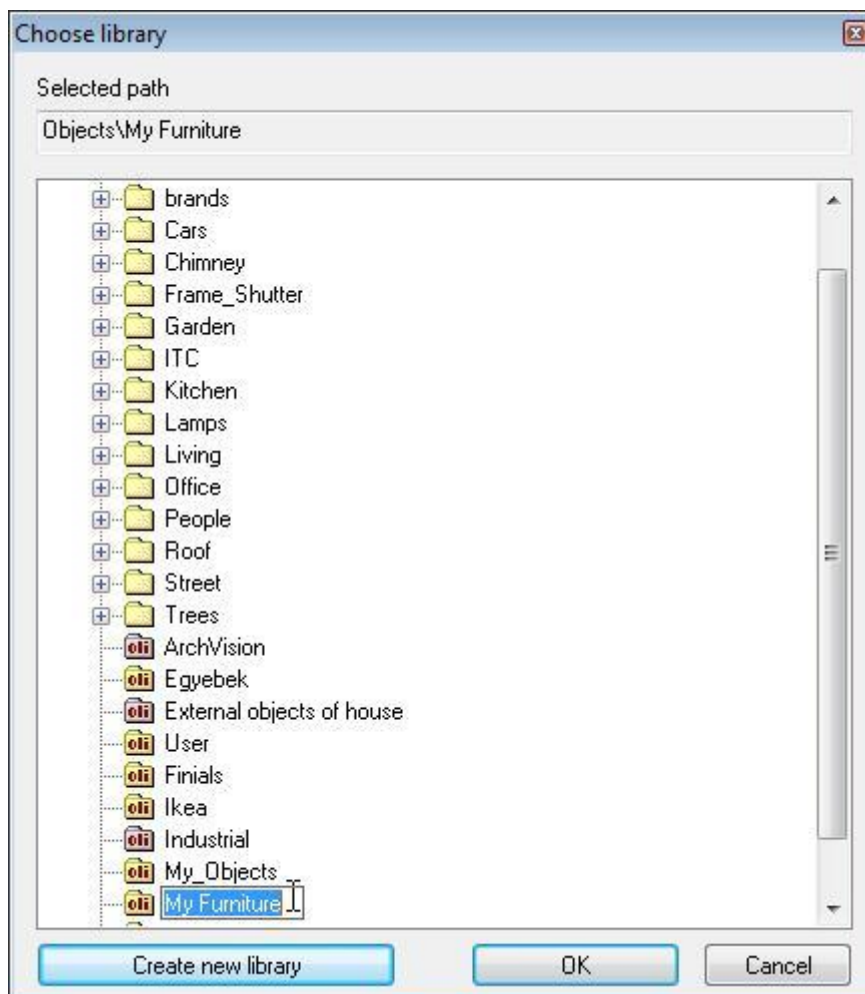
Enter the name of the manufacturer of the object here.

Article number

Enter the article number here.

Description

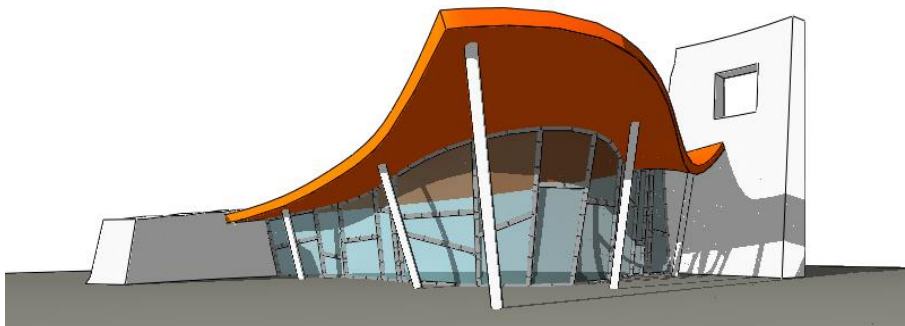
Enter a description of the object. The description can be a longer multiline text



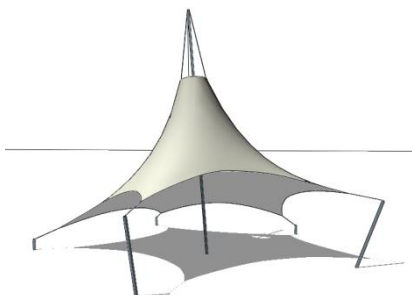
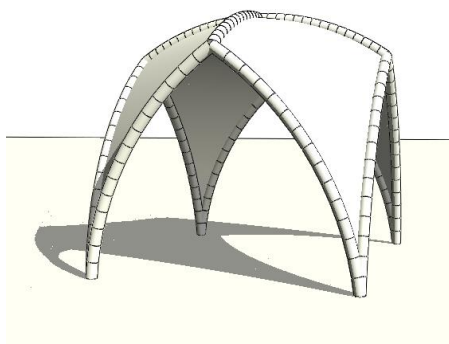
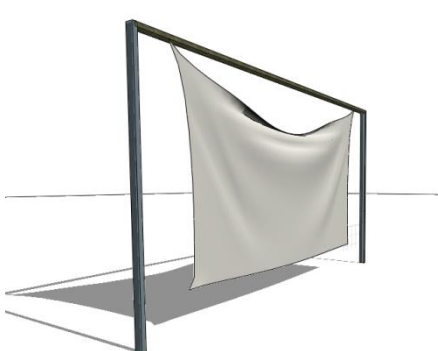
You can enhance the realism of the final render of one simple object when you use the Bump mapping properties of the materials applied on its surfaces.



9.12. Freeform surfaces



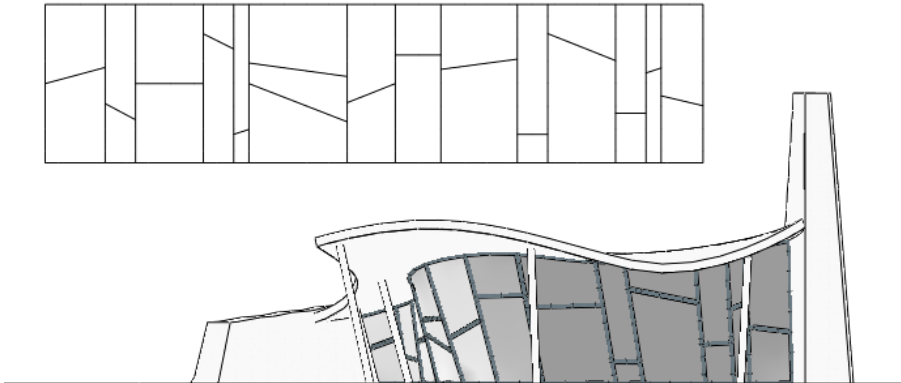
This tool can be used to create architectural structures like curved roofs and curtain walls, custom vaults or tent structures as well as textiles for interior design: draperies, curtains or table cloths.



9.12.1. Working with Freeform Surfaces

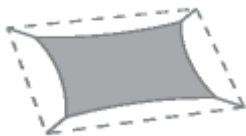
9.12.2. Layout and 3D model

The shape of a freeform surface is based on its layout. To create a freeform surface you have to define a layout first. Later, to make topological changes (inserting or deleting a node, cutting out a hole, etc.) you have to edit the layout of the surface. By default the layout appears as a flat surface in the 3D space. You can distort it in many ways: by fixing or moving nodes or edges, by adding control lines, or by letting the gravity take effect.



9.12.3. Physics

Freeform Surfaces can have two different physical models: Membrane and Textile. Membranes always tense between fixed points, textiles can crease. Typically, set the physical mode to Membrane for a tent structure and Textile for a table cloth.

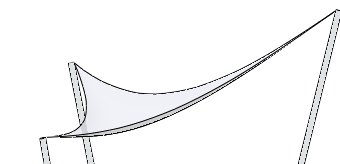


Membrane

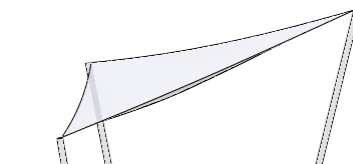


Textile

You can tense the cables, outline edges and control lines separately; this will affect the shape of the freeform surface.



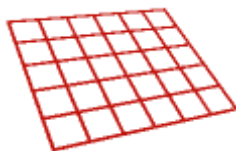
Lower outline stretch



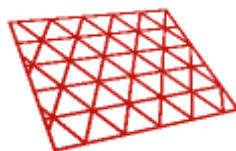
Higher outline stretch

9.12.4. Grid patterns

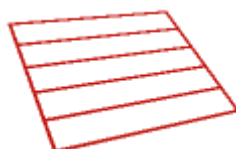
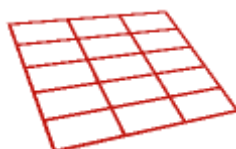
Grid patterns determine the look and physics of freeform surfaces. Four patterns are available: Square, Triangle, Rectangle and Monodirectional.



Square



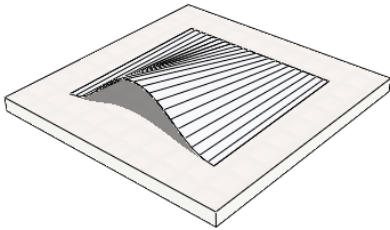
Triangle



Rectangle

Monodirectional

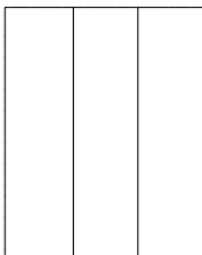
For textiles with realistic crease use the triangle pattern. Use the square or the rectangle pattern for architectural structures like curtain walls. You can define surfaces with straight rulings like a conoid using the monodirectional pattern.



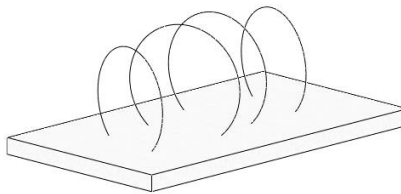
Conoid with monodirectional pattern

9.12.5. Control lines

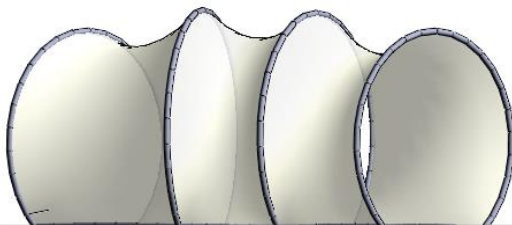
On the layout of the surface you can define so called control lines. Once you have control lines on the layout, you can fix them in the 3D space to any existing curve or simply turn them into straight or curved line.



Layout with the outline and two control lines

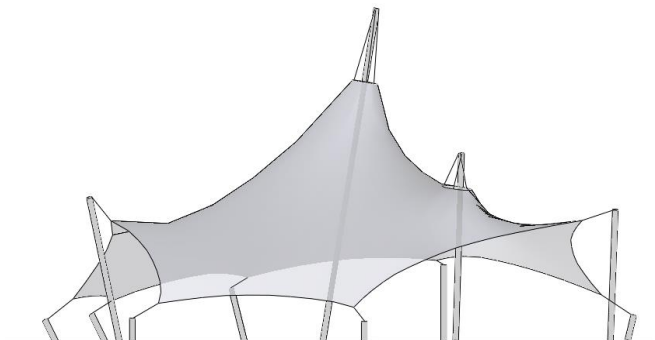


3D curves to which the outline edges and control lines can be fixed



9.12.6. Cables

You can add cables to the surface, in this way you can easily create models of tent structures.



9.12.7. Representation

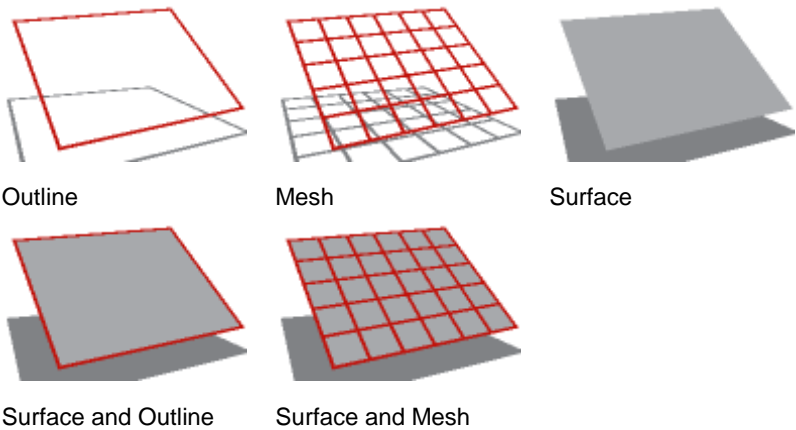
You can visualize a freeform surface in many ways. In the 2D window, you can select between outline and mesh representation. The outlines are drawn according to the general properties (colour, line type, line width) of the object, in case of using the mesh representation; you can specify separate properties for the gridlines.



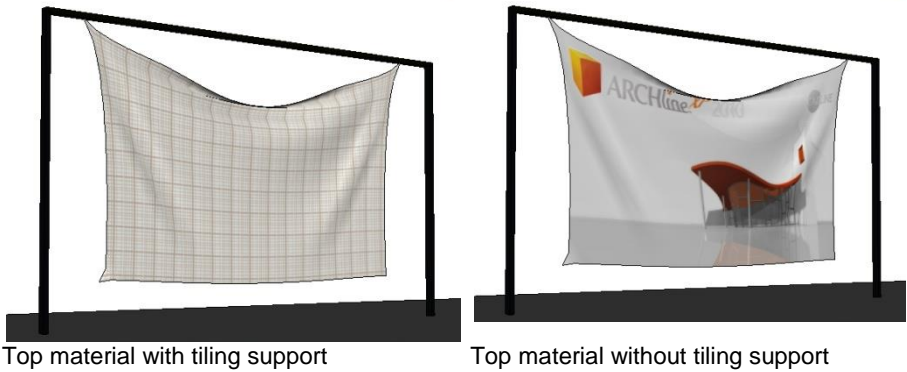
Outline

Mesh

In the 3D window the freeform surface can be visualized as a mesh or a surface, in addition you can combine these representations. The edges of the mesh can be represented as a simple line or you can define profiles for them.



You can assign different materials to the top and bottom side of the surface. By switching off the *tiling support* for a material, you can extend a picture to the whole surface. In the object has a positive thickness, you can define side material (material of the edges of the surface) and solid material (material of the cross section) as well.



9.12.8. Thickness

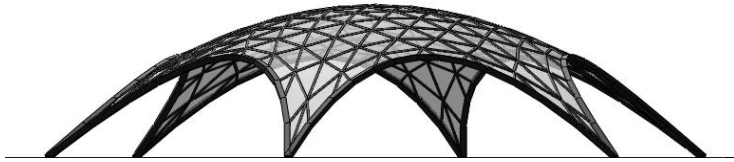
By default the mesh is represented as a thin surface. You can turn it into a solid by changing its thickness value. You can use positive or negative values; in case of using negative thickness value the second surface of the solid will appear under the first one.

| | Perpendicular | Vertical | Box extension |
|--------------------|---------------|----------|---------------|
| Positive thickness | | | |
| Negative thickness | | | |

To create the solid the program extrudes the surface by the given thickness perpendicular to itself or vertical. In addition you can select “Box extension”, in this case the solid will be bounded by the freeform surface and a horizontal plane, the thickness is measured from the highest or lowest point of the surface, depending on the sign of the thickness value.

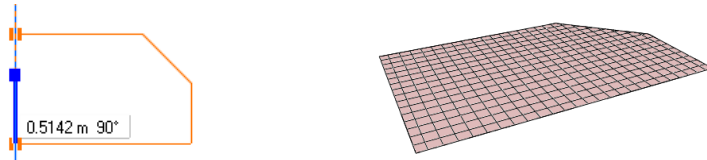
9.12.9. Structure

You can represent a freeform surface as an architectural structure by assigning profiles to different types of edges. Different profiles can be assigned to outline edges, control lines, gridlines and cables.

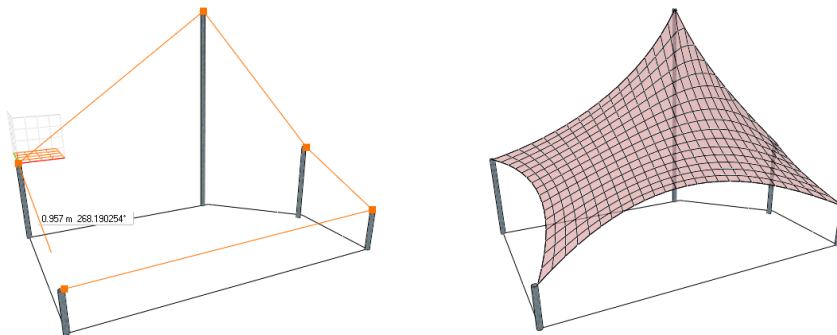


9.12.10. Creating a Freeform Surface

Generally, the creation of a freeform surface begins in a floor plan window by defining the layout of the surface. The *Profile definitions* tools appear in the Toolbox; you can draw the profile or select the **Point of profile** or **Point of profile with islands** option to use an existing contour. Once you have the layout profile, the 2D drawing and the 3D model of the freeform surface will be created according to the default settings. Initially the 3D model is a horizontal flat surface at the default level, with fixed corners



In addition you can start to create a freeform surface in the 3D window. Here you can define points one after the other, finally click the first point again or press ENTER. Now the layout of the surface has been generated automatically as a polygon based on the 3D points projected to a horizontal plane at the default level.



The layout is generated by projecting the points to a horizontal plane; therefore start creating the freeform surface in the 3D window only if the structure has a horizontal character like a tent structure. If the surface to be created is not of this kind, like a mainly horizontal hanging textile, first create the layout in the 2D window and then fix its nodes and edges to the appropriate 3D positions.

9.12.11. Modifying the 3D model

There is no further command in the Toolbox or in the main menu related to the freeform surfaces; you can work with them using the Popup menu and the markers

9.12.12. Popup menu commands

Edit layout

First you have to place the symbol of the layout, use the TAB key to choose the appropriate insertion point. Once the layout has been placed, the *Edit profile* tools appear in the Toolbox and you can edit the current profile of the layout: move or nodes or edges, add holes, etc. You can finish by pressing ENTER key. The surface will be regenerated based on the new layout, the fixed edges and nodes will be kept if necessary.

Place layout

First you have to place the symbol of the layout, use the TAB key to choose the appropriate insertion point. The layout of the surface will be drawn based on its current 2D representation settings.

Add control lines

First you have to place the symbol of the layout, use the TAB key to choose the appropriate insertion point. Once the layout has been placed, the *Profile definitions* tools appear in the Toolbox and you can draw one or more control lines on the layout. Control lines cannot exceed the outline. If you have been finished, the new control lines appear on the 2D drawing and the 3D model of the surface and you can fix them in the 3D space to any existing curve or simply turn them into straight or curved line by selecting the appropriate command from the marker menu. You can modify the control line on the layout or delete it by selecting **Modify Control Line On Layout** or **Remove Control Line** in the marker menu.

Reposition grid

First you have to place the symbol of the layout, use the TAB key to choose the appropriate insertion point. Once the layout has been placed, you can define the direction of the grid pattern graphically by drawing the direction vector.

Fix nodes

You can select points on the surface. If you have been finished, press ENTER. The fixed points can be moved, elevated; you can attach cables to them by selecting a command from their marker menu. To delete such a fixed point, from the marker menu select **Release node**.

Define gravity vector

By default the gravity vector is vertical. You can specify a different direction graphically by drawing the direction vector.

Recompute shape

Normally, the shape of the surface is recomputed after all relevant modification. You can clear the **Automatic Recomputation** checkbox in the Property Manager; in this case the shape of the surface is recomputed only if you select this command from the Popup menu.

9.12.13. Marker menu commands**Move Node**

Moves the current node. If it was a free node, it turns into a fixed one.

Elevate Node

Elevates the current node. If it was a free node, it turns into a fixed one.

Fix Node

Turns a free node into a fixed one.

Fix All Nodes

Turns all of the free nodes into fixed ones.

Release Node

Turns a fixed node into a free one.

Release All Nodes

Turns all of the fixed nodes into free ones.

Add Cable

Attaches a cable to the current node by placing the other endpoint of the cable.

Change Cable Length

You can modify the nominal length by giving a different value in the dialog box. Note that the real length may differ from this value depending on the current physical settings and geometry.

Delete Cable

Deletes the current cable.

Delete All Cables

Deletes all the cables.

Fix Edge

Turns a free outline edge or control line into a fixed one.

Fix All Edges

Turns all of the free outline edges and control lines into fixed ones.

Release Edge

Turns a fixed outline edge or control line into a free one.

Release All Edges

Turns all of the fixed outline edges and control lines into free ones.

Turn Into Straight Edge

Turns an outline edge or control line into a straight fixed edge.

Turn Into Curved Edge

Turns an outline edge or control line into a curved fixed edge by placing a third point of the arc. If you use this command in the 3D window, the curve becomes a real circular arc. By starting this command on the floor plan, the curve becomes a spiral if the heights of its endpoints are different.

Turn Into Custom Edge

Fixes an outline edge or control line to an existing curve (like arc, ellipse or spline) or to an edge of an existing solid by selecting the appropriate curve or edge.

Turn All Into Straight Edge

Turns all the outline edges and control lines into straight fixed edges.

Modify Control Line On Layout

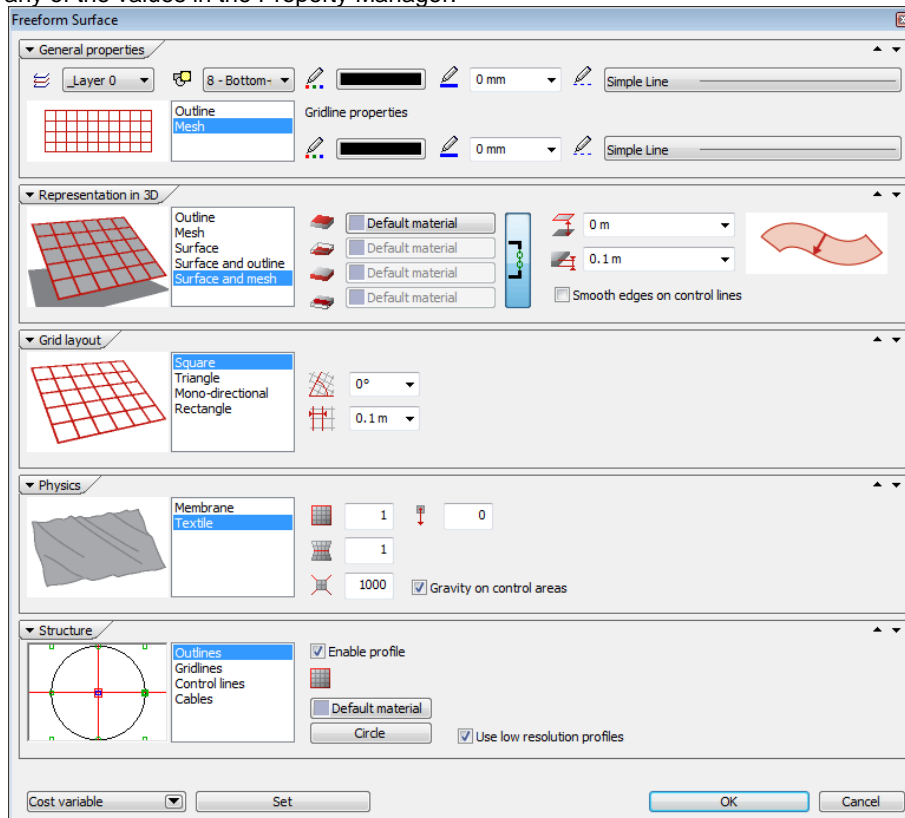
First you have to place the symbol of the layout, use the TAB key to choose the appropriate insertion point. Once the layout has been placed, the *Edit profile* tools appear in the Toolbox and you can edit the current control line. You can finish by pressing ENTER key.

Remove Control Line

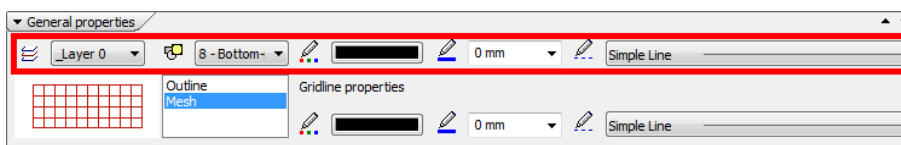
Removes the current control line from the layout.

9.12.14. Settings

You can change these settings by selecting a freeform surface clicking Properties from the Popup menu or by modifying any of the values in the Property Manager.

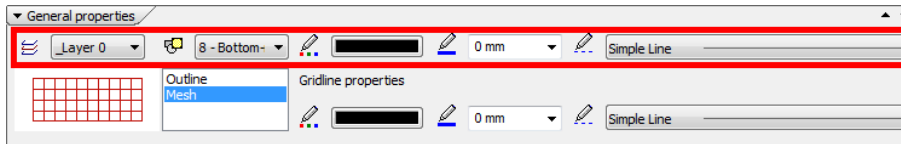


9.12.15. General settings



Layer and Drawing order relates to the whole object. The general colour, line width and style are applied to the outline edges only, the gridlines are represented according to the Gridline properties.

9.12.16. Representation in 2D



Representation in 2D

On the floor plan you can represent the whole grid or the outlines only.

Gridline Colour

Colour of the gridlines. The outline is represented according to the general settings.

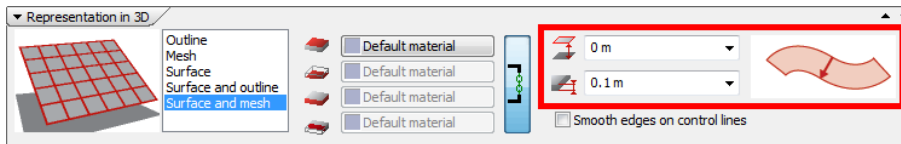
Gridline Type

Line type of the gridlines. The outline is represented according to the general settings.

Gridline Width

Width of the gridlines. The outline is represented according to the general settings.

9.12.17. Geometry



Relative height

Elevation from the floor level. The profile of the layout will be placed on that level. By changing this value you can elevate the whole structure.

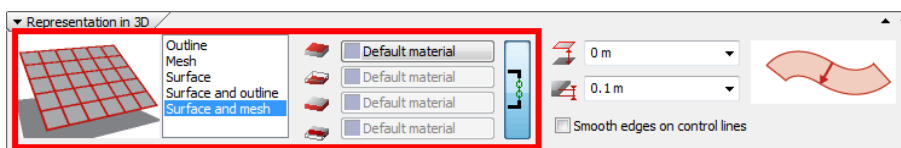
Thickness

By setting the thickness to zero the mesh is represented as a surface, otherwise as a solid. In case of using negative thickness value the second surface of the solid will appear under the first one.

Solid Extrusion Mode

You can extrude the freeform surface by the given thickness perpendicular to itself or vertical. In the third case (Cut by Plane) the solid will be bounded by the freeform surface and a horizontal plane, the thickness is measured from the highest or lowest point of the surface.

9.12.18. Representation in 3D



Representation in 3D

In the 3D window you can represent the outline, the gridlines, the surface or their combinations.

Top Material

Material on the top of the surface. Available only if the surface is represented in 3D.

Bottom Material

Material on the bottom of the surface. Available only if the surface is represented in 3D.

Side Material

Material of the sides of the solid. Available only if the surface is represented in 3D and the thickness is not zero.

Solid Material

Material of cross section of the solid. Available only if the surface is represented in 3D and the thickness is not zero.

Smooth Edges On Control Lines

If control lines have been added to the layout, they will be represented as a smooth or hard edge according to this setting.

9.12.19. Grid Layout



Pattern

The shape of a grid cell: Square, Triangle, Monodirectional or Rectangle. It has an effect on the computed shape of the mesh as well. To have a surface creasing realistically use the Triangle pattern. Use the Monodirectional grid to have Conoid surfaces.

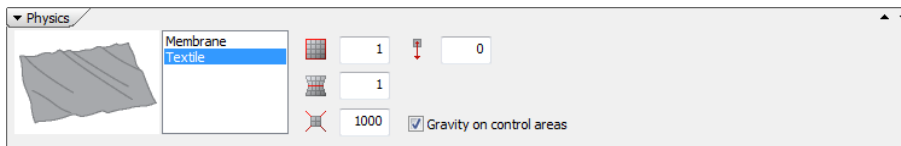
Direction

Direction of the main gridlines on the layout. You can also define the direction of the grid layout by selecting the Reposition Grid command from the Popup menu.

Spacing

Distance between two parallel gridlines on the layout

9.12.20. Physics



Gravity

Strength of the gravity force. You can set zero and negative values as well. In addition you can set a custom gravity direction by selecting the Define Gravity Vector command from the Popup menu.

Physical Model

Membrane always tenses between fixed points, Textile can crease.

Cable Stretch

You can tense the cables by increasing this value. Cables can be added to the surface by selecting the Add Cable command from the marker menu of a node.

Outline Stretch

You can tense the edges on the outline by increasing this value.

Control Line Stretch

You can tense the edges on the control lines by increasing this value. Control lines can be added to the surface by selecting the Add Control Lines command from the Popup menu.

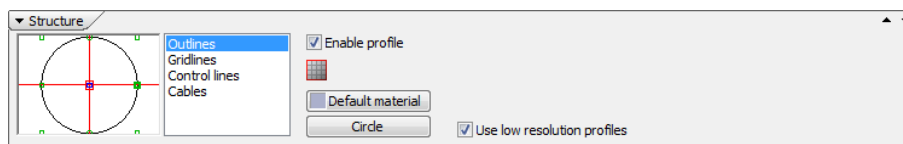
Automatic Recomputation (in the Property Manager only)

If disabled, the shape won't follow the changes until you select the Recompute Shape command from the Popup menu or enable this setting again.

Enable Gravity For Control Line Areas

Enables the gravity for the closed areas bounded by custom control lines.

9.12.21. Structure



Profile of Outline

Profile of the edges on the outline. Available only if the outline is represented in 3D. If the profile is disabled, outlines are represented as simple lines and will not appear on rendered images.

Material of Outline

Surface material of the profile of the edges on the outline.

Profile of Control Lines

Profile of the edges on control lines. Available only if the outline is represented in 3D. If the profile is disabled, control lines are represented as simple lines and will not appear on rendered images.

Material of Control Lines

Surface material of the profile of the edges on control lines.

Profile of Gridlines

Profile of the edges on gridlines. Available only if the mesh is represented in 3D. If the profile is disabled, gridlines are represented as simple lines and will not appear on rendered images.

Material of Gridlines

Surface material of the profile of the edges on gridlines.

Profile of Cables

Profile of the edges on cables. If the profile is disabled, cables are represented as simple lines and will not appear on rendered images.

Material of Cables

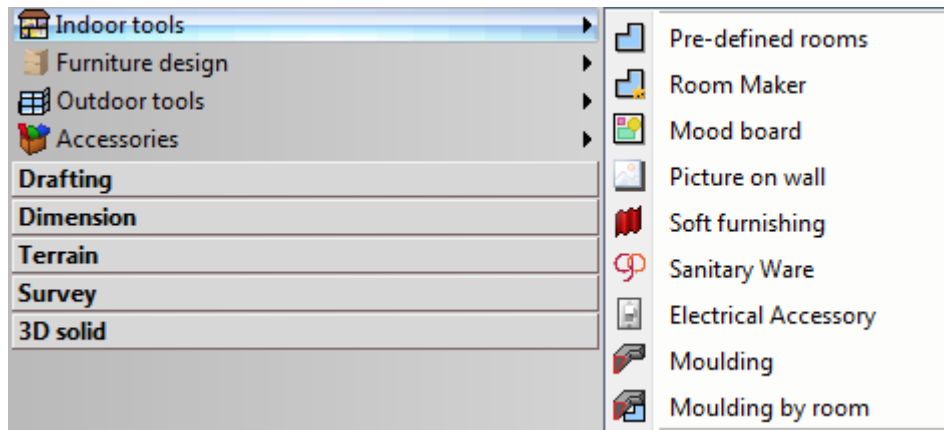
Surface material of the profile of the edges on cables.

Use Low Resolution Profiles

Use Low Resolution Profiles for cables, gridlines, outline edges and control lines. If disabled, the default resolution will be used while generating the 3D model.

9.13. Indoor Tools

ARCHLine.XP® gathers all indoor tools in one single module.

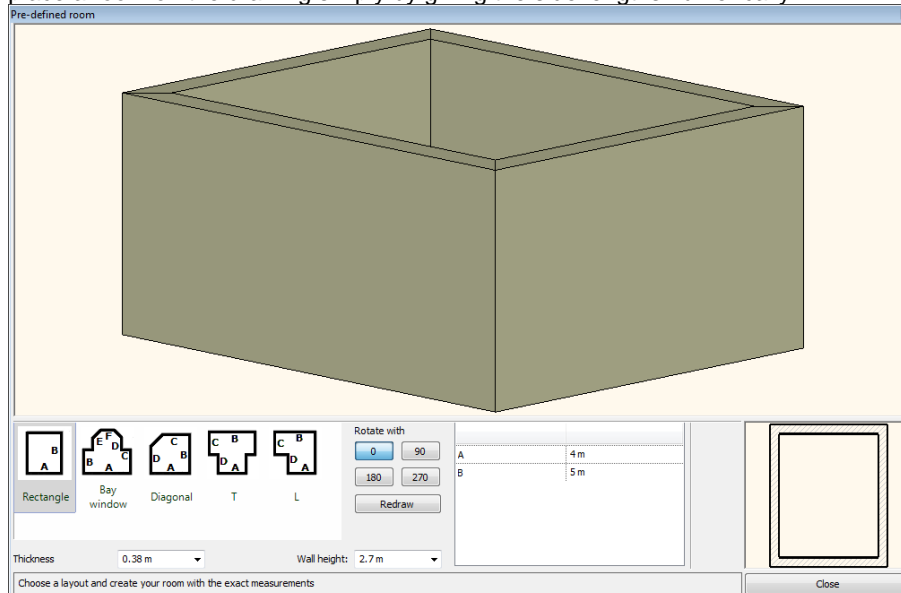


Indoor module contains the following tools:

Pre-defined rooms
Room Maker
Mood board
Picture on wall
Soft furnishing
Sanitary Ware
Electrical Accessory
Moulding
Moulding by room

9.13.1. Pre-defined room

The Pre-defined room tool helps to choose among pre-defined room shapes with exact measurements. It makes easier to place a room on the drawing simply by giving the side lengths numerically.



You can select one of the following room shapes:

- ❖ Rectangle room
- ❖ Bay window room
- ❖ Diagonal room
- ❖ T-shaped room
- ❖ L-shaped room

How to use the Pre-defined room tool?

- ❖ Choose the appropriate shape and type the side length values.
- ❖ Set the room orientation (0, 90, 180, 270 degree).
- ❖ Change the wall Thickness and Wall height if you want.

- ❖ Press Redraw to see the changes on the 2D and 3D previews.
- ❖ Press the Done button.
- ❖ When the dialog is closed place the room shape on your drawing with the mouse.

The Pre-defined room dialog has a few controls that you can use to customize a selected room shape.

Pre-defined Room shapes

The room shapes list contains the list of room shapes that you can create with the tool.

The tiny thumbnails also contain letters to help you to understand the values that can be changed in the Room sizes list.

Rotation

You can rotate the chosen room shape by setting up the rotation.

Redraw button

Most of the changes in the dialog won't be reflected on the preview contents automatically. Please press Redraw any time you want to see the changes you made in the dialog.

Thickness

The wall thickness can be defined for all walls of the current room.

Wall height

The wall height can be defined for all walls of the current room.

Room sizes

The Room sizes list shows a list of lengths that can be changed in the current room. Each length has a letter which helps to understand their relation to the sides of the room. Check the selected thumbnail to locate the value that you would like to change.

3D preview

The 3D preview is an active 3D content. It shows the current model of the room based on the changes you make. If you cannot see the changes, please press the Redraw button to update the model.

You can also rotate the 3D preview content to check the model from any directions. To rotate the 3D preview content just click and drag the 3D model and move your mouse. When finished release the mouse button.

2D preview

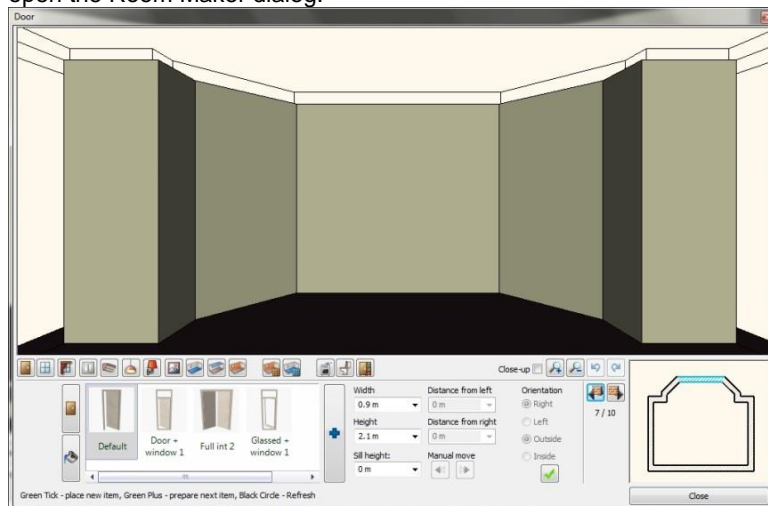
The 2D preview shows the current 2D representation of the selected room. Use the Redraw button to update the preview if necessary.

9.13.2. Room Maker

Room Maker is an all-in-one design tool that highly speeds up the interior design starting from an empty room. Starting from walls that form the room, Room Maker allows you to create your room details as you want it - every step of the way. Place doors and windows then add your choice of objects and decorate the room to your satisfaction

You can use Room Maker to detail an existing room whether it was created by using the Pre-designed Room Shapes tool or you designed a free-style room on your own.

When you start the Room Maker, the software will ask you to click into a closed room. When you do so, the software will open the Room Maker dialog.



The Room Maker dialog window is built up of 3 main parts. These are the 3D view content, the controllers and the properties.

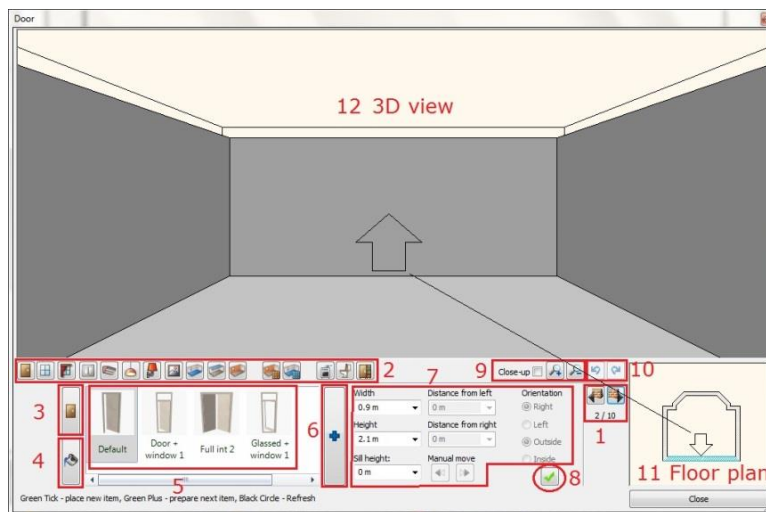
How to use the Room Maker?

Room Maker provides many opportunities to work inside the room. It is designed to be self-explanatory and easy to learn. However you might find the following method useful.

- ❖ Start the Room Maker tool.
- ❖ Click into a closed room shape on your drawing.
- ❖ Select a Tool from the toolbar.
- ❖ Prepare an object – set the type, material and settings of it.
- ❖ Create the object by pressing the Insert new button.

You can add as many details and new objects using the Room Maker as you wish. Click Close to close Room Maker. You can start Room Maker at any time later to continue editing the room again.

The Room Maker Interface



The interface of ARCHLine.XP Room Maker is built up of the following main parts and controllers.

1. Wall finder
2. Toolbar
3. Type finder
4. Texture finder
5. Favorites
6. Other types
7. Properties
8. Add new object
9. Zooming
10. Undo / redo
11. Floor plan
12. 3D view

9.13.2.1. Main controllers

Wall finder

The room will turn to the left or right wall and display it in frontal view. You can work on this wall or some cases on floor or ceiling.



Toolbar

The toolbar is the container of Room Maker's interior design tools. One of them is always active and Room Maker works with the selected one.



For example when you would like to add or edit a door, simply just click on the Door object button.

Type finder

It enables to see the *last used types* in the Favourites box.



The type finder shows different icons based on the actual context. For example when you are working with doors, the type finder button will show a door icon.

Texture finder

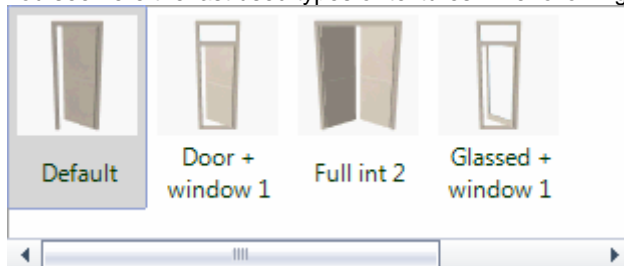
It enables to see the *last used textures* in the Favourites box.



There are some cases when you can modify multiple materials of an object. In that case you will see multiple Texture finder buttons.

Favourites

You see here the last used types or textures. The following example shows the door favourites list.



Other types

Here you can choose from the *library of types or textures*.



Properties

These values are used when you insert a new object or modify it. The following example shows the door properties dialog with the Insert new button.

| | | |
|---------------------|---|---|
| Width 0.9 m | Distance from left 0 m | Orientation <input checked="" type="radio"/> Right |
| Height 2.1 m | Distance from right 0 m | <input type="radio"/> Left |
| Sill height: 0 m | Manual move <input type="button" value="Left"/> <input type="button" value="Right"/> | <input checked="" type="radio"/> Outside |
| | | <input type="radio"/> Inside |
| | | <input checked="" type="checkbox"/> |

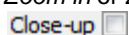
Insert new

You can insert a new object with a click on the Green Tick.



Zoom

Zoom in or zoom out the 3D view. In order to centre the view of the selected object enable the Close-up checkbox.



Undo / redo

The Undo button deletes the last change done by reverting it to the older state. The Redo button reverts the effects of the undo. You can undo and redo up to 16 actions.

**Floor plan**

The floor plan that focuses on the selected object (highlighted)

3D view

The 3D view is the three dimensional view facing to the selected wall / floor.

9.13.2.2. Additional controllers**Prepare new**

The “Prepare new” button appears in cases when an object of the current type already exists on the wall and there is the possibility to add more. This button appears on the left side of a panel.

**Remove actual**

The “Remove actual” button appears in cases when an object of the current type already exists on the wall and there is the possibility to remove it. This button appears on the left side of a panel.

**Object index**

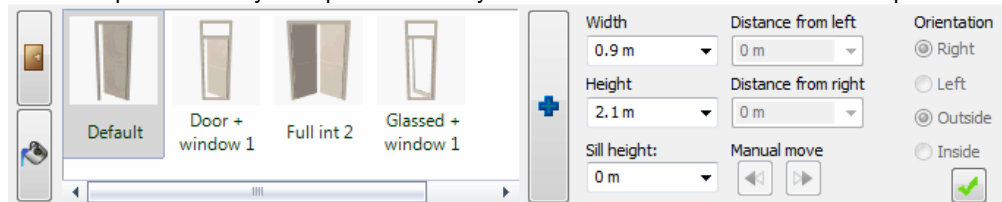
The object index list appears at the left side of an object panel on top of the Prepare new / Remove actual buttons. It consists of two numbers separated by a “/” mark. The first number is the sequence number of the current object. The second number is the total amount of the available objects on the current wall.

Edit

In cases when you have the possibility to edit the current object in the Favourites list you can use the Edit button to do so.

9.13.2.3. Door Panel

The Door panel allows you to place or modify a door in the room. Click on the Door panel button to see the properties.

**Door properties****Width**

You can type the width of the selected door. You can also use the small arrow to select from template sizes.

Height

You can type the height of the selected door. You can also use the small arrow to select from template sizes.

Sill height

You can type the sill height of the selected door. You can also use the small arrow to select from template sizes.

Distance from left or right

Use the Distance from left or the Distance from right option to set the door position in a wall measured from the closest left or right wall corner. When you change a value the corresponding other will be updated.

Manual move buttons

Use the manual move buttons to move the door in the wall by little steps to the left or to the right.

Orientation

The Orientation options help you to set the orientation of the opening on the 2D and in the 3D content.

Manual

How to add a door?

- Select a wall with Wall finder.
- Select a door from the favourites and change properties.
- Click on the Texture finder button and select a material.
- Click on Green tick – it will place the door in the wall centre point

How to add more doors to one wall?

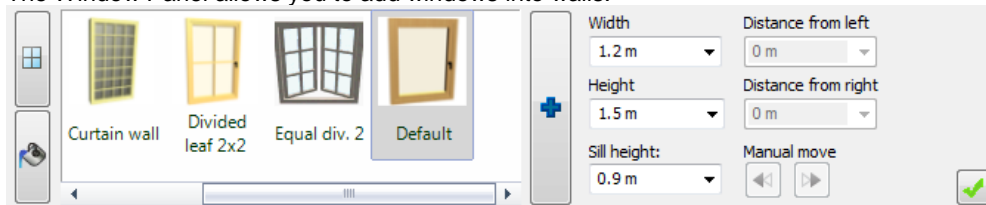
- Press the Green Plus first to prepare the next door on the same wall.
- Select a door from the favourites and change properties.
- Click on the Texture finder button and select a material.
- Click on Green tick – it will place the door in the wall.

How to modify an existing door?

- Navigate to the wall which contains the door that you would like to modify
- Click on the door in the 3D content window.
- Change its properties.
- Click on the Update button to refresh changes.

9.13.2.4. Window Panel

The Window Panel allows you to add windows into walls.

**Window properties****Width**

You can type the width of the selected window. You can also use the small arrow to select from template sizes.

Height

You can type the height of the selected window. You can also use the small arrow to select from template sizes.

Sill height

You can type the sill height of the selected window. You can also use the small arrow to select from template sizes.

Distance from left or right

Use the Distance from left or the Distance from right option to set the window position in a wall measured from the closest left or right wall corner. When you change a value the corresponding other will be updated.

Manual move buttons

Use the manual move buttons to move the window in the wall by little steps to the left or to the right.

How to add a window?

- Select a wall with Wall finder.
- Select a window from the favourites and change properties.
- Click on the Texture finder button and select a material.
- Click on Green tick – it will place the window in the wall centre point

How to add more windows to one wall?

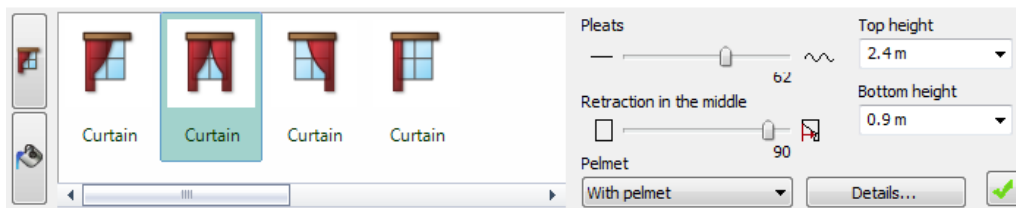
- Press the Green Plus first to prepare the next window on the same wall.
- Select a window from the favourites and change properties.
- Click on the Texture finder button and select a material.
- Click on Green tick – it will place the window in the wall.

How to modify an existing window?

- Navigate to the wall which contains the window that you would like to modify.
- Click on the window in the 3D content window.
- Change its properties.
- Click on the Update button to refresh changes.

9.13.2.5. Soft Furnishing Panel

The Soft Furnishing Panel contains a set of different soft furnishing objects and their customizable settings.



Soft Furnishing Properties

Pleats

When using curtains you can set the waves of the surface to be smooth or wavy. Use the slider to set the desired shape.

Retraction in the middle

Retraction in the middle opens or closes a curtain. Use the slider to open or close the curtain.

Pelmet

The Pelmet option allows you to turn on or off a pelmet for the current sun shade or curtain.

Top height

Top height allows you to change the top height of some of the soft furnishing objects.

Bottom height

Bottom height can be changed for selected types of soft furnishing objects.

Number of splitters

In case of using special objects such as Venetian or roman blinds, you can set the number of their splitters.

Strip rotation

When using sun shades with horizontal or vertical strips you can change the rotation of them.

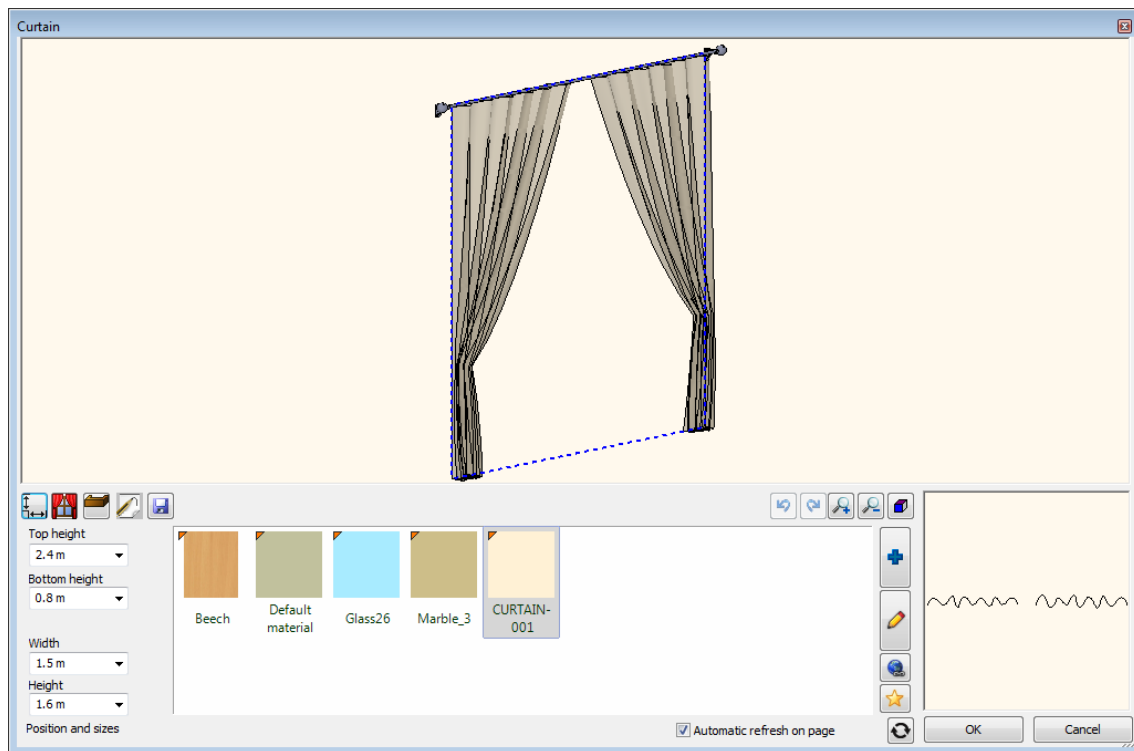
Retraction

In cases when you can change the Retraction option, you can actually open or close the object.

Details:

You are able to set further properties of the curtains, for example

- Position and Sizes
- Curtain
- Pelmet
- General settings
- Save



How to add a curtain?

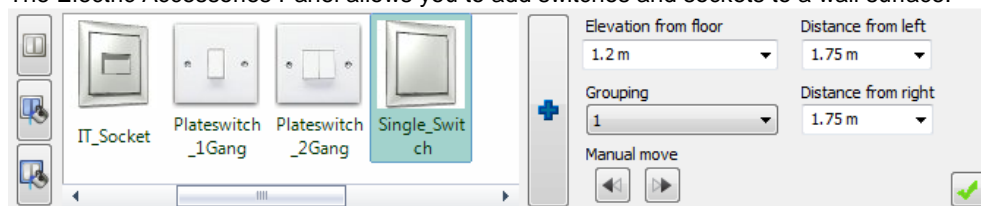
- Select a wall with Wall finder.
- Click on the window that you wish to add the curtain to.
- Select a curtain from the soft furnishing list and change properties.
- Click on the Texture finder button and select a material.
- Click on Green tick – it will place the curtain in front of the window.

How to modify an existing curtain?

- Navigate to the wall which contains the curtain that you would like to modify.
- Click on the curtain in the 3D content window.
- Change its properties.
- Click on the Update button to refresh changes.

9.13.2.6. Electric Accessories Panel

The Electric Accessories Panel allows you to add switches and sockets to a wall surface.



Electric Accessories Properties

Elevation from floor

You can set the distance between the floor level and the bottom of the selected electrical accessory.

Distance from left

You can set the distance of the object from the left side corner of the current wall.

Distance from right

You can set the distance of the object from the right side corner of the current wall.

Grouping

You can group a selected amount of electrical accessory by changing the Grouping value. Horizontal and vertical grouping options are available.

Manual move buttons

You can manually move the current object on the wall surface by using the Manual move buttons.

How to add an electric accessory?

- Select a wall with Wall finder.
- Select a switch or a socket from the favourites list and change properties.
- Click on the Texture finder buttons and select materials.
- Click on Green tick – it will place the object in front of the window.

How to add more electric accessories to one wall?

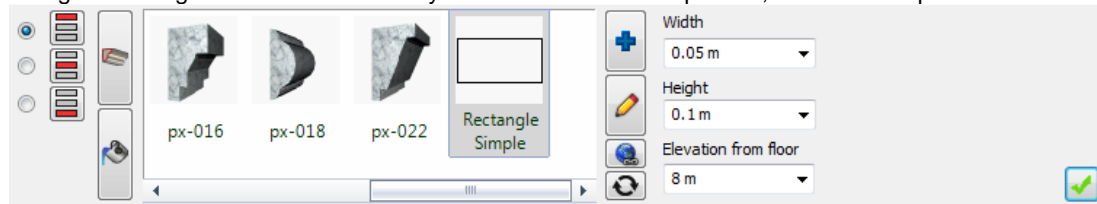
- Press the Green Plus first to prepare the next electric accessory on the same wall.
- Select a switch or socket from the favourites and change properties.
- Click on the Texture finder buttons and select materials.
- Click on Green tick – it will place the electric accessory in the wall centre point.

How to modify an existing electric accessory?

- Navigate to the wall which contains the object that you would like to modify.
- Click on the object in the 3D content window.
- Change its properties.
- Click on the Update button to refresh changes.

9.13.2.7. Profiles Panel

Using the settings of the Profiles Panel you can add decoration profiles, cornices and plinths to a room contour.

**Profile Properties****Profile mode**

You can change the profile mode to the following options:

- Cornice
- Décor
- Skirting board

Width

You can change the width of the selected profile cross section.

Height

You can change the height of the selected profile cross section.

Elevation from floor

You can set the distance between the floor level and the bottom of the selected profile.

How to add a cornice, a décor or a skirting board?

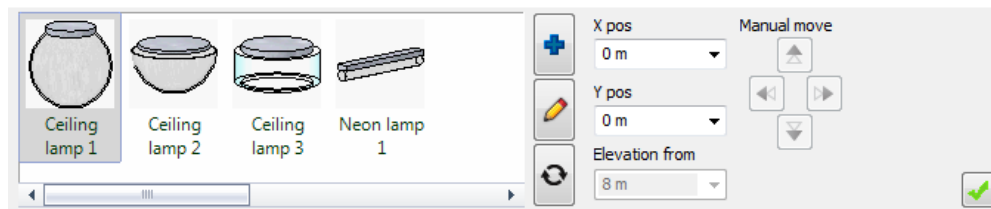
- Select the cornice, décor or skirting board option on the profile properties panel.
- Select a profile from the favourites list and change properties.
- Click on the Texture finder buttons and select materials.
- Click on Green tick – it will place the object according to the settings.

How modify a cornice, a décor or a skirting board?

- Select the cornice, décor or skirting board option on the profile properties panel.
- Change properties and texture.
- Click on the Update button to refresh changes.

9.13.2.8. Ceiling Lamps Panel

The Ceiling Lamps Panel allows you to add lamps to the ceiling surface. If the page is unavailable that means there is no ceiling that can be used.



X position

X position of the ceiling lamp can be changed. Zero means the origin (the middle) of the ceiling surface on top of the room shape. You can use positive and negative values.

Y position

Y position of the ceiling lamp can be changed. Zero means the origin (the middle) of the ceiling surface on top of the room shape. You can use positive and negative values.

Elevation from floor

You can set the distance between the floor level and the bottom of the selected lamp.

Manual move buttons

You can manually move the current object on the ceiling surface by using the Manual move buttons.

9.13.2.9. Wall Lamps Panel

The Wall Lamps Panel allows you to add lamps on wall surfaces.



Wall Lamp Properties

Distance from left

You can set the distance of the object from the left side corner of the current wall.

Distance from right

You can set the distance of the object from the right side corner of the current wall.

Elevation from floor

You can set the distance between the floor level and the bottom of the selected lamp.

Manual move buttons

You can manually move the current object on the wall surface by using the Manual move buttons.

Distance from wall line

You can set the distance between the wall surface and the back surface of the lamp.

How to add a lamp to a wall?

- Select a wall with Wall finder.
- Select a lamp from the favourites list and change properties.
- Click on the Texture finder buttons and select materials.
- Click on Green tick – it will place the object on the wall.

How to add more lamps to one wall?

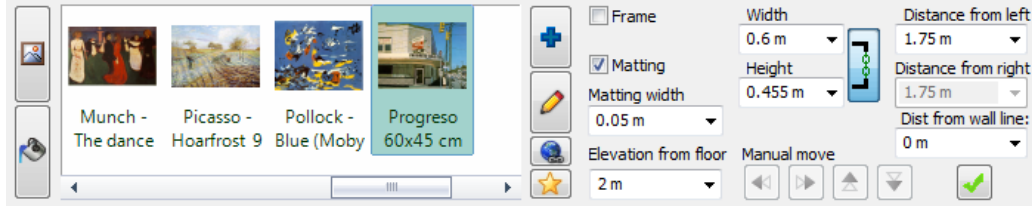
- Press the Green Plus first to prepare the next lamp on the same wall.
- Select a lamp from the favourites and change properties.
- Click on the Texture finder buttons and select materials.
- Click on Green tick – it will place the lamp on the wall.

How to modify an existing lamp?

- Navigate to the wall which contains the object that you would like to modify.
- Click on the object in the 3D content window.
- Change its properties.
- Click on the Update button to refresh changes.

9.13.2.10. Wall Pictures Panel

The Wall Pictures Panel allows you to add pictures on wall surfaces.



Wall Picture Properties

Frame option

You can enable or disable the picture framing to be displayed.

Matting option

You can enable or disable the picture matting to be displayed.

Matting width

If you enabled Matting you can change the width of it.

Elevation from floor

You can set the distance between the floor level and the bottom of the selected picture.

Width

You can set the width of the current picture.

Height

You can set the height of the current picture.

Keep aspect ratio

When the Keep aspect ratio button is ON that means the changes either on the width or the height will reflect on the other value as the software will recalculate the other keeping the aspect ratio between the two.

If the Keep aspect ratio button is OFF the two values can be changed individually and it will have no effect on each other.

Manual move buttons

You can manually move the current object on the wall surface by using the Manual move buttons.

Distance from left

You can set the distance of the object from the left side corner of the current wall.

Distance from right

You can set the distance of the object from the right side corner of the current wall.

Distance from wall line

You can set the distance between the wall surface and the back surface of the selected picture.

How to add a picture to a wall?

- Select a wall with Wall finder.
- Select a picture from the favourites list and change properties.
- Click on the Texture finder buttons and select materials.
- Click on Green tick – it will place the object on the wall.

How to add more pictures to one wall?

- Press the Green Plus first to prepare the next picture on the same wall.
- Select a picture from the favourites and change properties.
- Click on the Texture finder buttons and select materials.
- Click on Green tick – it will place the picture on the wall.

How to modify an existing picture?

- Navigate to the wall which contains the object that you would like to modify.
- Click on the object in the 3D content window.
- Change its properties.
- Click on the Update button to refresh changes.

9.13.2.11. Floor Material Panel

Using the Floor Material Panel you can change the material on the current floor surface.

Manual



Floor Material Properties

Browse another

If you click on the Browse another button the software will open the Material page of the Design Center where you can search for any of the existing materials on your computer. When you select one, it will be added to the favourites list.

Edit current

The current selected material can be edited by using this button.

Go to web

The Go to web button will open the default web browser and automatically navigate to the Useful links page of the Official ARCHLine.XP website. This is a page where you can find links to web pages that contain textures and images can be used for materials in ARCHLine.XP.

However the button opens a website, please not that any other webpages can be used to download images for materials ot just the ones that can be found on the appearing page.

Create new

You can create a new material based on images or colours. The material will be automatically added to the favourites list when finished.

Angle

If the material is made out of a texture, you can set its rotation by changing the Angle.

How to modify the floor material?

- Navigate to the floor – Choose the floor Material Panel.
- Choose the desired pattern from the favourites list.

9.13.2.12. Ceiling Material Panel

Using the Ceiling Material Panel you can change the material on the current ceiling surface.



Ceiling Material Properties

Browse another

If you click on the Browse another button the software will open the Material page of the Design Center where you can search for any of the existing materials on your computer. When you select one, it will be added to the favourites list.

Edit current

The current selected material can be edited by using this button.

Go to web

The Go to web button will open the default web browser and automatically navigate to the Useful links page of the Official ARCHLine.XP website. This is a page where you can find links to web pages that contain textures and images can be used for materials in ARCHLine.XP.

However the button opens a website, please not that any other web pages can be used to download images for materials or just the ones that can be found on the appearing page.

Create new

You can create a new material based on images or colours. The material will be automatically added to the favourites list when finished.

Angle

If the material is made out of a texture, you can set its rotation by changing the Angle.

How to modify the ceiling material?

- Navigate to the ceiling – Choose the ceiling Material Panel.
- Choose the desired pattern from the favourites list.

9.13.2.13. Wall Material Panel

Using the Wall Material Panel you can change the material on the current wall surface

**Wall Material Properties****Browse another**

If you click on the Browse another button the software will open the Material page of the Design Center where you can search for any of the existing materials on your computer. When you select one, it will be added to the favourites list.

Edit current

The current selected material can be edited by using this button.

Go to web

The Go to web button will open the default web browser and automatically navigate to the Useful links page of the Official ARCHLine.XP website. This is a page where you can find links to web pages that contain textures and images can be used for materials in ARCHLine.XP.

However the button opens a website, please not that any other web pages can be used to download images for materials or just the ones that can be found on the appearing page.

Create new

You can create a new material based on images or colours. The material will be automatically added to the favourites list when finished.

All walls option

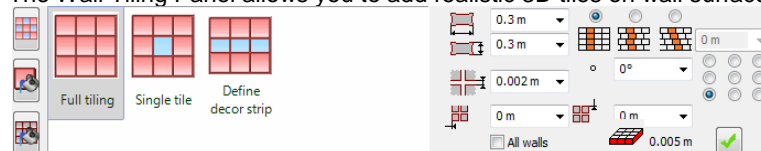
All walls option allows you to handle all the walls of a room in one step when defining the material on their surfaces. When this option is on you can handle all walls together. When this option is off you can handle the current wall only.

How to modify the wall material?

- Select a wall with Wall finder.
- Choose the desired pattern from the favourites list.

9.13.2.14. Wall Tiling Panel

The Wall Tiling Panel allows you to add realistic 3D tiles on wall surfaces which can be also listed later on.

**Wall Tiling Properties****Tile width**

You can set the width of a tile.

Tile height

You can set the height of a tile.

Grout thickness

You can set the thickness of the grout.

Offset from left

You can set the offset of the distribution starting point from the left side of the area.

Offset from bottom

You can set the offset of the distribution starting point from the left bottom of the area.

All walls

All walls option allows you to handle all the walls of a room in one step when defining the tiling on their surfaces. When this option is on you can handle all walls together. When this option is off you can handle the current wall only.

Angle

You can change the angle of the tiling distribution. The default value is Zero when a regular horizontal/vertical distribution is applied.

Alignment grid

The alignment grid represents the starting point of the distribution on the current surface. Each option means an origin that can be used as the starting point on the current surface.

Row shift

Select from the following three options:



There is no shifting between rows; the tiles are matched to each other by their corners precisely.



If the button is switched on you can define the value of horizontal row shift. Every second row will be shifted with this value from the first one.



If this option is selected, you can define horizontal and vertical shift values in the Row shift / Column shift fields

Row shift value

You can set the value of the row shift if one shift option was selected.

Tile thickness

The tile thickness information shows the tile thickness that will be used when creating the 3D tiling.

9.13.2.15. Floor Tiling Panel

The Floor Tiling Panel allows you to add realistic 3D tiles on wall surfaces which can be also listed later on.

**Floor Tiling Properties****Tile width**

You can set the width of a tile.

Tile height

You can set the height of a tile.

Grout thickness

You can set the thickness of the grout.

Offset from left

You can set the offset of the distribution starting point from the left side of the area.

Offset from bottom

You can set the offset of the distribution starting point from the left bottom of the area.

All walls option

All walls option allows you to handle all the walls of a room in one step when defining the tiling on their surfaces. When this option is on you can handle all walls together. When this option is off you can handle the current wall only.

Angle

You can change the angle of the tiling distribution. The default value is Zero when a regular horizontal/vertical distribution is applied.

Alignment grid

The alignment grid represents the starting point of the distribution on the current surface. Each option means an origin that can be used as the starting point on the current surface.

Row shift

Select from the following three options:



There is no shifting between rows; the tiles are matched to each other by their corners precisely.



If the button is switched on you can define the value of horizontal row shift. Every second row will be shifted with this value from the first one.



If this option is selected, you can define horizontal and vertical shift values in the Row shift / Column shift fields

Row shift value

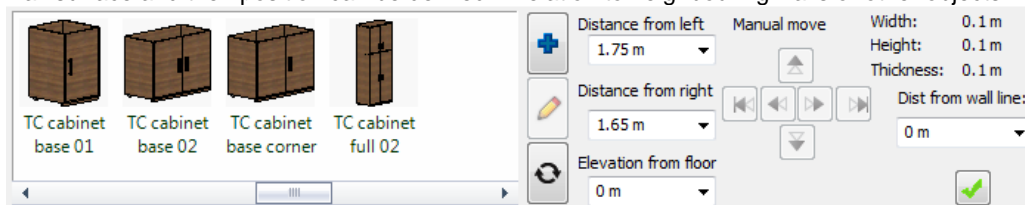
You can set the value of the row shift if one shift option was selected.

Tile thickness

The tile thickness information shows the tile thickness that will be used when creating the 3D tiling.

9.13.2.16. Kitchen Cabinets Panel

You can create and edit an aligned series of kitchen cabinets in the Kitchen Cabinets Panel. Objects can be added to a wall surface and their position can be defined in relation to neighbouring walls or other objects.

***Kitchen Cabinet Properties*****Distance from left**

You can set the distance of the object from the left side corner of the current wall.

Distance from right

You can set the distance of the object from the right side corner of the current wall.

Elevation from floor

You can set the distance between the floor level and the bottom of the selected object.

Manual move buttons

You can manually move the current object on the wall surface by using the Manual move buttons.

Distance from wall line

You can set the distance between the wall surface and the back surface of the selected object.

Dimensions

You can see the dimensions of the selected object in the Dimensions information area.

How to add a kitchen cabinet to a wall?

- Select a wall with Wall finder.
- Select a cabinet from the favourites list and change properties.
- Click on Green tick – it will place the object on the wall.

How to add more cabinets to one wall?

- Press the Green Plus first to prepare the next cabinet on the same wall.
- Select a cabinet from the favourites and change properties.

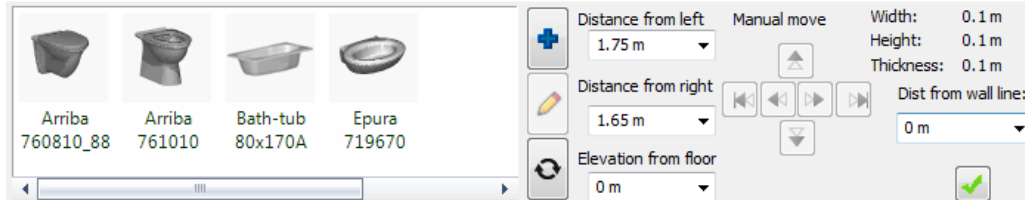
- Set its relation and distance to the existing cabinet object.
- Click on Green tick – it will place the cabinet on the wall.

How to modify an existing cabinet?

- Navigate to the wall which contains the object that you would like to modify.
- Click on the object in the 3D content window.
- Change its properties.
- Click on the Update button to refresh changes.

9.13.2.17. Sanitary Ware Panel

The Sanitary Ware Panel contains sanitary ware objects that can be aligned to a wall surface.



Sanitary Ware Properties

Distance from left

You can set the distance of the object from the left side corner of the current wall.

Distance from right

You can set the distance of the object from the right side corner of the current wall.

Elevation from floor

You can set the distance between the floor level and the bottom of the selected sanitary object.

Manual move buttons

You can manually move the current object on the wall surface by using the Manual move buttons.

Distance from wall line

You can set the distance between the wall surface and the back surface of the selected object.

Dimensions

You can see the dimensions of the selected object in the Dimensions information area.

How to add a sanitary ware to a wall?

- Select a wall with Wall finder.
- Select a sanitary ware from the favourites list and change properties.
- Click on Green tick – it will place the object on the wall.

How to add more sanitary ware objects to one wall?

- Press the Green Plus first to prepare the next sanitary ware on the same wall.
- Select a sanitary ware from the favourites and change properties.
- Set its relation and distance to the existing sanitary ware object.
- Click on Green tick – it will place the sanitary ware on the wall.

How to modify an existing cabinet?

- Navigate to the wall which contains the object that you would like to modify.
- Click on the object in the 3D content window.
- Change its properties.
- Click on the Update button to refresh changes.

9.13.2.18. Furniture

The Objects Panel allows you to align 3D objects to wall surfaces.



Object Properties

Distance from left

You can set the distance of the object from the left side corner of the current wall.

Distance from right

You can set the distance of the object from the right side corner of the current wall.

Elevation from floor

You can set the distance between the floor level and the bottom of the selected sanitary object.

Manual move buttons

You can manually move the current object on the wall surface by using the Manual move buttons.

Distance from wall line

You can set the distance between the wall surface and the back surface of the selected object.

Dimensions

You can see the dimensions of the selected object in the Dimensions information area.

How to add an object to a wall?

- Select a wall with Wall finder.
- Select an object from the favourites list and change properties.
- Click on Green tick – it will place the object on the wall.

How to add more objects to one wall?

- Press the Green Plus first to prepare the next object on the same wall.
- Select an object from the favourites and change properties.
- Set its relation and distance to the existing object.
- Click on Green tick – it will place the object on the wall.

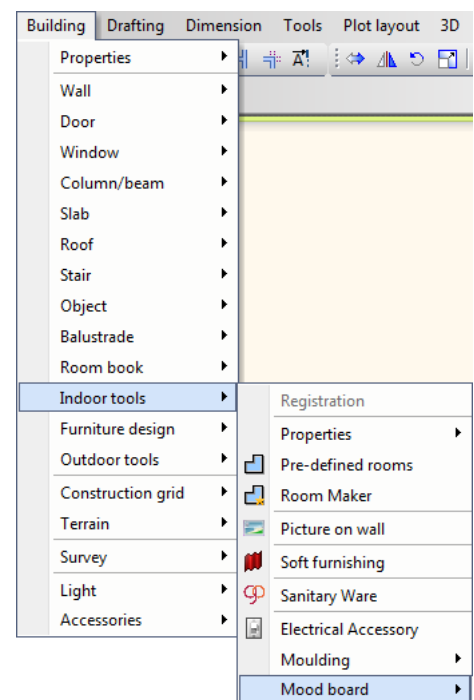
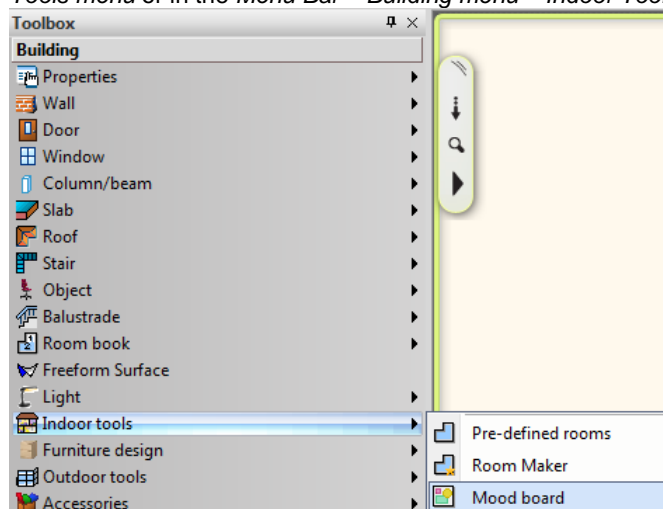
How to modify an existing cabinet?

- Navigate to the wall which contains the object that you would like to modify.
- Click on the object in the 3D content window.
- Change its properties.
- Click on the Update button to refresh changes.

9.13.3. Mood board

With this command you are able to illustrate the atmosphere of the project and its visual direction. You can easily use hand sketches, photos and materials.

The Mood Board command is in the *Toolbox* under the *Building / Indoor Tools menu* or in the *Menu Bar – Building menu – Indoor Tools*.

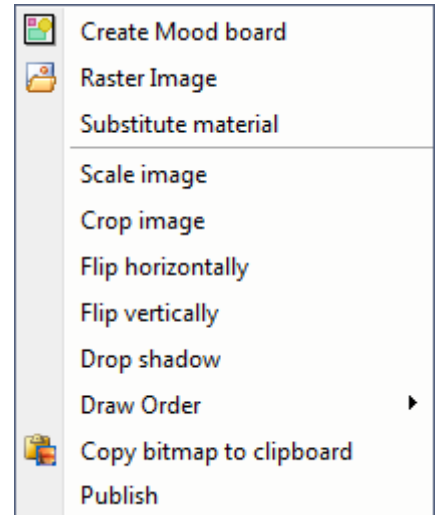


9.13.3.1. Creating mood board

First of all set the paper size what you would like to use for the mood board. Then click OK and a new window will appear where you can create your mood board.

For further functions open Menu Bar Building menu – Indoor Tools – Mood Board. These are:

- **Raster Image:**
You can select pictures from your computer with the help of this command.
- **Substitute material:**
This command replaces the material in the mood board with an other selected one.
- **Scale image:**
We can change the size of the placed image.
- **Crop image:**
If there is a part of the picture what you don't need, you can cut it.
- **Flip horizontally / vertically:**
We can flip the placed image on the board.
- **Drop shadow:**
Shadow can be used for the placed pictures.
- **Draw order:**
You can specify which images and materials are in the front or in the back of the mood board and their position to one another.
- **Copy bitmap to clipboard:**
The program copies the drawing of the active window as an image file to the clipboard of Windows.
- **Publish:**
You can make a snapshot about the mood board and upload it to the web.
The above mentioned commands (scale image, crop image, flip horizontally or vertically) are accessible via the local menu of the images.



9.13.4. Picture on wall

Introduction

With the *Picture on wall* function of ARCHLine.XP® it is easy to put pictures on different surfaces of interior spaces.

The *Picture on wall* is a dynamic object that can be configured with its parameters in a few steps. The Picture on wall is always based on an image which is supplemented with matting as rag mats, or collage mats and frame. Once the image is framed and displayed matting helps separate the photograph from its surroundings. It gives it its own unique space and presence.

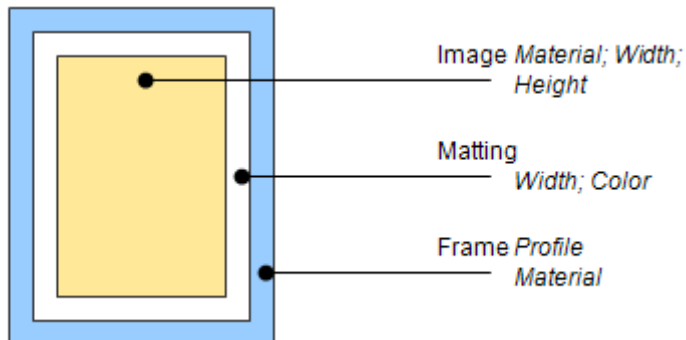
The command is available in the *Building menu – Indoor tools – Picture on wall*.



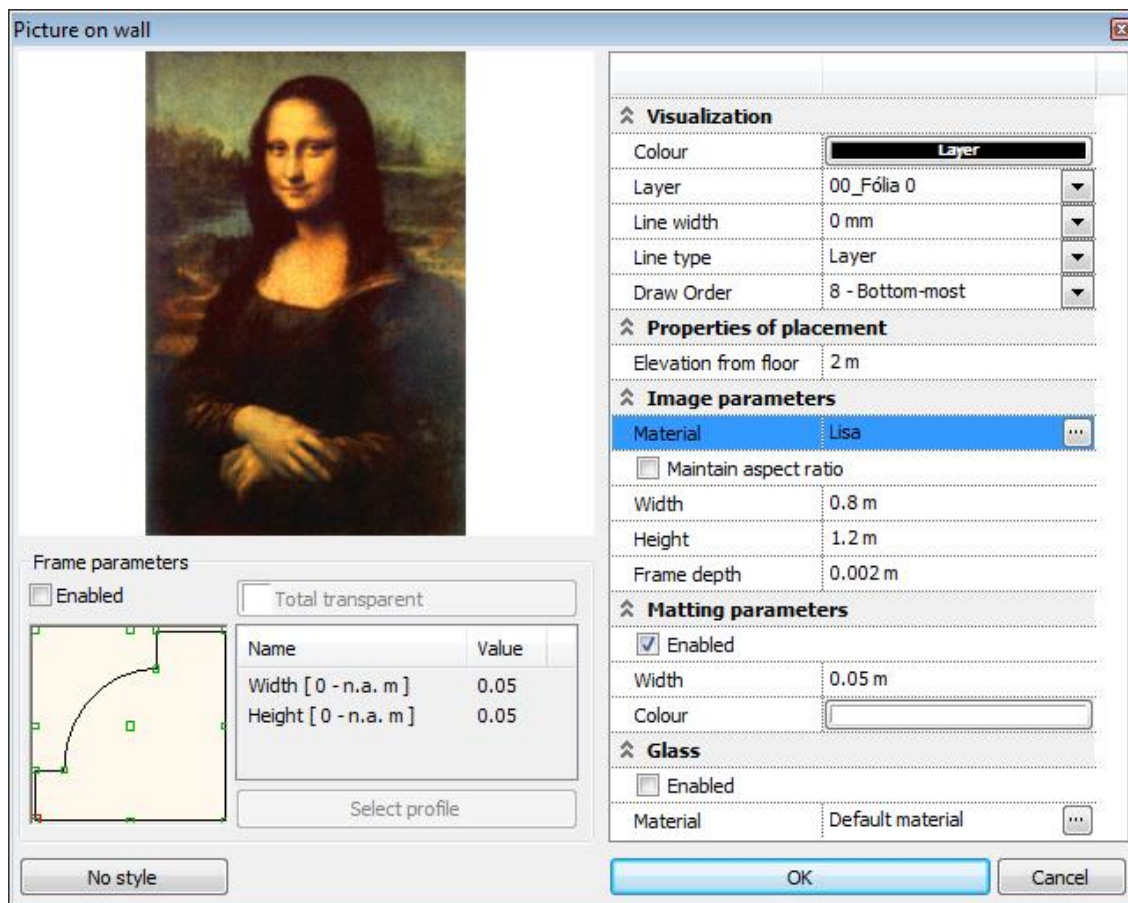
9.13.4.1. Properties

In the *Picture on wall* property settings dialog you can specify the how the object should look on the floor-plan and in 3D views. For this you have to click on *Building menu – Indoor tools – Picture on wall* or *Toolbox – Building – Indoor tools – Picture on wall* icon

A Picture on wall consists of three parts, as it is shown on the figure below (with the main properties):



The total width and height depend on the dimensions of the above mentioned parts.



Visualization

In this property group you can set the line representation. The following properties can be set: Colour, Layer, Line width, Line type, Draw order

Properties of placement

Elevation from floor

The height of the bottom left point of the picture object relative to the zero level of the active floor.

Image parameters**Material**

You can select a material from the material manager dialog. This material will be the image. The program recognizes the width and height parameters of the selected material texture automatically, and their values appear in the Width and Height input fields.

Maintain aspect ratio

With this option the original width/height ratio of the image can be kept.

Width

You can modify the width of the image. This width parameter belongs to the image and not to the whole picture object.

Height

You can modify the height of the image. This height parameter belongs to the image and not to the whole picture object.

Frame depth

You can modify the depth of the frame.

Frame parameters

You can specify the profile of the frame around the picture along with its material.

Enabled

With this option you can switch on the frame.

Matting parameters

You can specify the properties of the stripe between the picture frame and the border of the image.

Enabled

With this option you can switch on the matting.

Width

The value specified here is the width of the stripe between the picture frame and the border of the image.

Colour

The matting is represented with this colour.

Glass

You can specify the properties of the glass in front of the picture.

Enabled

With this option you can switch on the glass.

Material

You can select a material from the material manager dialog.

9.13.4.2. Placing picture on wall**In 2D**

Select Building menu – Indoor tools – Picture on wall or the Toolbox – Building – Indoor tools – Picture on wall command.
Set the appropriate properties and then press Ok.
Place the picture object on the floor-plan.



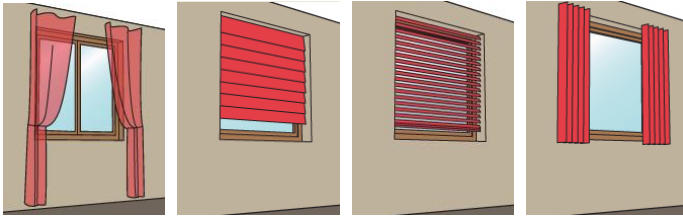
Use the Graphic keyword if you want to rotate the object during the placement.

In 3D

Select Building menu – Indoor tools – Picture on wall or the Toolbox – Building – Indoor tools – Picture on wall command.
Set the appropriate properties and then press Ok.
Move your mouse to the appropriate surface and then select it.
Move the picture object to the appropriate position and then placed it.

9.13.5. Soft furnishing – Window decoration and blinds

Four types of indoor blinds are available: curtain, roman blind, venetian blind and vertical blind.

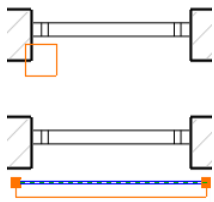
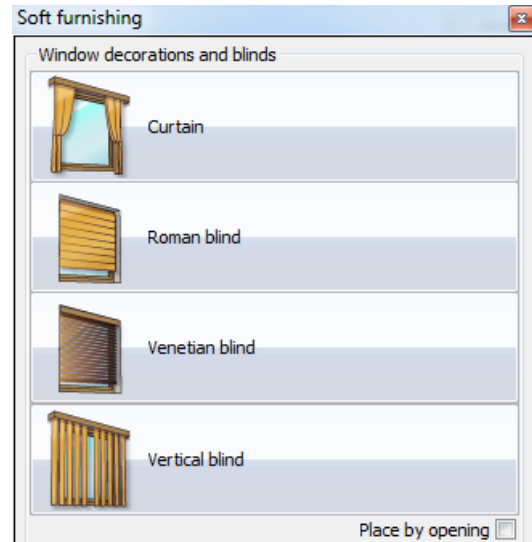


9.13.5.1. Creating indoor blinds

You can create an indoor blind by selecting an opening (door or window) to place the blind in it or by drawing it directly on the floor plan.

Menu (Architecture):
Building > Indoor Tools > Soft Furnishing

Menu (Interior):
Furnishing > Soft Furnishing



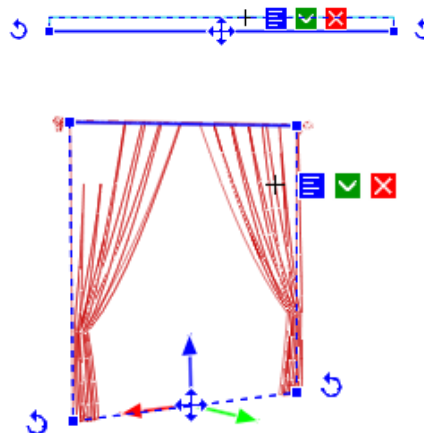
To create a blind in an existing opening click on the appropriate side of a door or window.

To draw the blind on the floor plan draw the bounding rectangle of the blind. You can mirror the rectangle to the blue line by pressing the F5 key.

Once the indoor blind is placed a dialog appears and you can set the appropriate values. Finally the blind appears on the floor plan and in the 3D window.

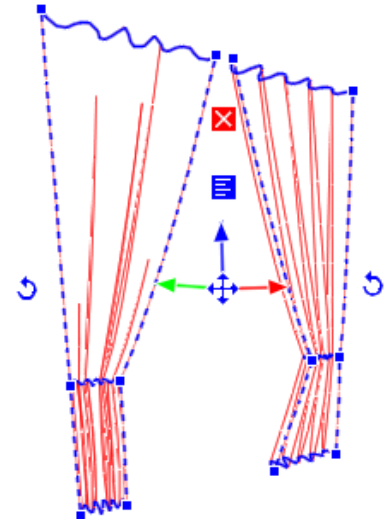
9.13.5.2. Editing blinds

Once the object is selected, you can edit it by means of the markers: by using the node markers you can change its length or move an endpoint. By using the Offset command of the line marker you can move the object perpendicular to itself. In the 3D window you can adjust the top and bottom height of the blind, too.



9.13.5.3. Converting blinds

Each indoor blind can be easily converted to another by clicking on it with right mouse button and selecting **Convert to...** command. You can convert an indoor blind to a general freeform surface, too. Once you have the freeform surface, it is possible to move each individual node of the model, fix edges to the appropriate position, etc.

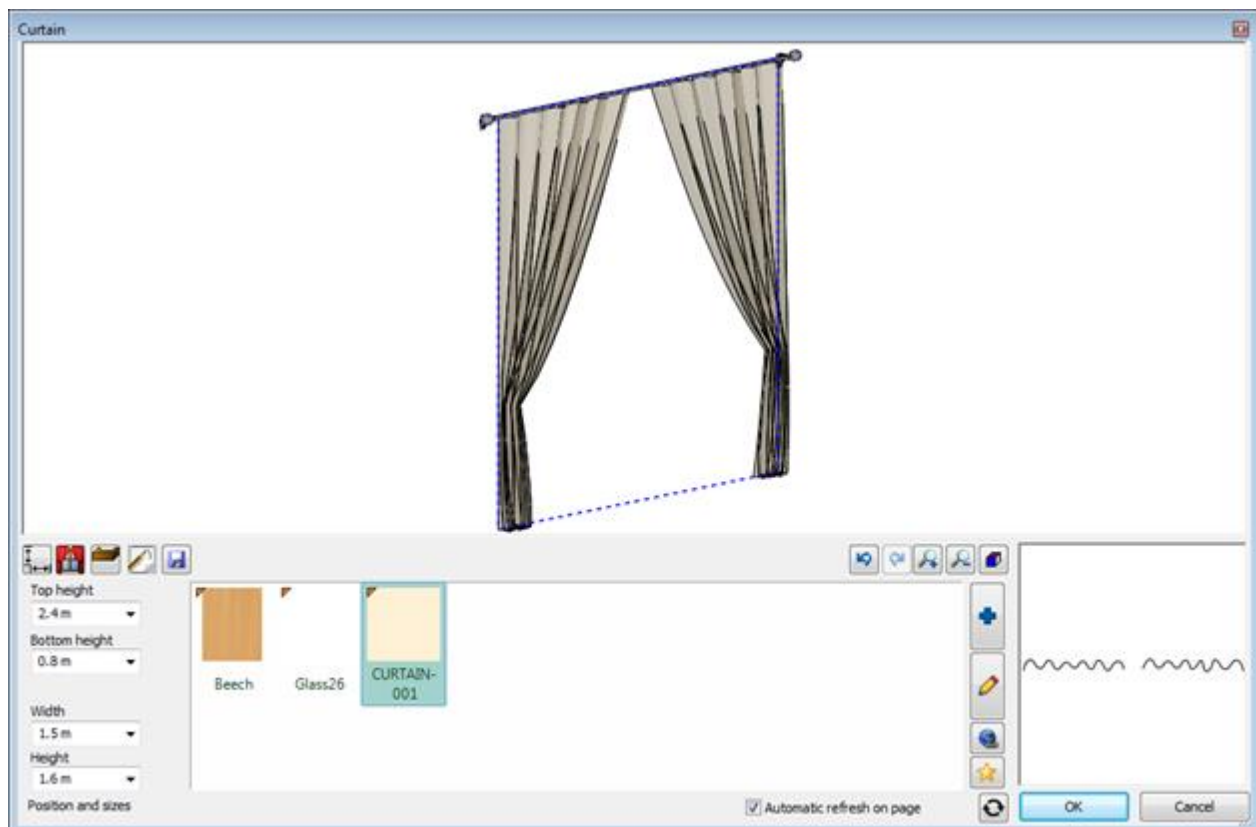


9.13.5.4. Indoor blind types

Each blind type has its own setting dialog. Once you have placed the blind on the floor plan, the dialog appears and the blind will be created based on the values set in it.

To modify an indoor blind right click on an object and select **Properties**.

9.13.5.5. Position and sizes



This page is available for all blind types.

Top height

The height of the top of the blind from the story level.

Bottom height

The height of the bottom of the blind from the story level.

Height

The height of the blind.

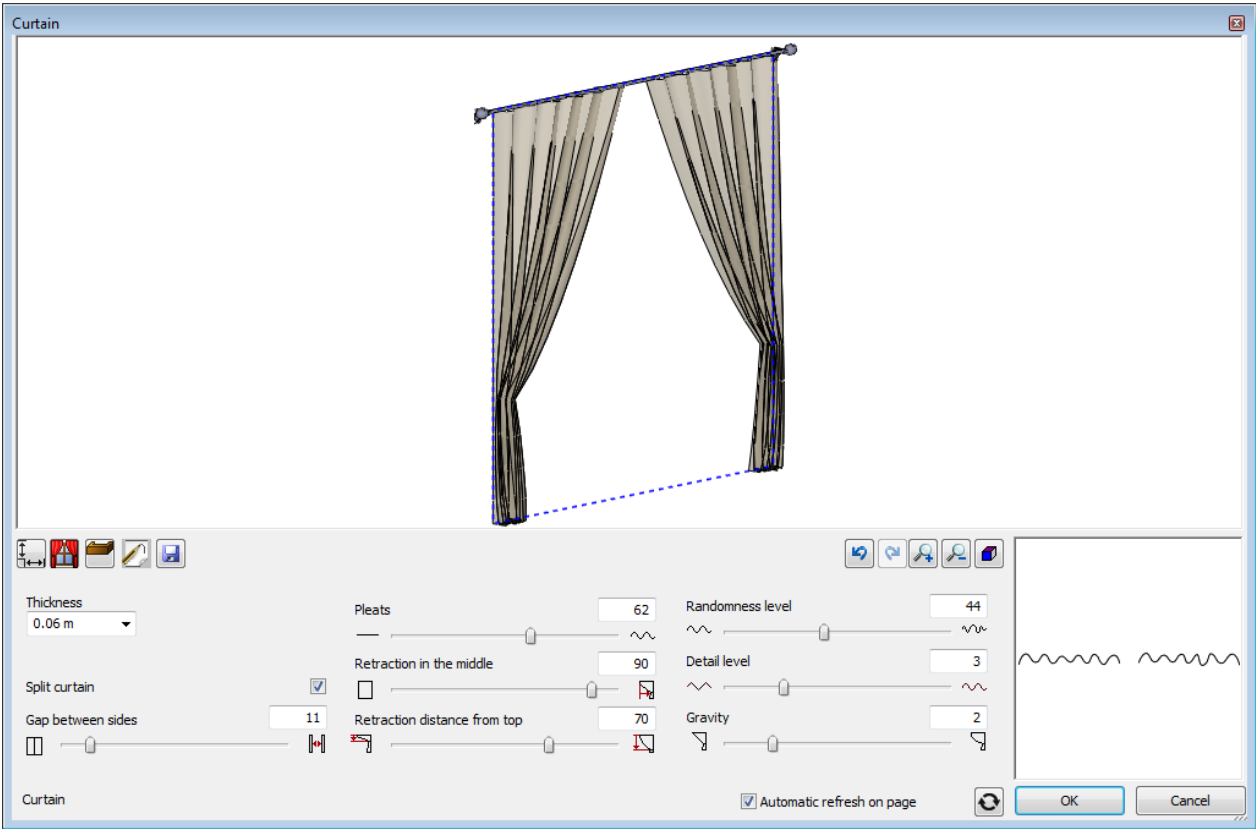
Width

The width of the blind.

Material

The material of the blind. Pelmet and curtain rods have their own material settings.

9.13.5.6. Curtain



This page is available only for curtains.

Thickness

The width of the bounding rectangle of the curtain. If the blind is mirrored to its reference line, this value can be negative.

Split Curtain

If enabled, curtain is split into two parts.



Split curtain enabled



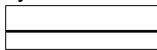
Split curtain disabled

Gap between sides

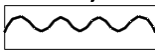
You can define the distance between the two parts of a split curtain.

Pleats

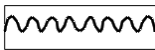
By means of this slider you can adjust the wave-form of the curtain. The lowest value results in a straight line.



Pleats: 0%



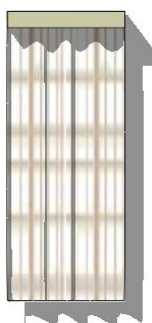
Pleats: 50%



Pleats: 100%

Retraction in the middle

By setting this slider to the lowest value you can define a straight curtain without retraction, otherwise the middle of the curtain will be retracted towards the second point of the bounding rectangle.



Retraction in the
middle: 0%



Retraction in the
middle: 50%



Retraction in the
middle: 100%

Retraction distance from top

If the "Retraction in the middle" value is positive, here you can set the vertical position of the retraction. By setting it to 0% or 100%, the upper or lower edge will be retracted instead of the middle of the curtain.



Retraction
distance from top:
0%



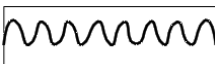
Retraction
distance from top:
50%



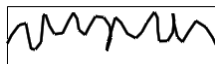
Retraction
distance from top:
100%

Randomness level

You can choose between regular and random wave-forms.



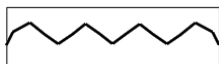
Randomness level: 0%



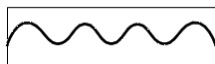
Randomness level: 100%

Detail level

The resolution of the freeform surface.



Detail level: 1



Detail level: 5

Gravity

The textile can "fall down" realistically by increasing the gravity value.



Gravity: 0

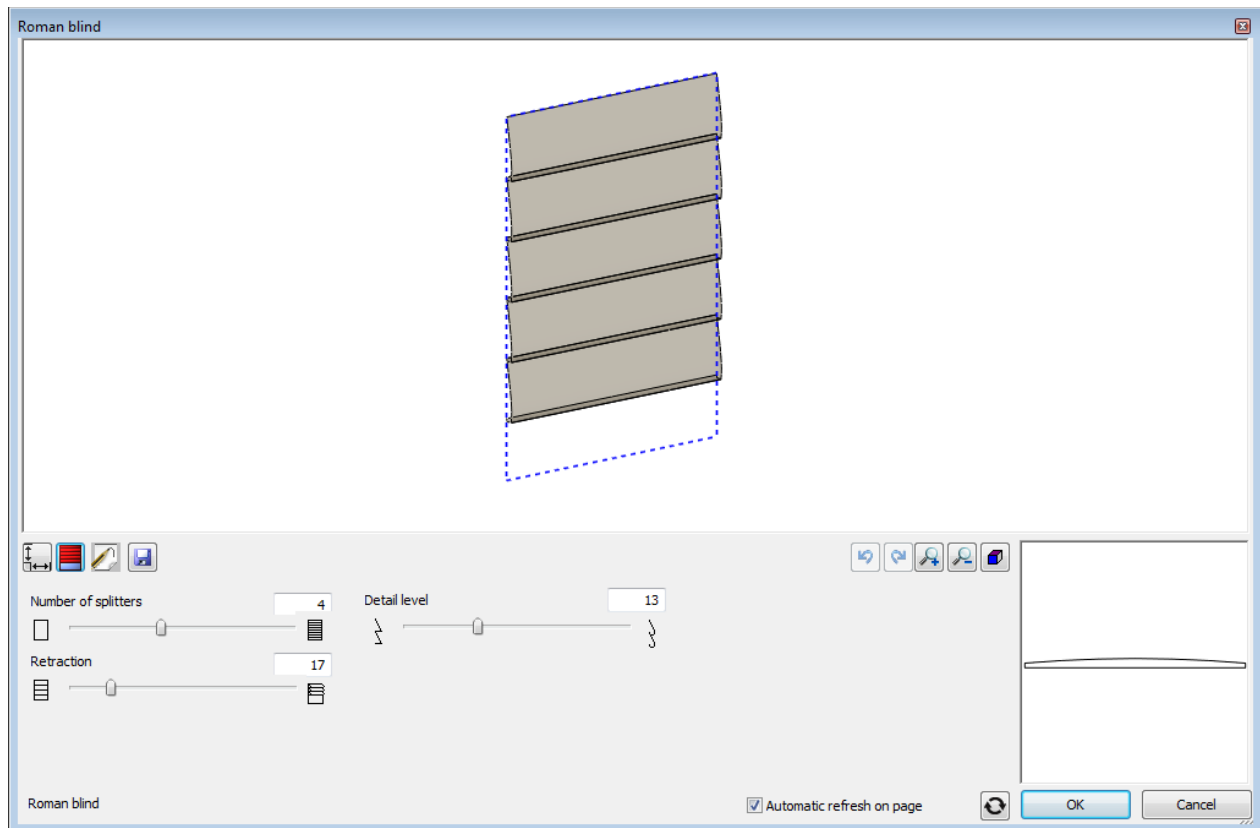


Gravity: 2



Gravity: 4

9.13.5.7. Roman blind properties



This page is available only for roman blinds.

Number of splitters

The number of horizontal divisions can be set here.

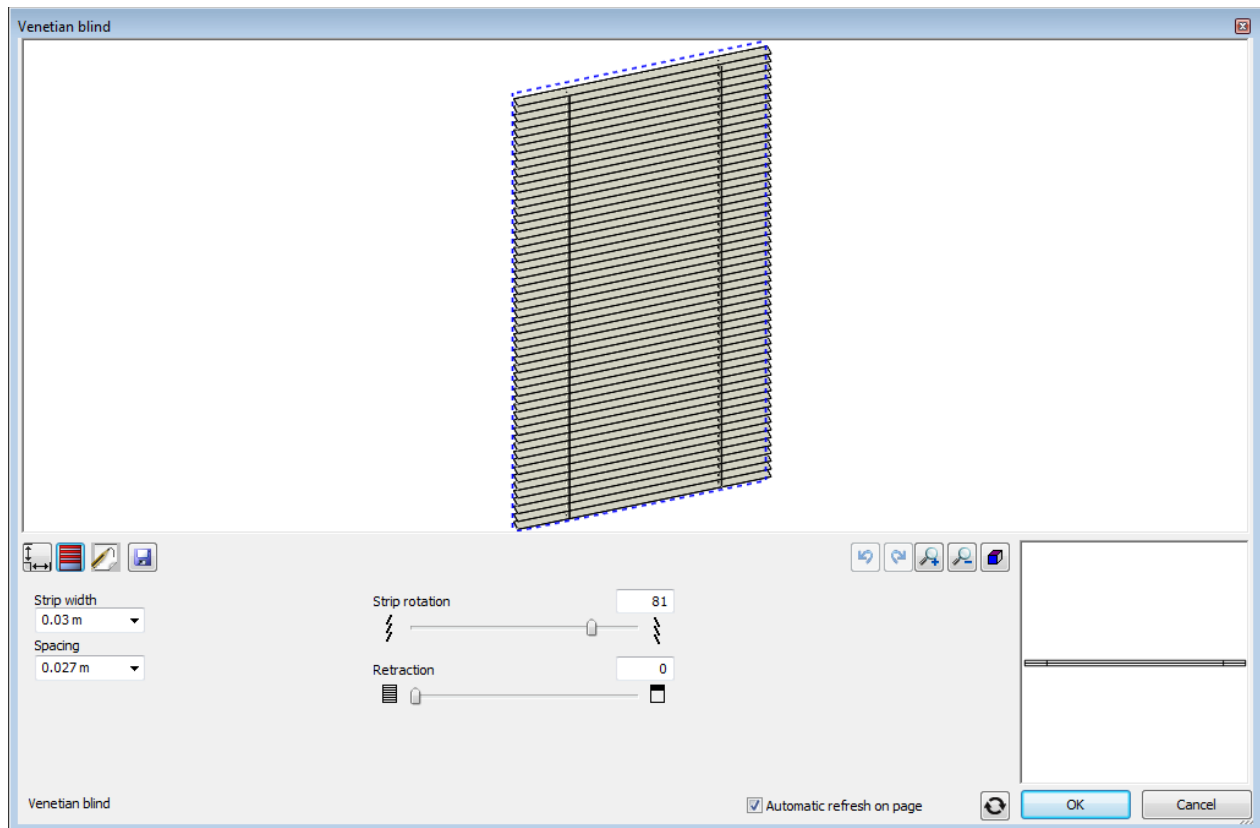
Retraction

The lowest value means a fully shut roman blind, and the top value means a fully open roman blind.

Detail level

You can set the detail level of the surface of the generated roman blind. Higher value makes the final result more realistic while lower will make it rough.

9.13.5.8. Venetian blind



This page is available only for venetian blinds.

Strip width

The width of a strip.

Strip spacing

The distance between strips.

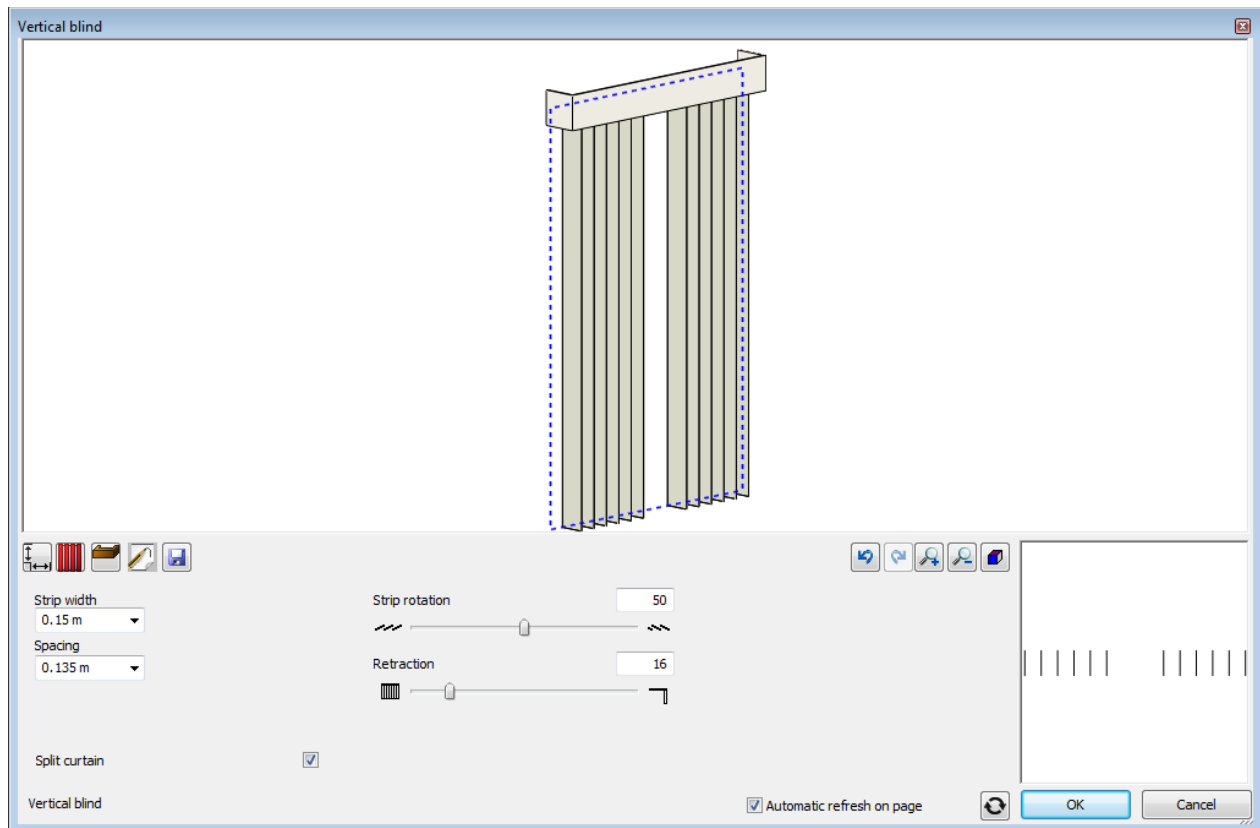
Strip rotation

The rotation of the strips. The 50% value results in horizontal strips. The maximum rotation angle is 80° in both directions

Retraction

The lowest value means a fully shut blind, and the top value means a fully open one.

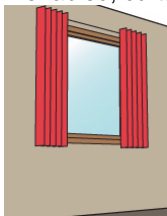
9.13.5.9. Vertical blind



This page is available only for vertical blinds.

Split curtain

If enabled, curtain is split into two parts.



Split curtain enabled



Split curtain disabled

Strip width

The width of a strip.

Strip spacing

The distance between strips.

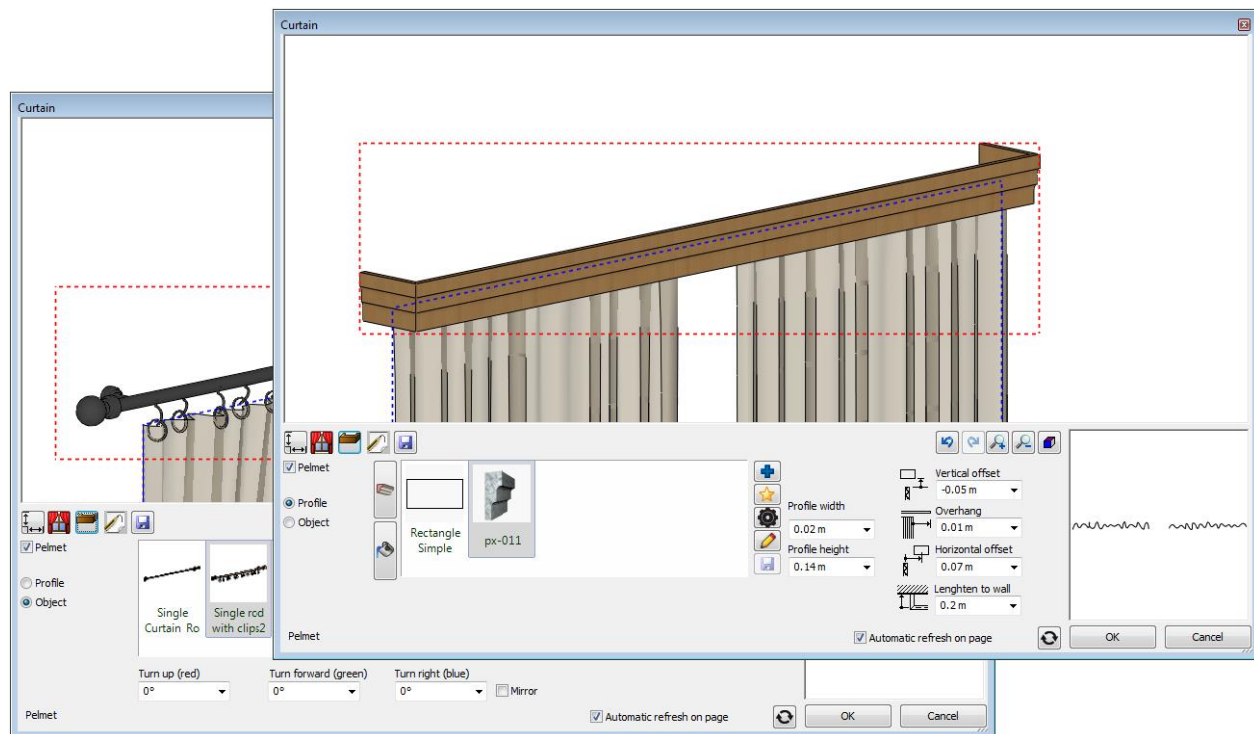
Strip rotation

The rotation of the strips. The 50% value effects strips perpendicular to the plane of the opening. The maximum rotation angle is 80° in both directions.

Retraction

The lowest value means a fully shut blind, and the top value means a fully open one.

9.13.5.10. Pelmet properties



This page is available only for curtains and vertical blinds.

You can use an extruded profile or an object as pelmet.

Profile pelmet

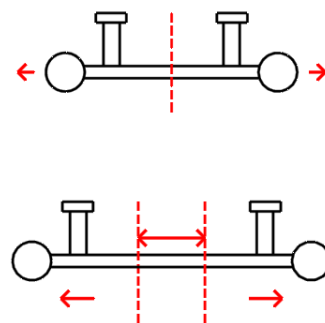
The pelmet profile will be extruded along the top center line of the blind. (The selected hotspot of the profile will be aligned to this line.)



Use the **horizontal/vertical offset**, **overhang** and **lengthen to wall** values to customize the pelmet path.

Object pelmet

The pelmet object will be aligned to the top center line of the blind. If the blind is longer than the pelmet object, the pelmet object will be cut in the middle and stretched so that the ends of the pelmet object remain proportional.



Use the **horizontal/vertical offset** and **overhang** values to customize the pelmet.

Pelmet

You can enable or disable the pelmet.

Profile or Object

You can extrude a profile or use an object.

Pelmet Object

The object used as pelmet or curtain rod. This setting is available for object pelmets only.

Turn up/forward/right

You can rotate the pelmet object. This setting is available for object pelmets only.

Pelmet profile

The section profile of the pelmet. The hotspot of the profile will be aligned to the top of the curtain. This setting is available for profile pelmets only.

**Profile width/height**

You can resize the section profile. This setting is available for profile pelmets only..

Material

The material of the pelmet. This setting is available for profile pelmets only.

**Vertical offset**

You can elevate the pelmet by changing this value.

**Horizontal offset**

You can shift the pelmet perpendicular to the curtain.

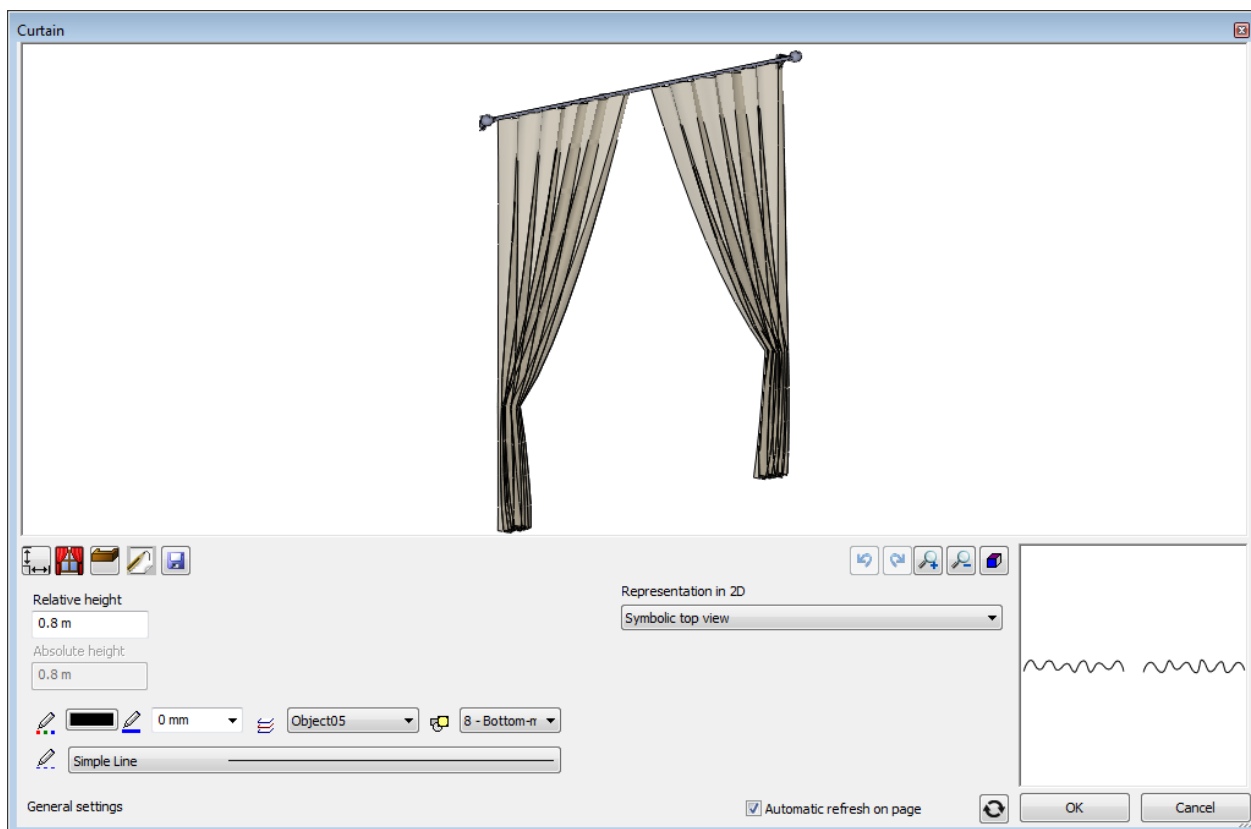
**Overhang**

You can lengthen / shorten the pelmet..

**Lengthen to wall**

You can lengthen the pelmet perpendicular to the blind. This setting is available for profile pelmets only.

**9.13.5.11. General properties**



This page is available for all blind types.

You can define the relative height, colour, line width, layer, priority and line type of the blind. You can also choose the 2D representation here.

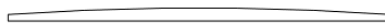
Simplified



Symbolic top view



Curtain



Roman blind

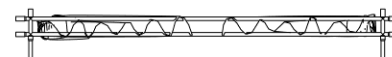


Venetian blind

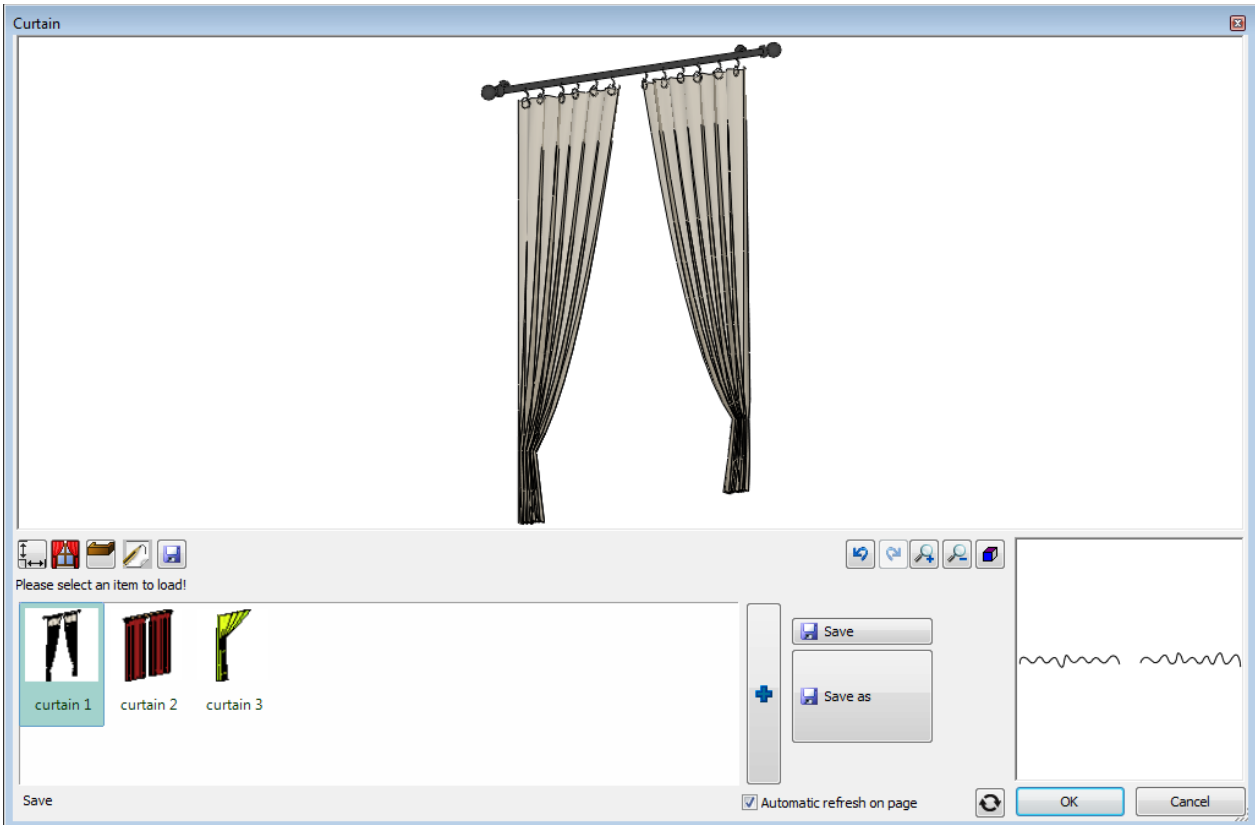


Vertical blind

Top view



9.13.5.12. Load and Save

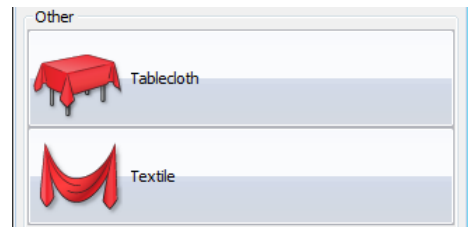
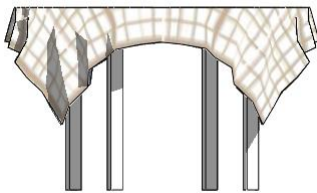


This page is available for all blind types. You can save the blind in the Design Center or load an existing one.

9.13.6. Soft furnishing - Other

9.13.6.1. Table cloth

ARCHLine.XP® provides wizard to make easier the creation and modification of table cloths.



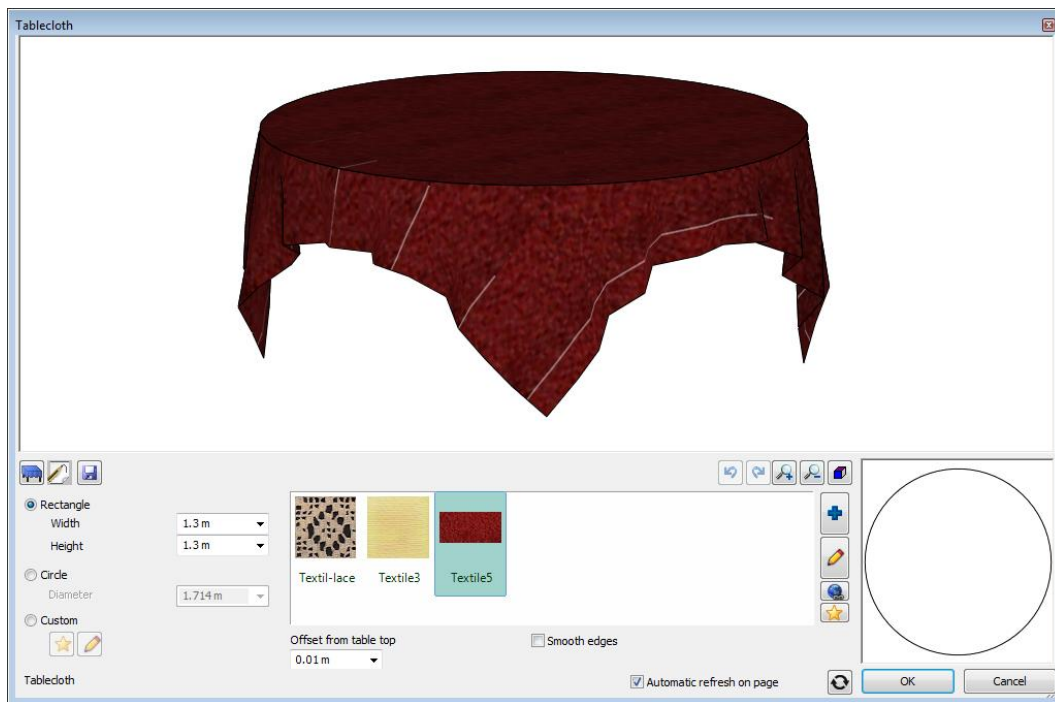
9.13.6.2. Creating a table cloth

Menu (Architecture):
Building > Indoor Tools > Soft Furnishing

Menu (Interior):
Furnishing > Soft Furnishing

To create a table cloth first you have to define the profile of the table on the floor plan: the *Profile definitions* tools appear in the Toolbox, you can draw the profile or select the **Point of profile** option to use the contours of an existing table. Once you have the table profile, the Table cloth wizard dialog appears.

The table cloth will be created based on the following settings:



Shape and profile of the table cloth

You can select rectangle, circle and custom shape for the table cloth. In the first two cases, the sizes of the table cloth layout must be set: width and height or diameter.

In the third case, you can define the profile of the table cloth layout by clicking the Define Profile (★) button: first you have to place the table outline onto the floor plan and then the *Profile definitions* tools appear in the Toolbox and you can draw the new profile around the table. Note that the table cloth profile cannot intersect the table profile.

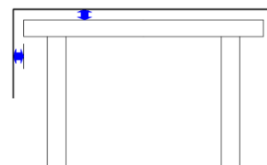
Once have a custom cloth profile you can edit it by using the Edit profile (✎) button: first you have to place the table outline onto the floor plan and then the *Edit profile* tools appear in the Toolbox and you can edit the profile. Note that the table cloth profile cannot intersect the table profile.



Rectangular table cloth Circle-shaped table cloth Custom oval table cloth

Offset from table top

To avoid overlapping surfaces in the 3D window and on the rendered images, the table cloth itself will be created above the table top level

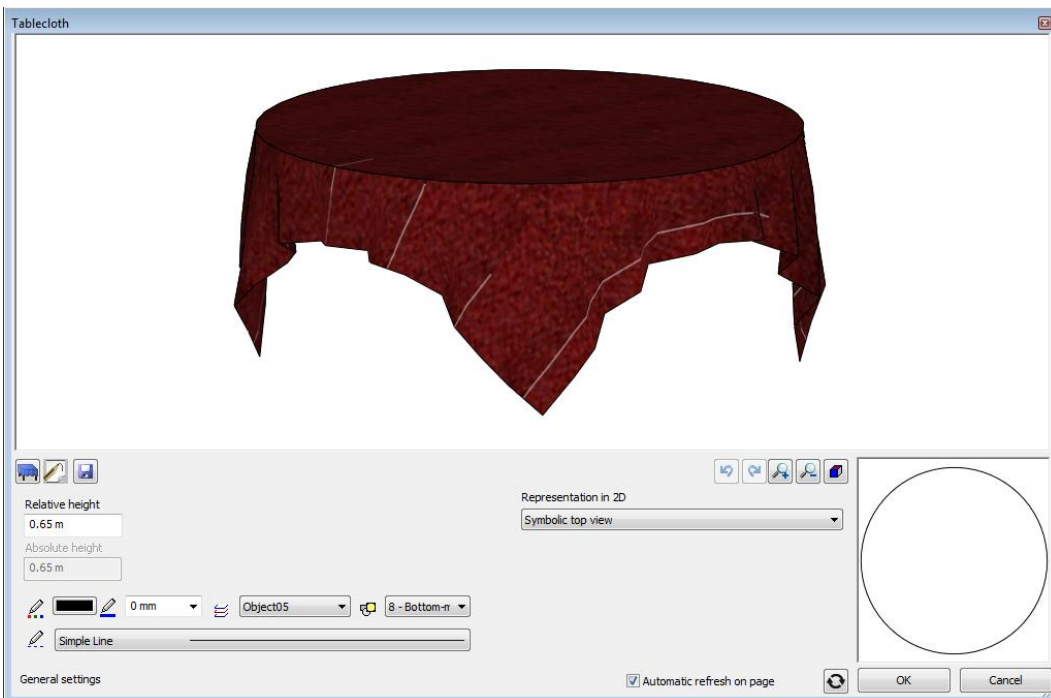


Smooth edges

Enable this option to hide the sharp edges appearing around the table contour. Use smooth edges to cover rounded objects like beds, etc.

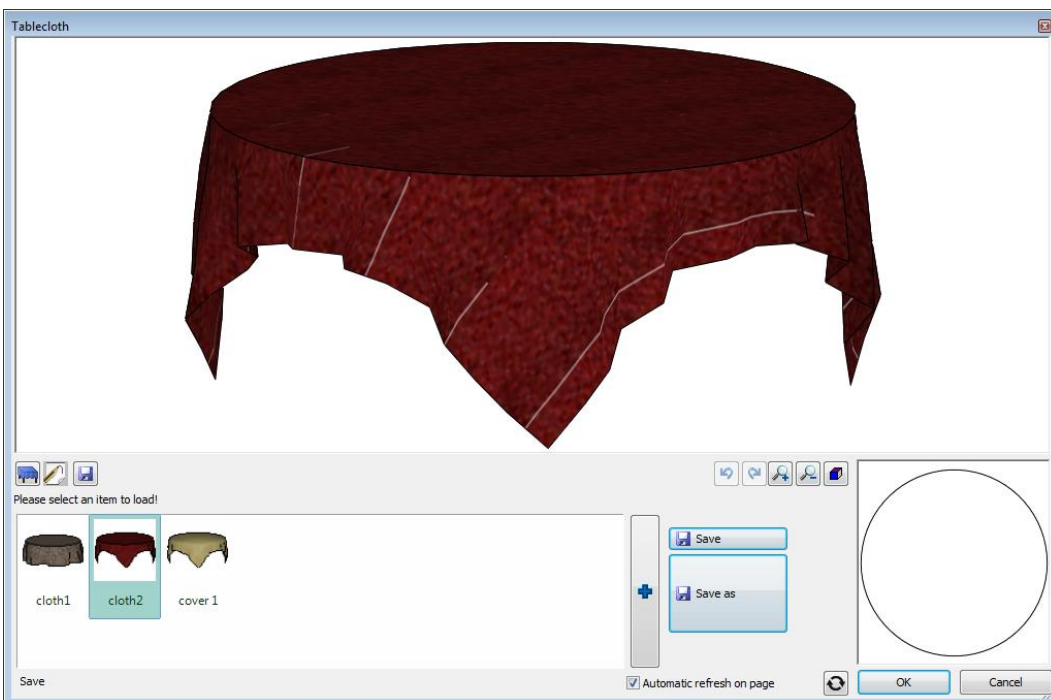


9.13.6.3. General properties



You can define the relative height, colour, line width, layer, priority and line type of the blind. You can also choose the 2D representation here.

9.13.6.4. Load and Save



You can save the blind in the Design Center or load an existing one.

9.13.6.5. Textile

You can find this command in the Toolbox – Building – Indoor tools – Soft furnishing – Textile or in the Building menu – Freeform surface.



See description in 9.12. *Freeform surfaces* chapter.

9.13.7. Soft furnishing – External louvre

ARCHLine.XP 2013 enhanced the soft furnishing tools with parasol and awning design.

Menu (Architecture): Building > Indoor Tools > Soft Furnishing

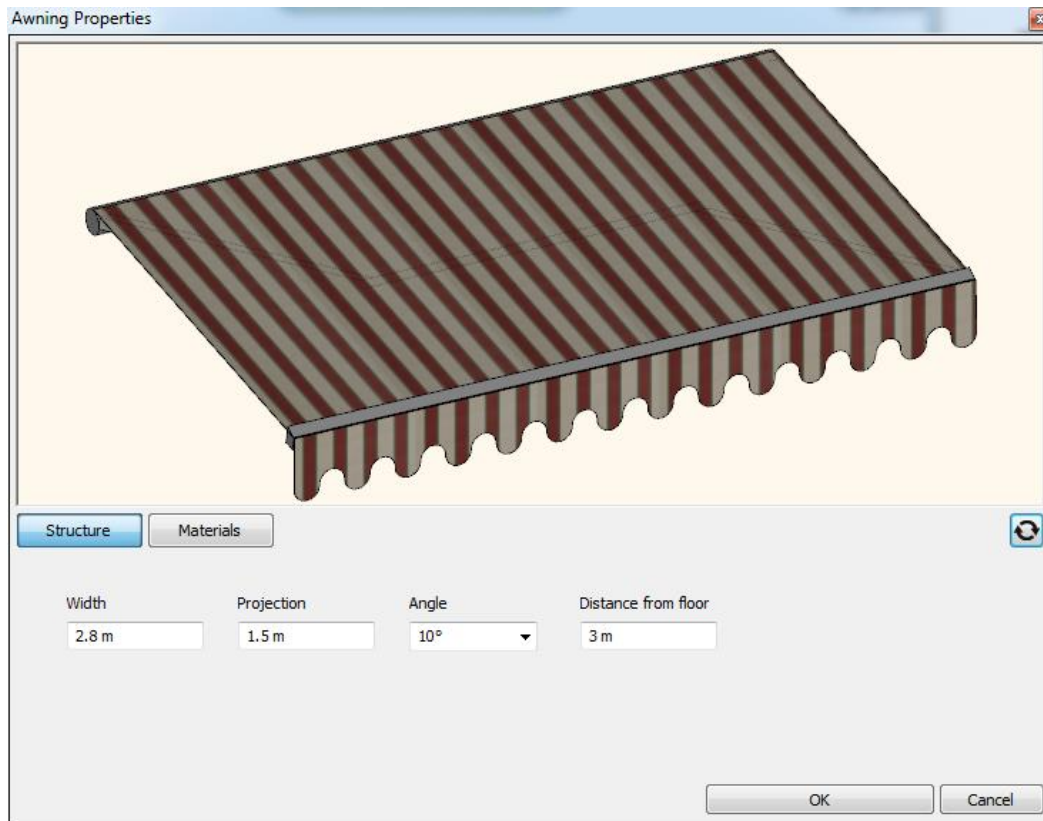
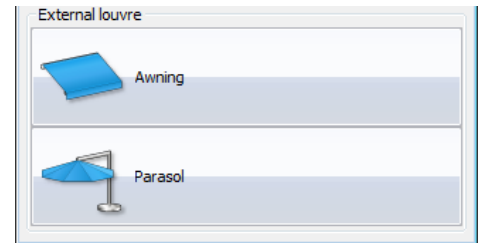
Menu (Interior): Furnishing > Soft Furnishing

9.13.7.1. Awning

Menu (Architecture): Building > Indoor Tools > Soft Furnishing

Menu (Interior): Furnishing > Soft Furnishing

ARCHLine.XP comes with a tool that makes easy to design awning as a secondary covering attached to the exterior wall of a building. It is composed of canvas fabric that is stretched tightly over a structure of aluminium, or steel. You can parameterize its size, angle and its elevation from the floor.



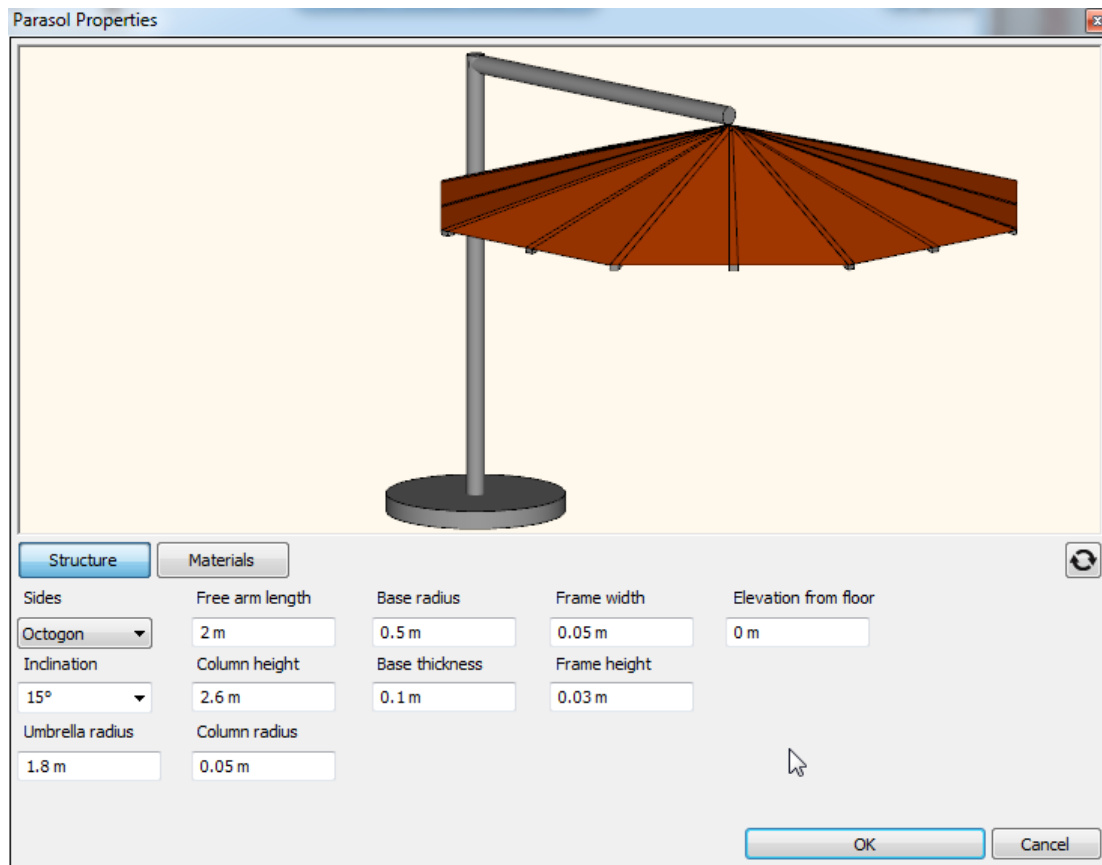
9.13.7.2. Parasol

Menu (Architecture): Building > Indoor Tools > Soft Furnishing

Menu (Interior): Furnishing > Soft Furnishing

ARCHLine.XP enables to design parasol to protect against rain or sunlight. It is composed of canvas fabric that is stretched over a structure of aluminium or steel.

You can parameterize its main components as sides, structure and umbrella measurement and elevation from the floor.



9.13.8. Sanitary Ware

Objects from Sanitary Ware (Manufacturers tool) in ARCHLine.XP is a continuously expanding object database. With the help of this tool you can access global sanitary, heating and air conditioner manufacturer companies' product databases and use them free of charge in your design.

The actual product database is free to access and download from the following webpage: <http://www.shk-branchenportal.de/>. After registration you should choose Download Center and Badplandaten in the menu of the homepage.

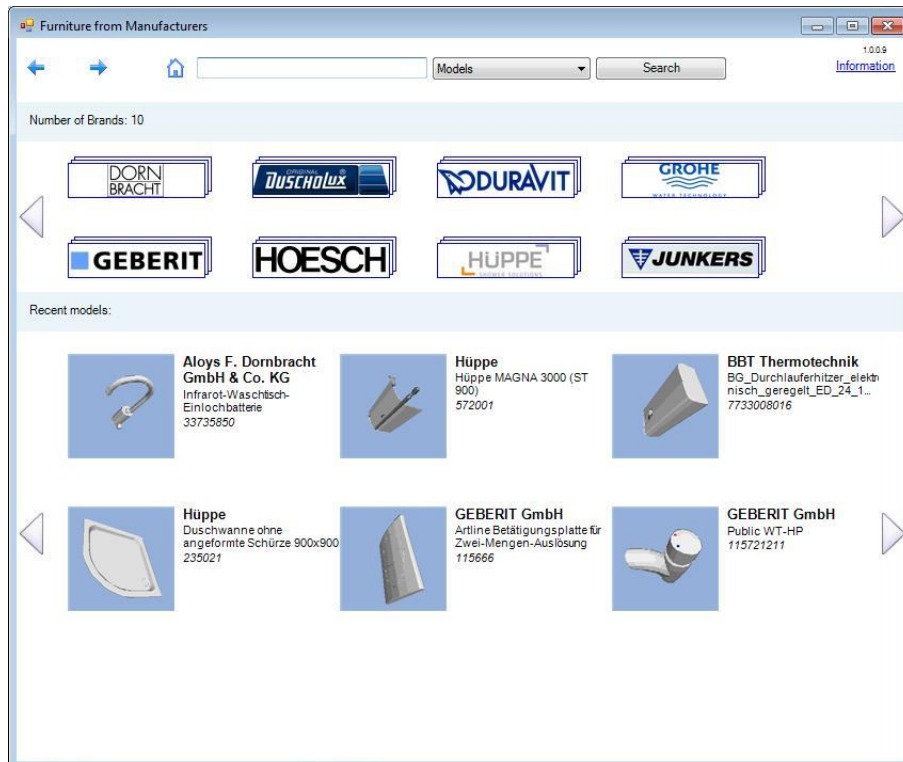


Please choose the database you would like to download, by clicking on the manufacturer's name at the right side and install it after download. After installation the built in Object browser in ARCHLine.XP® will automatically contain the installed database logo. Select it and choose the desired object from the catalogue. The selected object can be easily insert to your design and parallel it will be saved into the object libraries of ARCHLine.XP®.

The object will contain the name and production code of the product, making it really useful when you create lists of used products later on.

Object browser

Open **Toolbox –Building – Indoor tools –Sanitary ware** to start Object browser.



First start

The first start of Object browser could take longer, because the software needs to prepare the downloaded new databases for use. If there are no new databases to prepare, Object browser will appear immediately.

Main page

The first or main page of Object browser is the starting point for every search.

Navigation pane

The Navigation pane is located at the top of the Object browser.



Previous page – Next page

Use the left and right arrows in the navigation pane to load previous and next page.



Home

The Home icon will navigate back to the Main page no matter where you stay actually in Object Browser.



Search field

Type a phrase into the search field and search for it. Search field is able to memorize previous search phrases. Next time you want to use the same or similar search phrase, the software will offer auto complete to help you.



Filter by model or by database



Set filter to Models to search in model descriptions, collection names and article numbers. The result will be a list of objects.

Set filter to Collections to search in Collection names only. The result will be a list of collections. You can select a collection in the result list to open its content and access models inside.

Information link

Click on Information to open the online description page of Object Browser. This link will navigate you to the ARCHLine.XP® webpage and needs internet connection.

[Information](#)

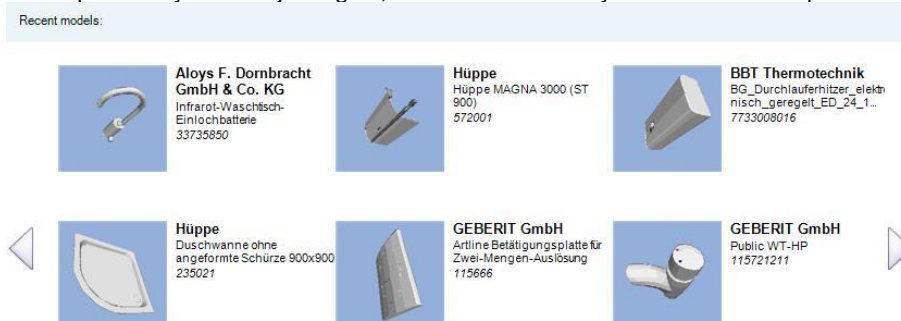
Brand pane

All installed brand databases can be found here represented by their logos. Use the arrows at the left and right side to roll the list. Select one brand logo to open the database and browse its content.



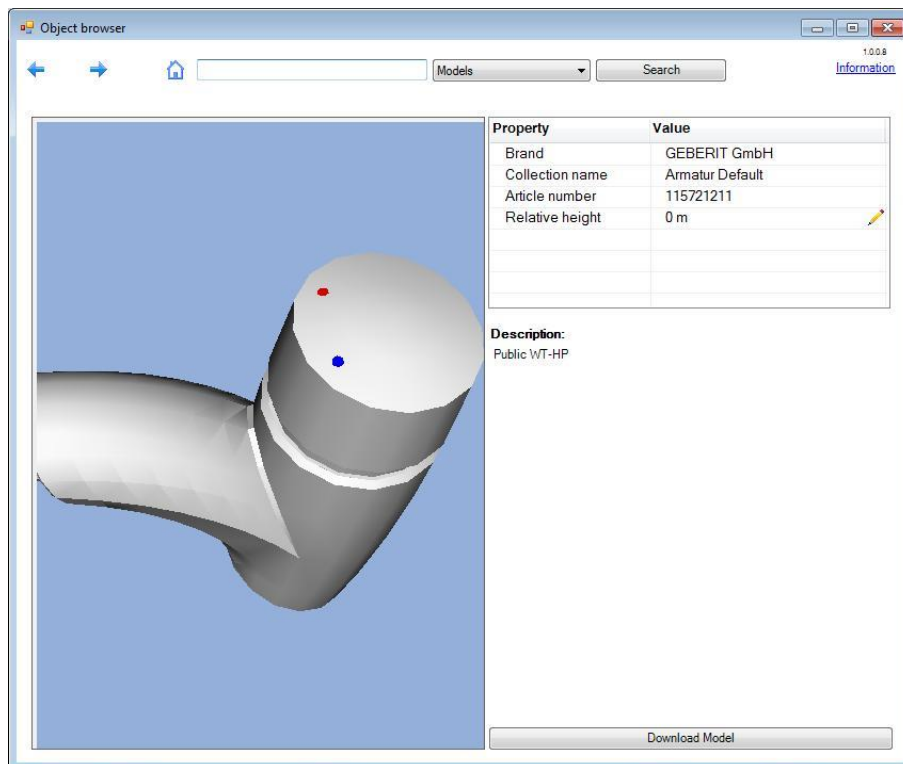
Recent models pane

When you place an object on the drawing the last used object will be stored in this list. There is no need to search a previously used object again, because from here you can select and place it again.



Browsing objects

Select an object by left click in the catalogue to open it. You will see the model and properties of the selected object.



3D View

3D view helps you check the model of selected product before using it. Hold down the left mouse button over the model and move the mouse to rotate.

Hold down CTRL + Mouse scroll and move the mouse to zoom in an out.

Properties

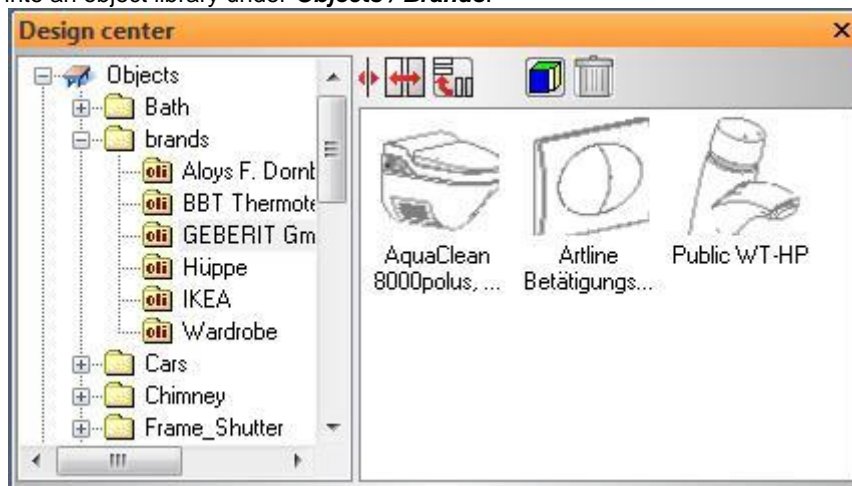
Right to the 3D View there are the properties of the selected object. You can find brand name, collection name, article number and relative height here. You can change the relative height to set the position of the object in the 3D space.

Description




If the selected product has a description, you can see it in the description field.

Download model

Click on Download model to place the selected product on your drawing. At the same time it will be automatically saved into an object library under **Objects / Brands**.



The object will automatically contain the name, description and article number of the product. This will be handy when you will create the lists of the objects and objects in your project, using ARCHLine.XP® listing tools.

| ARCHline ^{XP} | | OBJECT LIST | | | | | |
|--|--|-------------------|------------|-------------------------|----|-------|-------|
| D:\Projects\John_Smith\Bathroom_interior.pro | | Date: 2010.06.30. | | | | | |
| No | Name | Volume | Code | Description | Pc | Price | Total |
| 1 |  Huppe MAGNA 3000 (ST 900) | 0.90x0.96x2.45 | 572001 | Duschabtrennung Default | 1 | 54 | 54 |
| 2 |  BG_Durchlauferhitzer_elektronisch_geregelt-BS 3005 | 0.24x0.14x0.47 | 7733008016 | Warmwassergefäß Default | 1 | 430 | 430 |
| 3 |  Duschwanne ohne angeformte Schürze 900x900 | 0.90x0.90x0.08 | 235021 | Duschwanne Fürnfeck | 1 | 120 | 120 |
| 4 |  Artline Betätigungsplatte für Zwei-Mechanismen-4573127 | 0.21x0.02x0.14 | 115666 | Accessoire Default | 1 | 32 | 32 |

Good to know

When you start your search by clicking on the Search button the time of search will depend on the number of installed brands. Please wait until the search results are displayed.

When you use the navigation arrows on the Navigation pane of Object browser the previous search will be applied. This means if the previous search took long time to display, you should wait again to be able to access the results.

The whole search phrase must be at least 3 characters long.

9.13.9. Electrical accessories



9.13.9.1. Working with Electrical accessories

3D representation

To get the simplest 3D model, you can represent the electrical accessory by a flat shape and a texture on it. To have a more detailed representation, just enable 3D switches or sockets, in this way you can determine the shape and the material of the switch or socket inside the border separately.









Flat shape with texture



Model with 3D switches or sockets

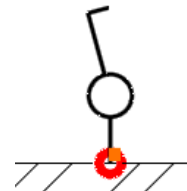
Shape of 3D switches and sockets

You can use any shape for 3D switches and sockets by selecting a profile from the profile library. You can assign shapes to functions by creating a profile and a symbol with the same name in the library. If the *Shape by Function* checkbox is enabled and you choose a function, the switch or socket will be represented by the related shape automatically.

| | | | |
|---|---|---|---|
| 2D symbol |  |  |  |
| | single switch | double switch | socket |
| Related shape (Profile) of the switch or socket |  |  |  |
| | single switch | double switch | socket |

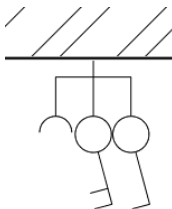
Custom 2D Symbols

On the floor plan you can represent an electrical accessory with its upper view or as a 2D symbol. You can use any 2D symbol as an electrical accessory representation; even you can create your own symbols. To have the appropriate placement, the symbol must have at least one hotspot and the symbol (and the front face of the 3D model) must be oriented upward.



Grouping

Switches and sockets can be grouped in one frame horizontally or vertically. Each switch or socket in a frame can have a unique function.

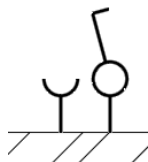


Shifting symbols

To make your 2D plans easier to understand; you can move and rotate the 2D symbol of the electrical accessory independent from the 3D model if necessary.



Switch above a socket in 3D



Symbols next to each other on the floor plan

9.13.9.2. Creating an Electrical accessory

First set the default properties of the Electrical accessory by selecting **Building / Properties / Electrical Accessory** in the Toolbox (Furnishing / **Properties / Electrical Accessory** in the Interior version). You can place an Electrical accessory by selecting **Building / Indoor Tools / Electrical Accessory** (Furnishing / **Electrical Accessory** in the Interior version). This command works differently on the floor plan and in the 3D window.

On the floor plan place the symbol by the first click typically on a wall edge, then set the rotation by the second click. Repeat this to place more objects or press ENTER or ESC to quit.

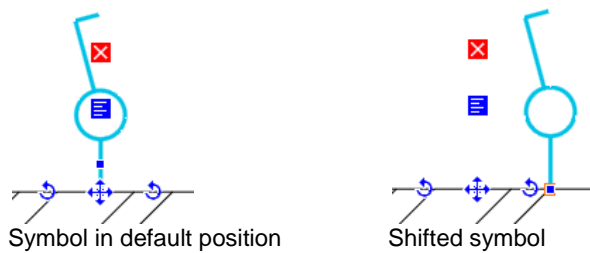
In the 3D window first select a surface then place the symbol on that surface. Repeat this to place more objects or press ENTER or ESC to quit....

9.13.9.3. Modifying the 3D model

There is no further command in the Toolbox or in the main menu related to the electrical accessories; you can work with them by using the markers or changing their properties.

Marker menu commands

In case of using a symbol for the 2D representation, a small node marker appears on a selected electrical accessory, by using the marker commands on it you can shift the symbol independent from the 3D model.



Shift Symbol

You can move the symbol independent from the 3D model.

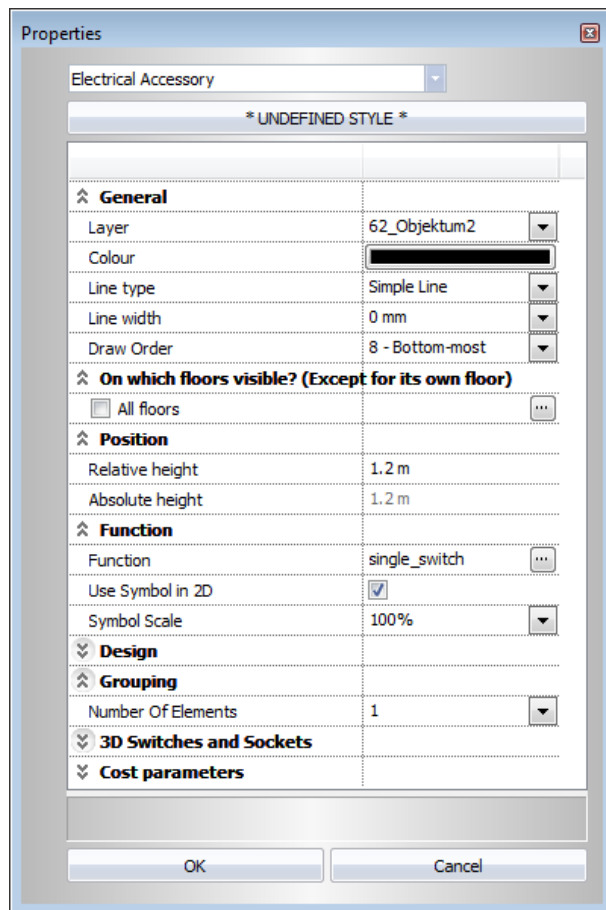
Rotate Symbol

You can rotate the symbol independent from the 3D model.

Reset Symbol

You can reset the symbol to its original position.

9.13.9.4. Settings



Position

Relative Height

Elevation from the floor level.

Absolute height

Elevation including the floor level.

On which floors visible? (Except for its own floor)

All floors

Use this option if you would like to see the switch at all levels of the building. Furthermore, you can select floors where the switch should appear.

Function**Function**

The name of the 2D symbol.

Use Symbol in 2D

If selected, the electrical accessory is represented by a 2D symbol, otherwise by a simple rectangle with real dimensions.

Symbol Scale

You can rescale the 2D symbol by this value.

Design**Shape**

The outer profile of the electrical accessory.

Material

The material of the electrical accessory. If '3D Switches and Sockets' are enabled, this material is applied to the border.

Width

The whole width of the electrical accessory.

Height

The whole height of the electrical accessory.

Thickness

The thickness of the electrical accessory. If '3D Switches and Sockets' are enabled, it is applied to the border.

Grouping**Number of Objects**

Number of switches or sockets in a single frame.

Same Functions

If enabled, all the switches or sockets in a single frame have the same function and will be represented by the same symbol.

Direction

Describes whether the switches or sockets will be placed side by side or one above the other.

Offset

The distance between the midpoints of two switches or sockets in a single frame.

Symbol Offset in 2D

The distance between the insertion points of two symbols on the floor plan.

3D Switches and Sockets**Enabled**

If enabled, 3D switches or sockets appear in the frame; otherwise the whole electrical accessory will be represented as a single shape described in the 'Design' part.

Shape by Function

If enabled, the profile of which name equals to the 2D symbol name is automatically used as the shape of the 3D switch or socket.

Shape

The profile which is used as the shape of the 3D switch or socket.

Material

Material of the 3D switch or socket.

Width

Width of the 3D switch or socket.

Height

Height of the 3D switch or socket.

Thickness

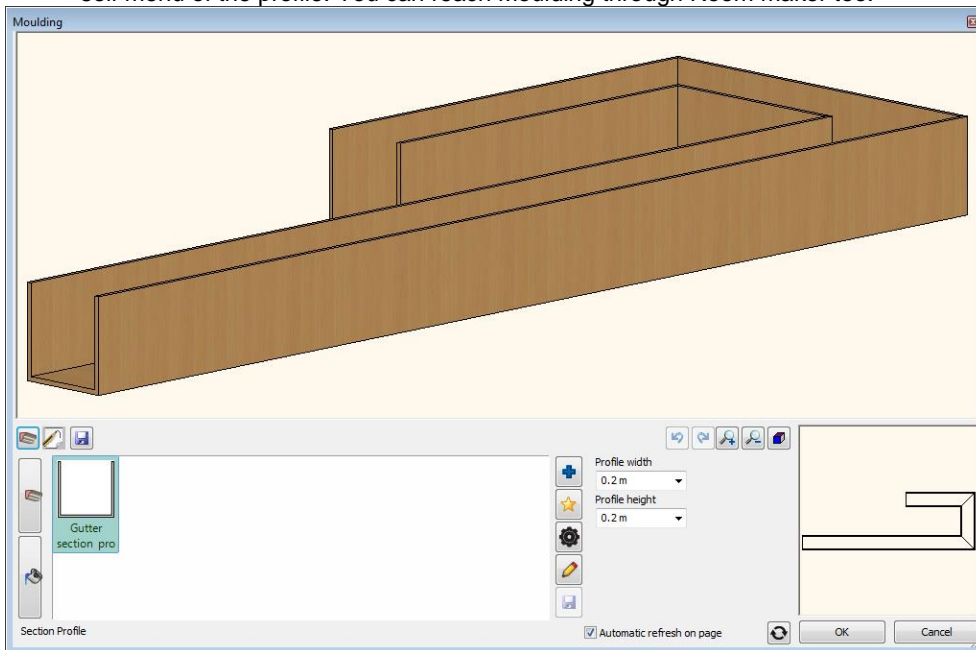
Thickness of the 3D switch or socket.

Border Gap

Space between the border and the 3D switch or socket.

9.13.10. Moulding

With the help of the program we can place profiles as well. You can change the properties of the profile as well from the self menu of the profile. You can reach Moulding through Room maker too.



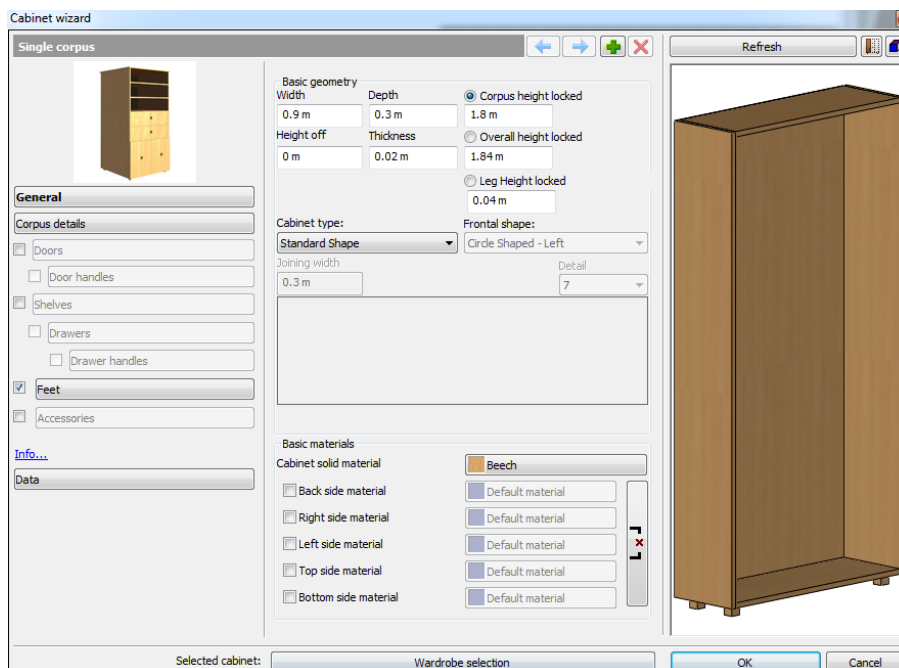
See description in 9.13.2.7. *Room maker – Profiles panel* chapter. Cabinet Wizard

Using the cabinet wizard you can design complex cabinets for kitchen or living room or for other purpose in a few steps. This tool is designed to offer simple and easy to use options to create a new cabinet. It is possible only by setting the main properties such as the Shelves, Doors, Legs, Drawers, and Handles, Materials (even photos of the original door), additional object Accessories and Data tool to build up the cabinet.

9.14. Furniture design

9.14.1. Cabinet wizard

The wizard helps you creating wardrobe, add and remove corpus to it and you can load or save the model in ARCHLine.XP library.



9.14.1.1. Corpus section

The corpus section allows you manage more wardrobe corpus one by one.



Add corpus button

Use the add corpus button on the corpus pane to add a new corpus.

Remove corpus button

Use the remove corpus button to remove the active corpus. The last corpus cannot be removed as there should at least one remain.

Navigation arrows

Use left and right navigation buttons to switch to the next corpus to edit it or just to see its properties.

9.14.1.2. General page

The cabinet box is defined by its width, depth and height. The box-like component is fitted with drawers, shelves, legs, doors in cabinet construction.

The structure of cabinet wizard enables to define various types of enclosed furniture such as desks, bookcases, sideboards, etc.

Height definitions

The Cabinet wizard tool allows you to define the box overall height as the sum of the corpus height plus the leg height. You can lock one of them and you can modify the other two height values freely.

Cabinet types

The Cabinet wizard tool let you choose among four kind of structures:

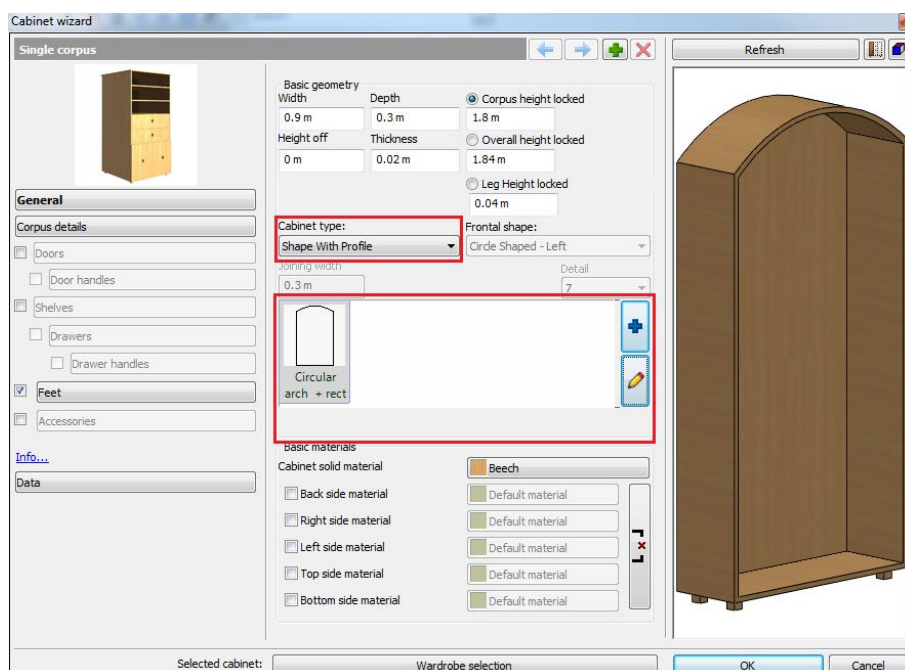
- ❖ Standard Shape
- ❖ Shape with Profile
- ❖ Curved Shape
- ❖ Corner Wardrobe

Standard shaped cabinet

By setting standard shaped cabinet front you can design regular box shaped cabinets

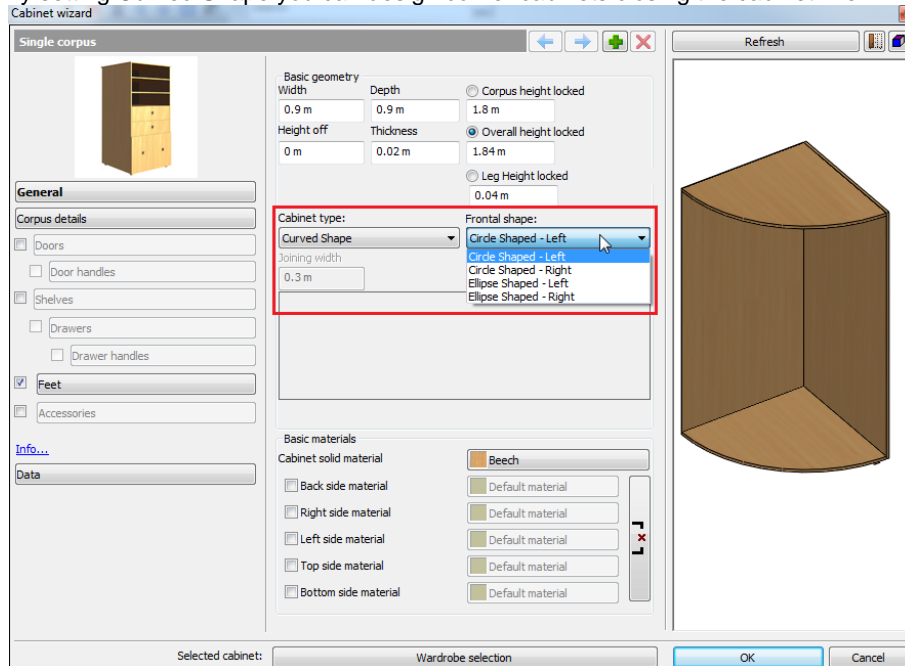
Shape with Profile cabinet

By setting shape with profile you can design irregular shaped cabinet fronts by selecting a frontal profile for them. Click on the Favourites list to select a frontal profile from the profile libraries. You can add a new profile to the Favourites list with the blue plus button and you can delete a profile from the list with the keyboard Delete button.



Arch-shaped cabinets

By setting Curved Shape you can design corner cabinets closing the cabinet line.

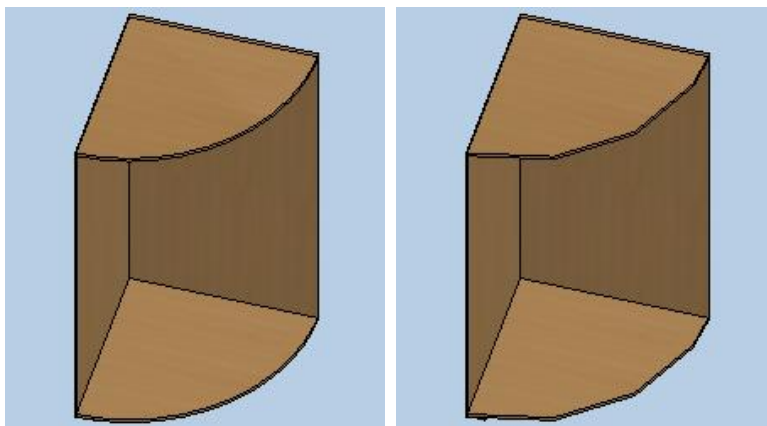


Frontal shape

You can select four different options to round-off one side of the current cabinet object. There are two options to create a circle shaped side and two to create an ellipse shaped one.

Detail

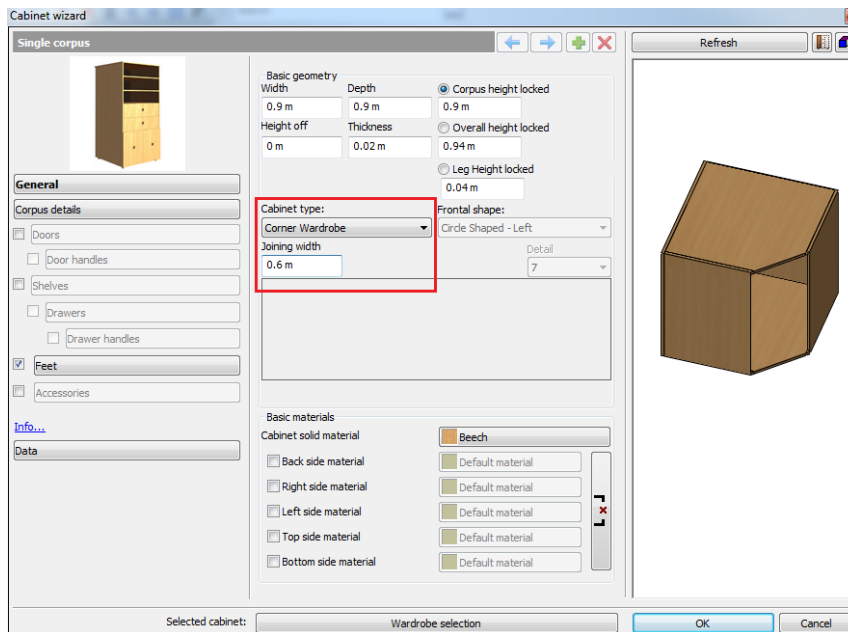
You can set the resolution of the curved side of the cabinet by changing the Detail level. Higher values result in a smoother curve, while lower values will create a rough approximation to a curve.



Corner cabinets

By using the Cabinet wizard you can create corner cabinets.

Change the Cabinet type to Corner Wardrobe.



Joining width

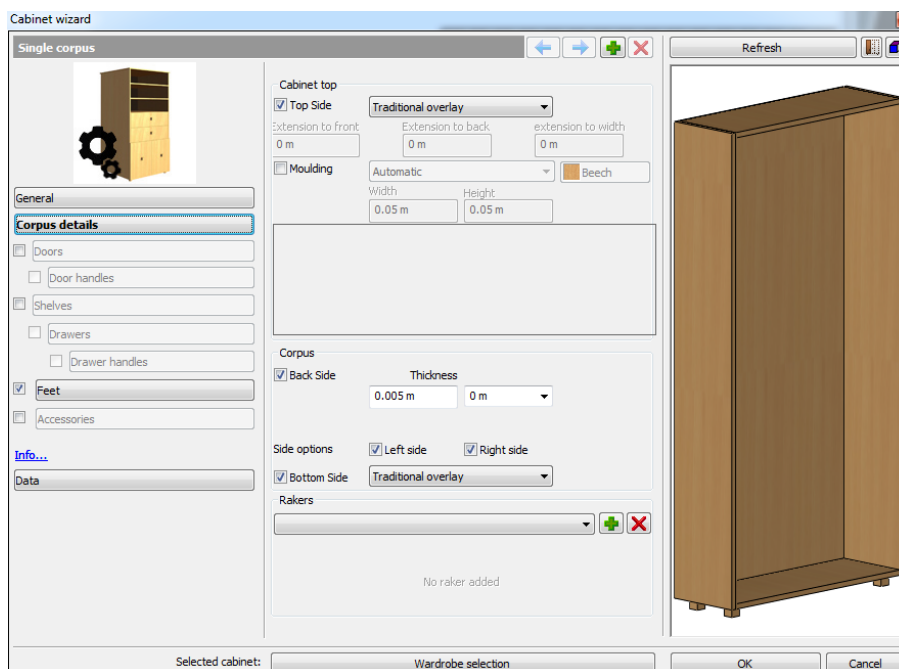
By defining the Joining width value you can set the size of the side panel of the corner cabinet on which it is connected to other objects of the cabinet series.

Materials

In the General section you can assign materials to the following parts:

Cabinet solid material (general)
 Back Side Material
 Right Side Material
 Left Side Material
 Top Side Material
 Bottom Side Material

9.14.1.3. Corpus Details page



The cabinet box is mostly made from plywood or particle board and you can define its thickness in the Thickness field. Typical cabinet box thickness varies from 3/8 inch (9.5 mm) to 3/4 inch (19 mm). You can define separately the thickness for cabinet backs.

Extension

The Cabinet top Extension to front, Extension to back and Extension to width value lets you extend the top panel over the cabinet box.

Cabinet top

☒ Top Side

Full overlay

Extension to front

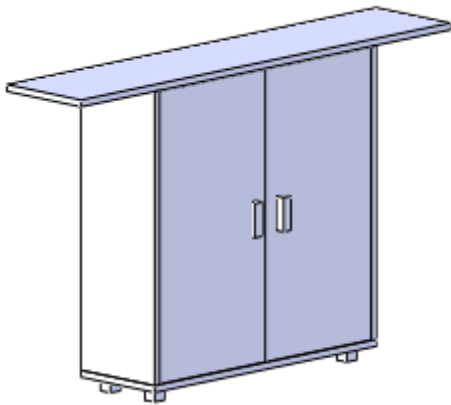
0.15 m

Extension to back

0.2 m

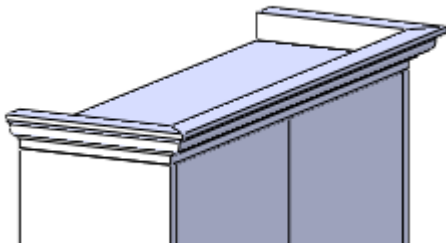
extension to width

0.5 m



Crown moulding

Crown moulding is an attractive detail to the cabinet box top edge. You can choose here Profile from the profile library or you can design your own profile and select it later. The **Crown moulding width** and **height** defines the enclosing box of the profile as cross section.



Cabinets may be either face-frame or frameless in construction. You can set it with the Has top face, Has bottom face and Has back face checkboxes.

Back face connection

In the Cabinet wizard you can change the connection between the back face and the side panels of a cabinet. This option can be found on the Corpus details page in the Corpus section.

Cabinet wizard

Single corpus

General

Corpus Details

Doors

Shelves

Drawers

Feet

Accessories

Info...

Data

Cabinet Top

☒ Top Side

Full overlay

Top Extension To

Top Extension To

Top extension to

☒ Moulding

Automatic

Width

0.05 m

Height

0.05 m

Select Profile

Corpus

☒ Back Side

Thickness

0.005 m

0

Back Side Material

Side panels:

Both sides

☒ Bottom Side

Full overlay

Rakers

No raker added

Refresh

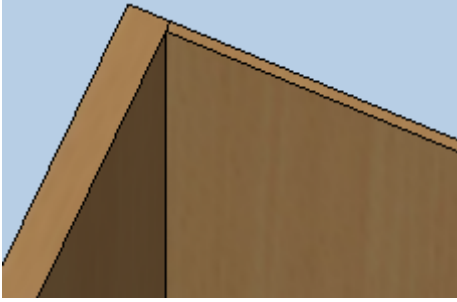
Selected cabinet:

Default Wardrobe

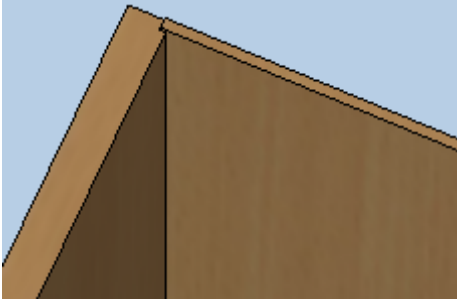
OK

Cancel

If you set the option to "0" that means a default connection between the panels and the back face, when the side edge of the back face is perfectly aligned to the inner side of the side panels.



If you change this option, using a different value the back panel will be cut into the side panel.

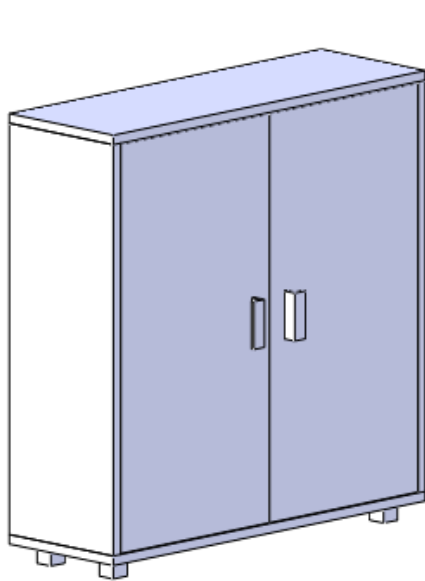


Cabinet wizard allows you to choose between two cabinet box mounting options.

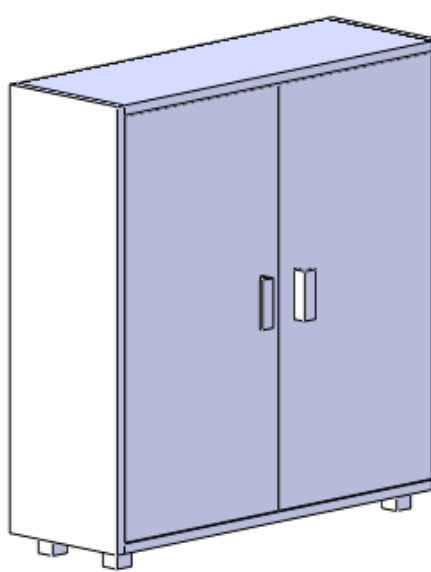
Full overlay means the side face is enclosed by top and bottom frame.

Traditional overlay means the top and bottom face is enclosed by side frame.

Full overlay

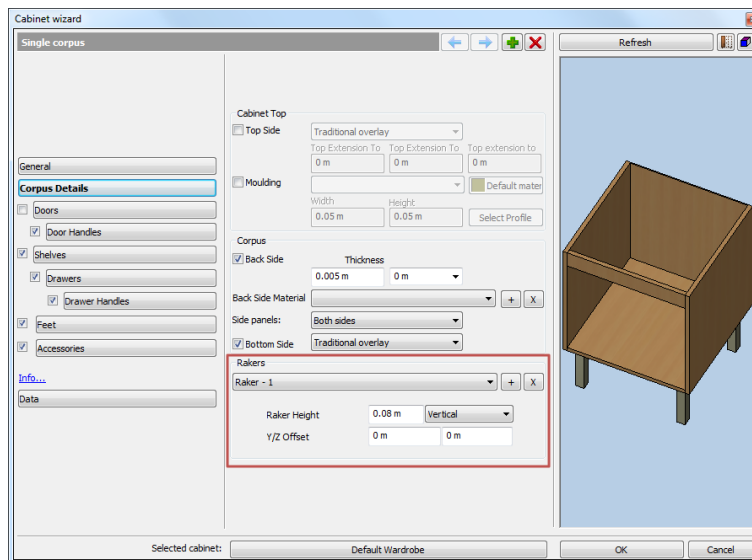


Traditional overlay



Raker

You can add rakers to a cabinet on the Corpus details page of the Cabinet wizard. These structural parts of the cabinet can be set individually in the Rakers section.



Add/remove raker

Click on the Add/Remove raker buttons to add or remove a raker to the current cabinet. The raker list shows the list of the actual rakers added to the cabinet. When you select a raker from the list, you can see and edit the properties of it.

Raker height

One size of the raker can be changed by the raker height value.

Raker orientation

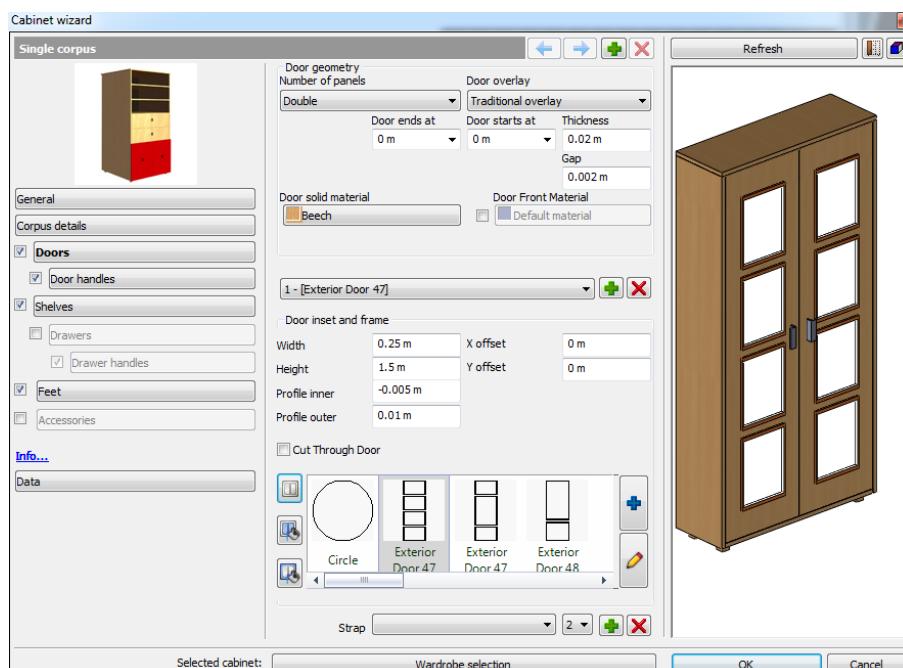
The raker can be horizontal or vertical, based on the selection from the Orientation options.

X and Z Offset

You can shift the selected raker to two directions by changing the X/Z Offset values. The default position of a raker is the origin when it is aligned to the frontal face of the cabinet.

By changing the first value, you can move the raker to front or back. By changing the second value, you can elevate or lower the raker.

9.14.1.4. Doors page




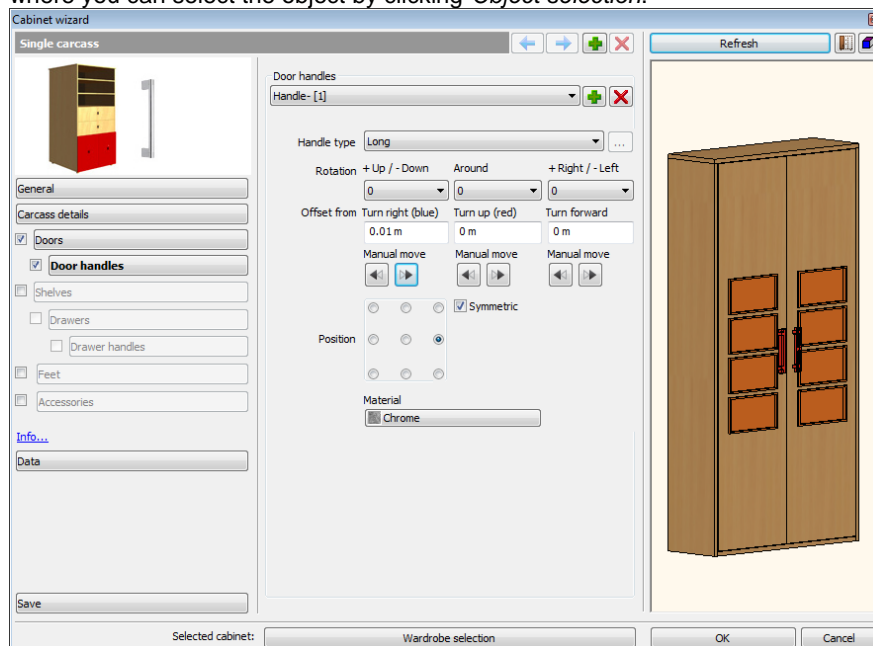
Door properties are:

- Has door checkbox allows to add door
- Side Count can be: Single, Double, 3 and 4 sided
- Door overlay can be: Full or Traditional overlay
- Gap defines the gap between the door and the cabinet frame
- Door starts at height: door top elevation
- Door ends at height: door bottom elevation as height or shelf number
- Thickness: door thickness
- Inset definition: profile, enclosing box, offset, thickness, materials
- Handle: Type, Rotation, Offset, and Alignment

9.14.1.5. Door handles page

With the help of the Door handles button you can place handles onto the doors. You can choose from Round, KLIP, Long, Sphere and Custom.

Select Custom if you would like to create a special item then click Browse . The Insert Object window appears, where you can select the object by clicking *Object selection*.



Rotation around X/Y/Z Axis

You can rotate the selected handle by changing the values of the Rotation around X/Y/Z Axis. The default is 0, 0, 0 and the unit is degrees. Select the desired angle to rotate the handle by a specific angle.

X/Y/Z Offset

The X/Y/Z Offset values of the door Handle properties let you to define a free offset of the selected handles in every direction. The left bottom alignment point is the origin (0,0,0). The three values are the X, Y, and Z directions.

Position

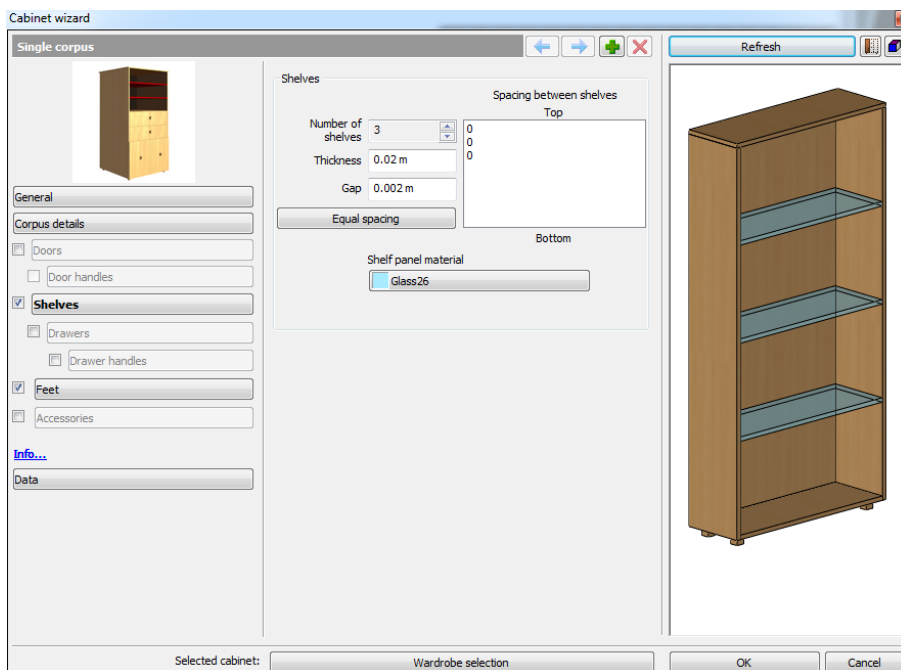
You can determine the location of handles on the doors.

Material

You can choose or modify the material of the handle.

9.14.1.6. Shelves page

Click on the Shelves button in the Wardrobe wizard to enable shelves and set the settings of them.



Number of shelves

Use the spin buttons or enter a value to set the number of shelves.

Thickness

You can set the thickness of a shelf board here.

Gap

Set the gap between the door panel plane and the edge of the shelves.

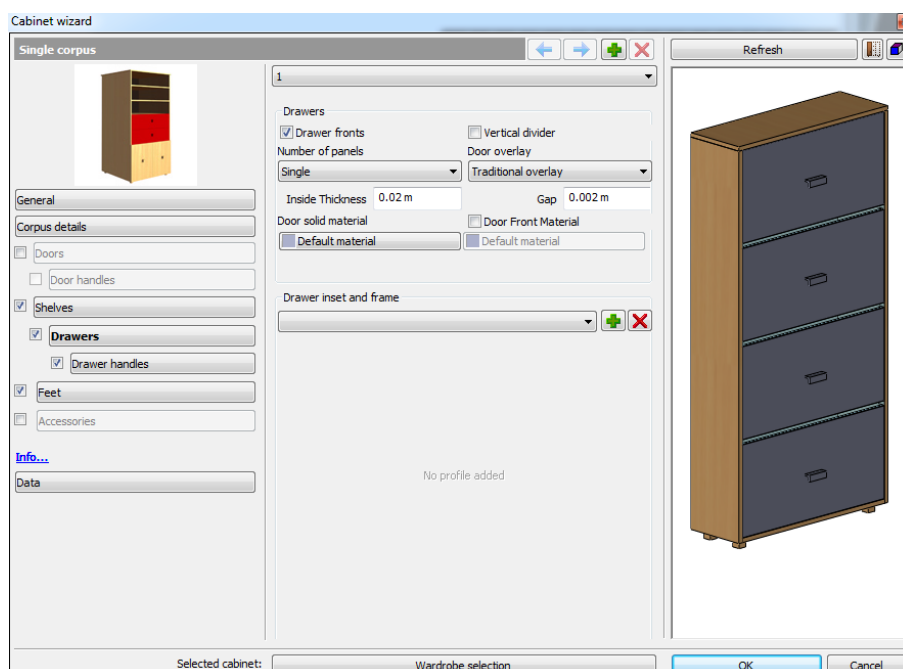
Spacing between shelves

Set the spacing between shelves by changing the value here. Double click on the value to change it. The first reference plane is the top of the corpus. If there is more than one shelf then the 2nd and other shelves' positions are measured from the bottom plane of the previous ones.

Equal spacing

Press equal spacing to set it to all the actually existing shelves.

9.14.1.7. Drawers page

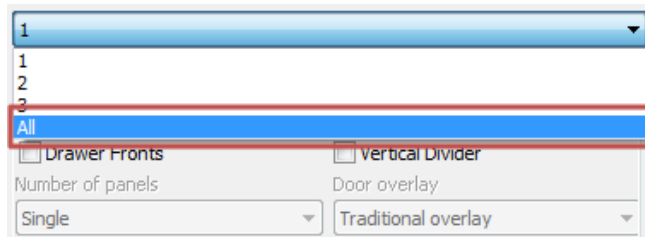


Drawer properties are:

- Vertical divider
- Number of panels
- Door Overlay
- Gap
- Inside Thickness
- Door Front Material
- Door Solid Material
- Inset definition: profile, Cut Through Inset width/height, offset, thickness, materials

Modify all drawers

There is a convenient option in the drawer list of the Cabinet wizard. By using the All option, you can set the same properties for all of the drawers in the current cabinet.



How to use

To set the properties of multiple drawers at a time go to the Drawers page of the Cabinet wizard and from the drawers list select "All".

Set the properties according to your needs.


Click Refresh to see the results.

When you would like to make changes to individual drawers one-by-one, please just select the number of the drawer and make the changes as you wish.

Handle: Type, Rotation, Offset, and Alignment

9.14.1.8. Drawer handles page

With the help of the Drawer handles button you can place handles onto the drawers. You can choose from Round, KLIP, Long, Sphere and Custom.

Select Custom if you would like to create a special item then click Browse . The Insert Object window appears, where you can select the object by clicking *Object selection*.

Rotation around X/Y/Z Axis

You can rotate the selected handle by changing the values of the Rotation around X/Y/Z Axis. The default is 0, 0, 0 and the unit is degrees. Select the desired angle to rotate the handle by a specific angle.

X/Y/Z Offset

The X/Y/Z Offset values of the drawer handle properties let you to define a free offset of the selected handles in every direction. The left bottom alignment point is the origin (0,0,0). The three values are the X, Y, and Z directions.

Position

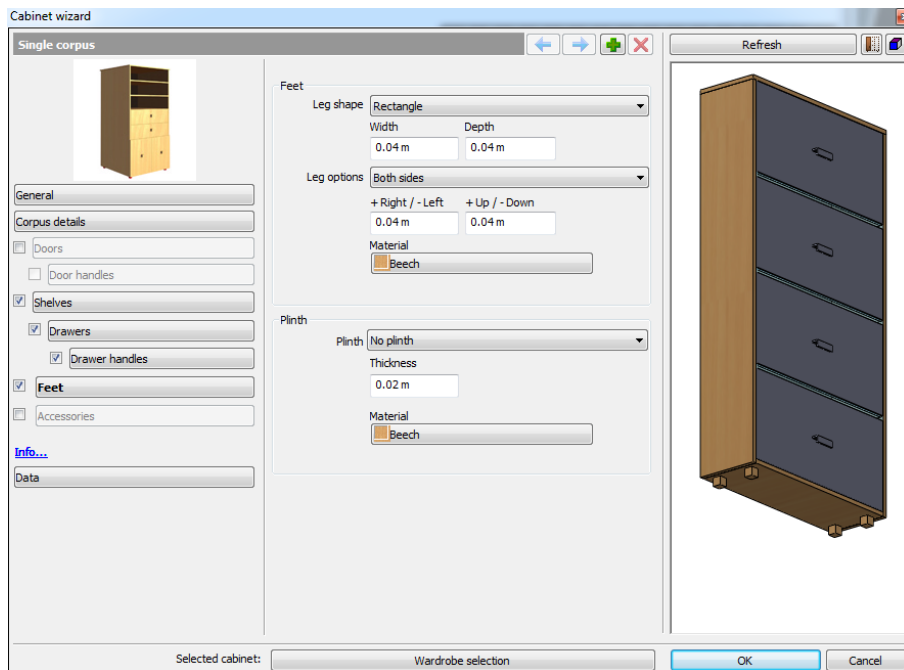
You can determine the location of handles on the drawers.

Material

You can choose or modify the material of the handle.

9.14.1.9. Legs page

Click on the Legs button in the Wardrobe wizard to set legs.



Legs

This option enables / disables the legs of the wardrobe.

Width

You can set the width of the legs here.

Depth

You can set the depth of the legs here.

Height

You can set the height of the legs here.

X Offset

You can set the offset measured from the two side edges of the active corpus.

Y Offset

You can set the offset measured from the front and back edges of the active corpus.

Plank thickness

You can set the thickness of the plank, if it is enabled.

Shape

You can set the shape of the legs. The following options you can choose:

- ❖ Rectangle
- ❖ Circle

Plank

You can set plank by selecting an option here. The following options you can choose:

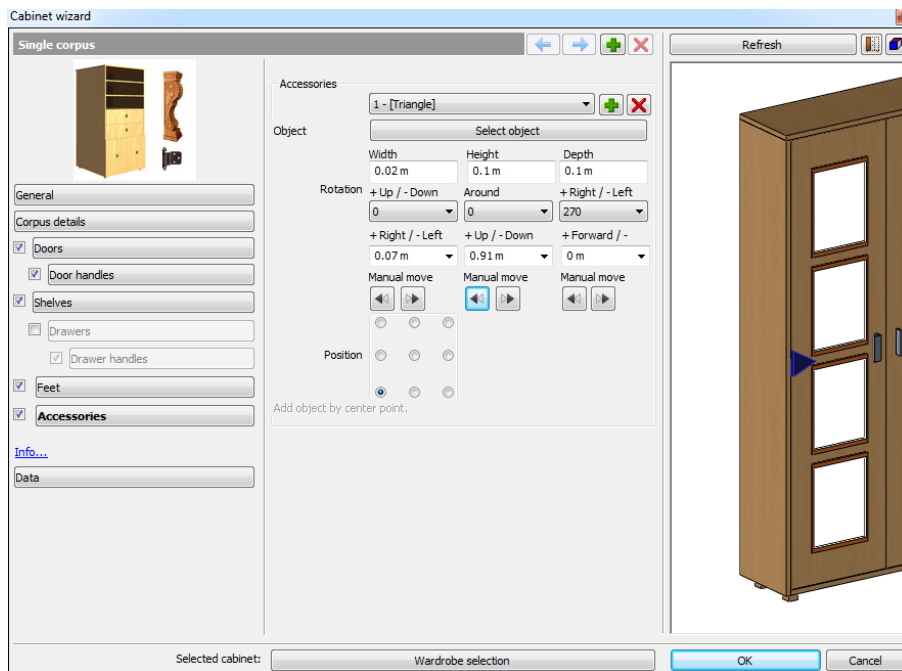
- ❖ No Plank
- ❖ Front Plank
- ❖ Front and Right Plank
- ❖ Front and Left Plank
- ❖ U-Shaped Plank.

Leg Options

When legs are enabled, you can set the pattern of legs here. The following options you can choose:

- ❖ Both sides
- ❖ Left side
- ❖ Right side.

9.14.1.10. Accessories page



List of accessories

The list of accessories has all of the items which have been added to the furniture. Choose one from the list for the modification. If you don't have any added items, the list is inactive. When you add an item, it will appear in the list with the next number and with the name of the object.

X/Y/Z Offset

The X/Y/Z Offset values of the drawer handle properties let you to define a free offset of the selected handles in every direction. The left bottom alignment point is the origin (0,0,0). The three values are the X, Y, and Z directions.

Rotation around X/Y/Z Axis

You can rotate the selected accessory by changing the values of the Rotation around X/Y/Z Axis. The default is 0, 0, 0 and the unit is degrees. Select the desired angle to rotate the accessory by a specific angle.

Position

You can determine the location of handles on the drawers.

Object – Select object

By clicking the Select object button the Insert Object window appears, where you can select the object by clicking *Object selection*.

Add an object

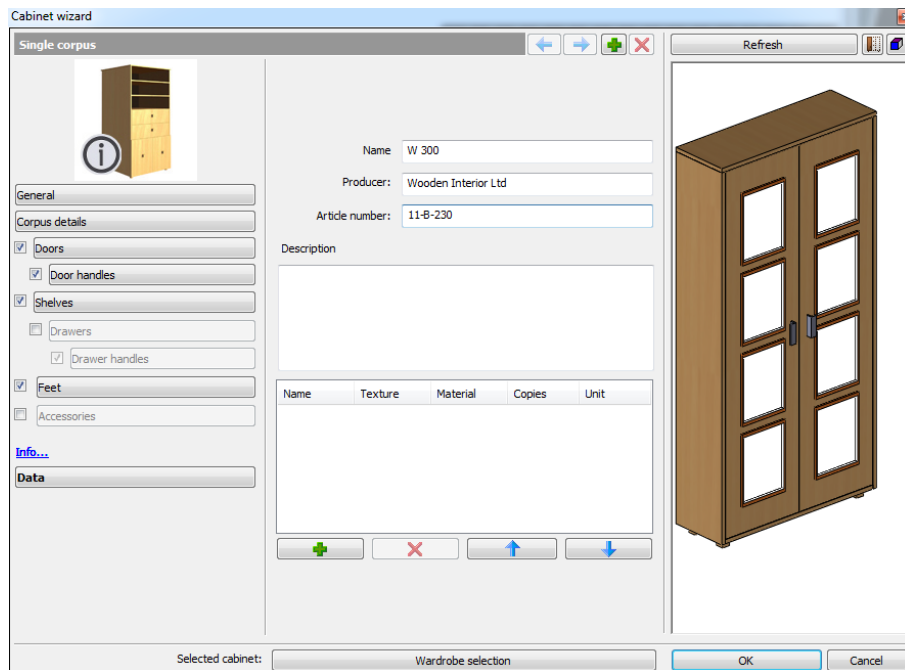
Click the Add button for a new accessory. Then you can select the new item with the Select object button. The name and the number of the added object will appear in the List of accessories, where you can switch between the other, previously added items, if you would like to modify or delete them.

Delete

Select an accessory in the List of accessories and click on the Delete button. *Please note: you can't withdraw this action.* If you accidentally remove an item, you will need to enter it again.

9.14.1.11. Data page

Click on the Data button in the Wardrobe wizard to type additional data for the wardrobe.



Name field

Type the name of the wardrobe.

Producer field

Type the name of the manufacturer of the wardrobe.

Article number field

Type the article number of the wardrobe.

Description field

Type or paste the additional description of the designed furniture.

9.14.1.12. Preview panel

On the right side of the Cabinet wizard dialog you can find the 3D preview panel. Use this panel and its controllers to examine the changes during the design process in the wizard.

Refresh button

On the top of the 3D preview panel you can find the Refresh button. This can be used to refresh the 3D preview content after changing values in the Cabinet Wizard. When you press the Refresh button, the software will update the door preview by using the current values.

View mode button

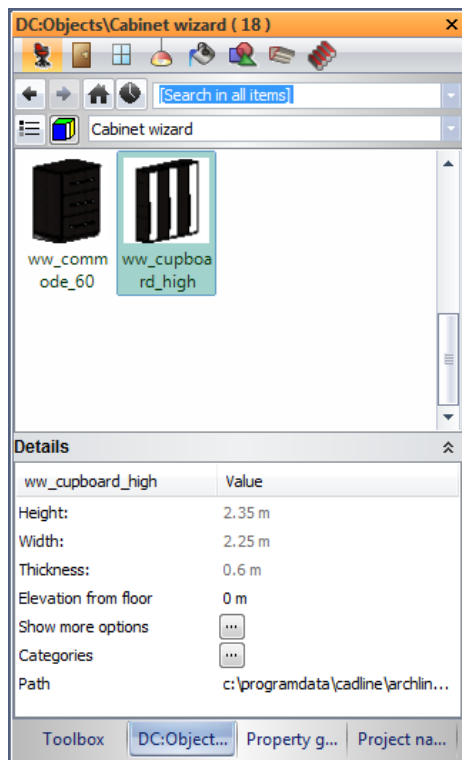
The View mode button can be used to switch between Wireframe, Hidden lines and textured views. Click on the button to switch to the next view. When you reach the last view, click on it again to set the first visual style again. On slower machines, this button can be used to turn off the 3D preview also, by setting the "X" state on it.

3D Preview area

The 3D preview area is the largest part of the 3D preview panel on the Cabinet wizard dialog. Click and hold your left mouse button and move your mouse to rotate the preview content. Use the scroll-wheel of the mouse to zoom in or out and pan the 3D preview content.

9.14.1.13. Edit wardrobe

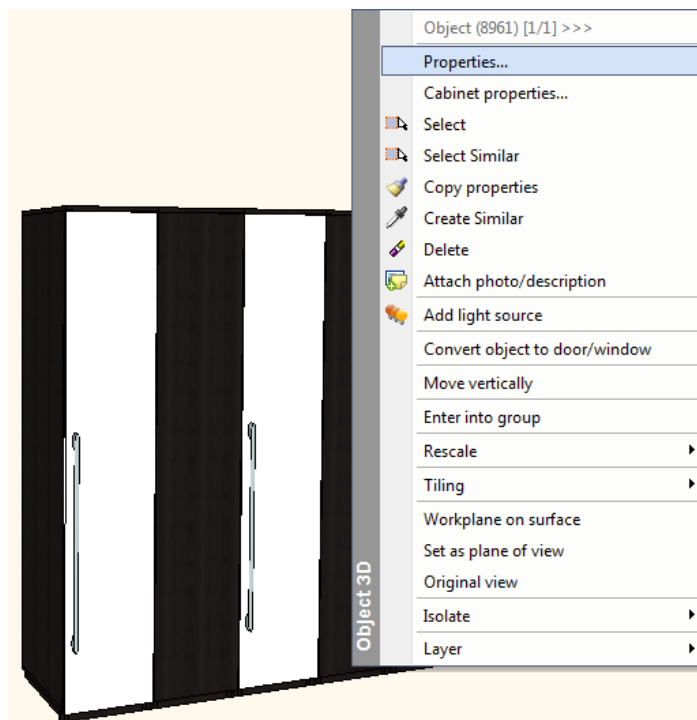
When you place a wardrobe designed in the wardrobe wizard, it will be automatically saved as an object. Later you can find it in the Design Center.



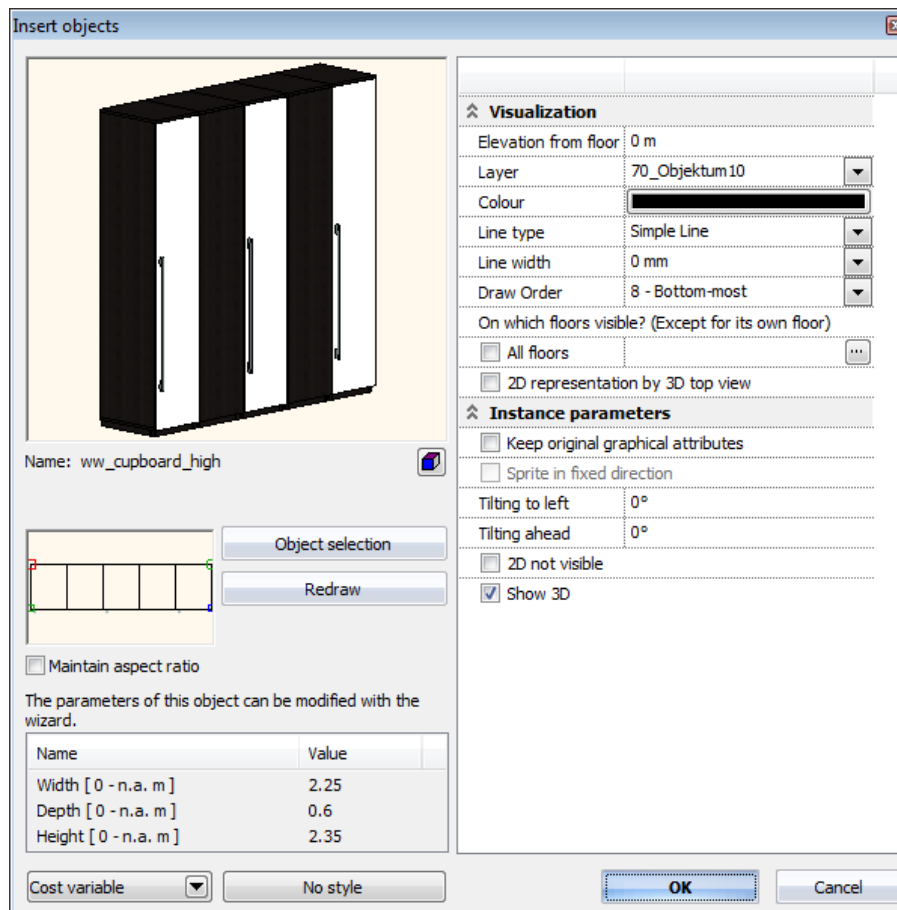
You can handle a wardrobe created by the wardrobe wizard in two ways. One is to handle it as a general object. In that case you can access its main properties.

Edit as general object

Choose Properties... in the pop menu of the object on 2D or in 3D.

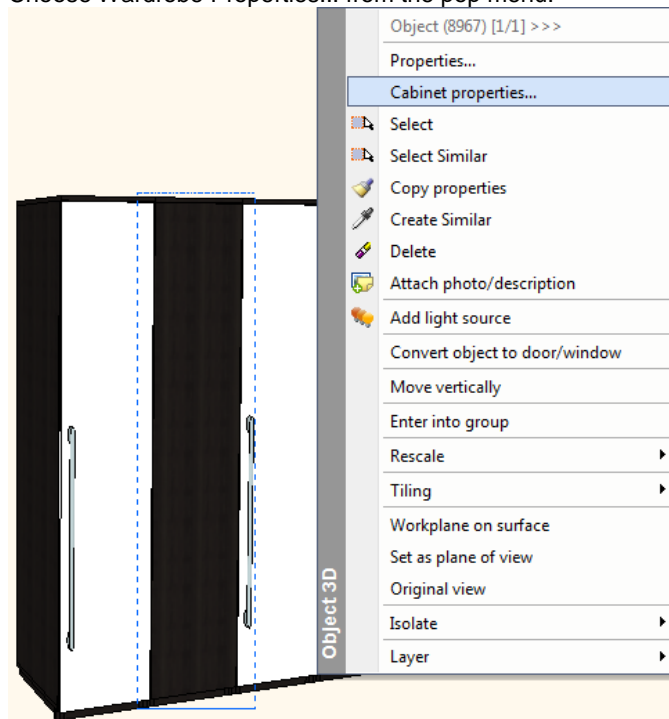


The general Object Properties window will open.

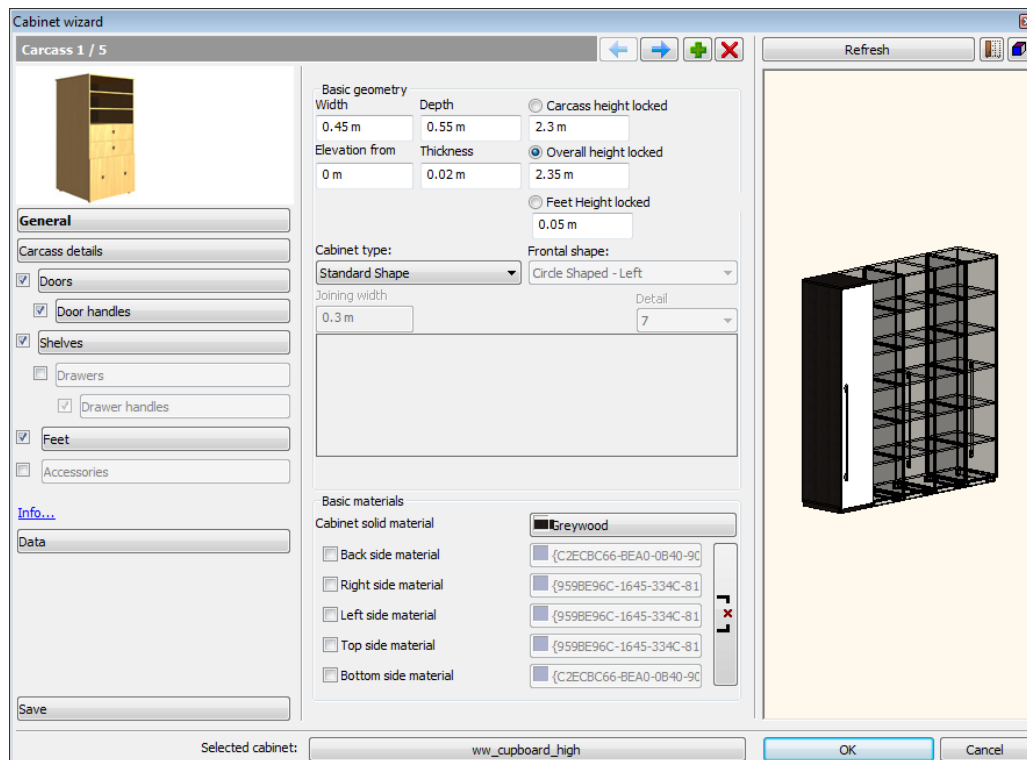


Edit as wardrobe

Choose Wardrobe Properties... from the pop menu.

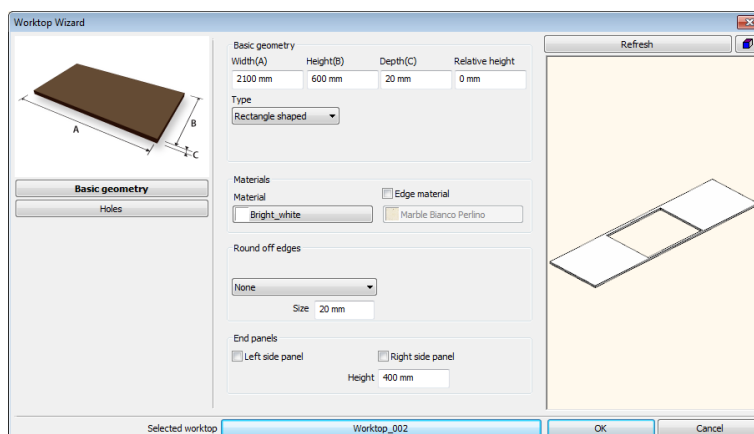


The Wardrobe wizard will open with the settings of the selected wardrobe. You can overwrite the previous settings or create a new version of the already existing object.



9.14.2. Worktop

Using the Worktop tool, you can quickly design a worktop object on top of one or multiple cabinets. The worktop tool will let you customize detailed settings and to add or remove worktop holes using the same easy-to-understand dialog window.



How to use it?

To use the Worktop tool, follow these steps:

- ❖ Click on the Worktop tool. The Worktop properties dialog will appear.
- ❖ Set the settings you wish, and click OK to accept the changes and close the dialog.
- ❖ Save the new worktop using a unique name and set the category you wish to save it into.
- ❖ Place the worktop on your drawing.

Worktop properties

When you create a new worktop or change an existing one, you can use the Worktop properties dialog. This dialog is separated into 4 main parts.

The Worktop properties dialog window has the following pages: Basic geometry and Holes. Click on these buttons to change see their details.

9.14.2.1. Basic geometry

The Basic geometry section of the basic geometry page allows you to see and change the basic geometry details for the worktop.

Width

You can set the width of the worktop object.

Depth

You can set the depth of the worktop object.

Thickness

You can set the thickness of the worktop object.

Relative height

You can set the relative position of the worktop object in the 3D space measured from the zero level of the actual floor.

Type

The type of the worktop defines the shape of the worktop. You have the following options to choose from:

- ❖ Rectangle shaped
- ❖ Trim left
- ❖ Trim right
- ❖ Trim both

Description

The description field allows you to manually add extra data to the worktop, which can be visualized in lists later.

Materials

You can change the worktop and the worktop edge material.

Material

By default when changing the first material, all surfaces of the worktop will be changed.

Edge material

You need to enable the Edge material option to define material especially for the edges.

Edges

The edges section of the basic geometry in the Worktop properties allows you to set the edge round-off.

Round-off edges option

This option enables the additional round off profile to the edges of the worktop. Enable this option and choose the position of round-off from the Round-off edges list.

Round-off edges list

There are several options to choose from, when you would like to set the placement of the edge round-off for a worktop. This can be selected in the Round-off edges list.

Size

The round-off profile size can be changed by typing the desired value here.

End panels

End panels can be defined for a worktop in the End panels section.

Left side panel option

By enabling this option you can turn on the vertical left side panel for a worktop.

Right side panel option

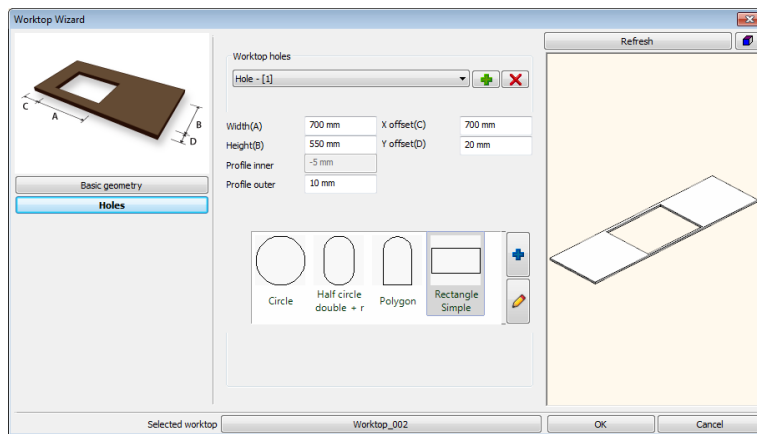
By enabling this option you can turn on the vertical left side panel for a worktop.

Height

The height option allows you to change the height of the side panels if they are enabled for a worktop.

9.14.2.2. Holes

You can add, remove and displace holes into the worktops.



List of current worktop holes

The list of current worktop holes is a drop-down list. It allows you to browse through, view or modify existing holes.

Add hole

Click on the Add Hole icon to add a new hole into the current worktop.

Remove hole

When you click on the Remove hole button the software will automatically remove the currently selected one.

X and Y size

You can change the size of the current hole by changing the X and Y size values.

X and Y Offset

The offset of a worktop hole is 0 by default. This means that the hole is at the left bottom corner of the worktop. Change the X and Y offset values to displace the hole into the worktop.

Hole profile list

In the hole profile list you can select a top view profile of the current worktop hole.

Browse profile

Click on the browse profile button to browse another one from the profile libraries. The selected object will be automatically added to the list as a favourite.

Edit profile

Select a profile in the profile list and click on the Edit profile button to change its properties.

Selected worktop

The selected worktop button shows the name of the current worktop. When you make changes in a worktop and you click on the OK button of the Worktop wizard you will be prompted to save the changes. You can overwrite the current worktop or you can create a new one with a new name.

9.14.3. Cabinet legend

With the *Cabinet legend* menu commands detailed information can be gained in Excel (.xls or .xlsx) files about wardrobes created with *Cabinet wizard* function.

Cabinet legend menu listing commands are accessible

- ❖ in Architecture edition: Building menu – Furniture design – Cabinet legend
- ❖ in Interior edition: Furnishing menu – Furniture design – Cabinet legend

Two listing commands are available: *General itemlist* and *Workshop drawing*.

General itemlist

This command lists the quantities and properties of items of the selected wardrobes created by *Cabinet wizard*. All cabinets are listed on one worksheet.

- Start the command on the floor plan where cabinets can be selected.
- Select wardrobes created with *Cabinet wizard*.
- Specify the path and file name of Excel file.
- After saving, the file will open automatically.

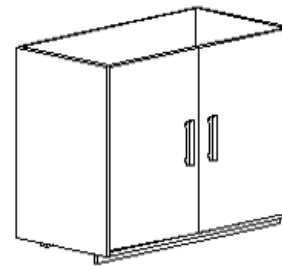
| | A | B | C | D | E | F | G | H | I | J |
|----|-----------------------------|----------|---------|--------|-------|--------|-----------|--------|----------|------|
| 1 | General item list | | | | | | | | | |
| 2 | Description | Material | Texture | Copies | Width | Height | Thickness | Edging | Quantity | Unit |
| 3 | Base cabinet - 1door | | | | | | | | | |
| 4 | Right Side | | zebrano | 1 | 600 | 840 | 20 | | 0.5 | m2 |
| 5 | Left Side | | zebrano | 1 | 600 | 840 | 20 | | 0.5 | m2 |
| 6 | Back Side | | zebrano | 1 | 600 | 840 | 5 | | 0.5 | m2 |
| 7 | Bottom Side | | Default | 1 | 560 | 595 | 20 | | 0.33 | m2 |
| 8 | Door | | zebrano | 1 | 556 | 816 | 20 | | 0.45 | m2 |
| 9 | Strap | | | 2 | | | | | | |
| 10 | Custom handle | | CHROME | 1 | | | | | | |
| 11 | Rectangle Shaped feet | | zebrano | 4 | 40 | 40 | 40 | | 0.01 | m2 |
| 12 | Front plinth | | zebrano | 1 | 600 | 40 | 20 | | 0.02 | m2 |

Workshop drawing

This command lists the main properties and items of the selected wardrobes created by *Cabinet wizard*. Each cabinet has a worksheet with its data and hidden line representation.

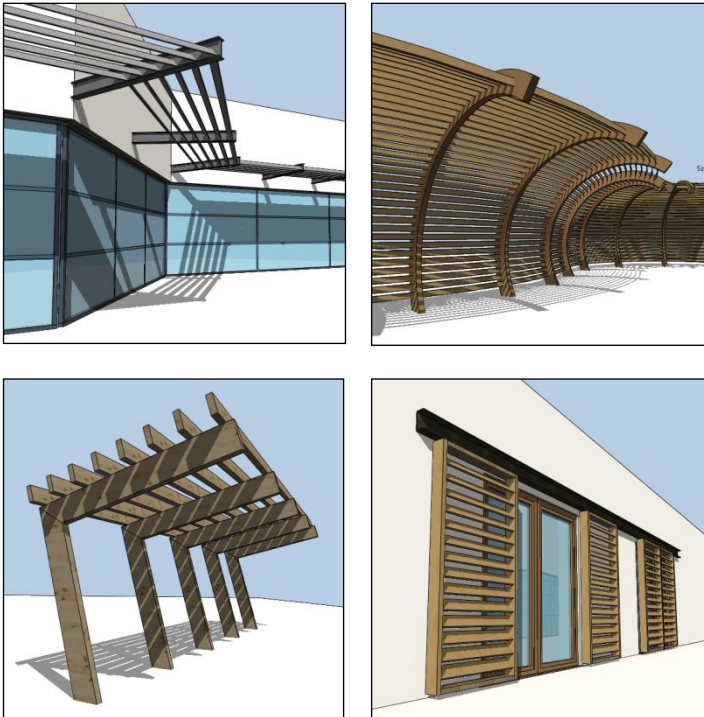
- Start the command on the floor plan where cabinets can be selected.
- Select wardrobes created with *Cabinet wizard*.
- Specify the path and file name of Excel file.
- After saving, the file will open automatically.

| | A | B | C | D | E | F | G | H |
|----|-------------------------------|----------|---|-----|---|---|---|---|
| 1 | Base cabinet - 2 doors | | | | | | | |
| 2 | Workshop drawings | | | | | | | |
| 3 | Width: | 1200 | | | | | | |
| 4 | Depth: | 600 | | | | | | |
| 5 | Height: | 860 | | | | | | |
| 6 | Volume: | 0.619 m3 | | | | | | |
| 7 | | | | | | | | |
| 8 | No material | 3.70 m2 | | | | | | |
| 9 | Right Side | 600 | x | 840 | | | | |
| 10 | Left Side | 600 | x | 840 | | | | |
| 11 | Back Side | 1200 | x | 840 | | | | |
| 12 | Bottom Side | 1160 | x | 595 | | | | |
| 13 | Door | 577 | x | 816 | | | | |
| 14 | Strap | 0 | x | 0 | | | | |
| 15 | Custom handle | 0 | x | 0 | | | | |
| 16 | Rectangle Shaped feet | 40 | x | 40 | | | | |
| 17 | Front plinth | 1200 | x | 40 | | | | |



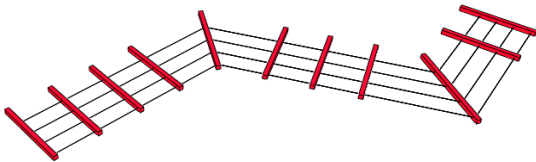
9.15. Outdoor Tools

9.15.1. External louvres

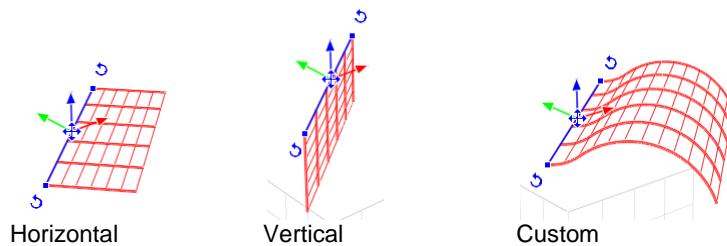


9.15.1.1. Working with external louvres

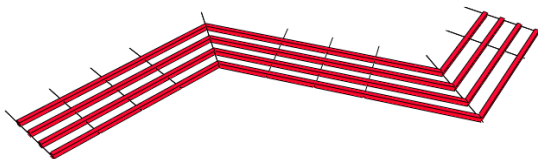
Frames



An external louvre is based on a profile drawn on a floor plan. Frames are structures perpendicular to the floor plan path. They can be horizontal, vertical or you can define a custom frame by selecting *Define custom frame* command from the Popup menu.



Louvres

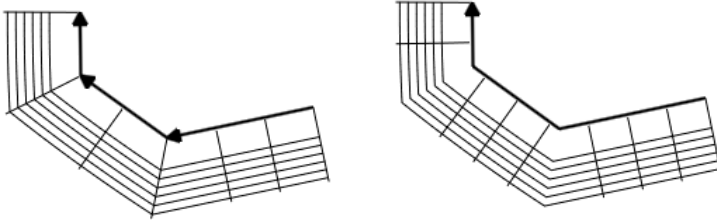


Louvres are structures parallel to the floor plan path. You can rotate them around their axis and use a different louvre type for the first and last position.



Distribution of frames and louvres

By setting the frame distribution you can enable or disable frames on path nodes:



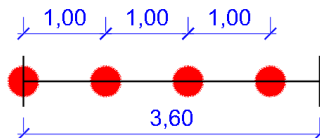
Frames on path nodes enabled

Frames on path nodes disabled

The main rules of frame and louvre distribution are the same. On a given distance you can distribute frames or louvres in three different ways:

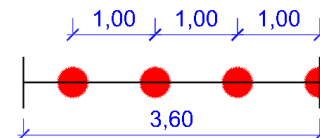
Align to start point

The exact spacing value (1.00) is used



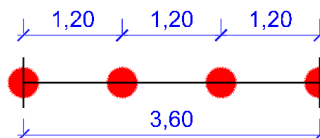
Align to end point

The exact spacing value (1.00) is used



Evenly distributed

The spacing value (1.00) is modified



9.15.1.2. Creating an External louvre

First set the default properties of the External louvre by selecting **Building / Properties / External louvre** in the Toolbox. You can place an External louvre by selecting **Building / Outdoor Tools / External louvre**. Draw an open profile by means of the *Profile definition* tools. While drawing the profile, you can mirror the structure to the path by selecting *Change offsets to the other side of the path* from the Toolbox.

Modifying the 3D model

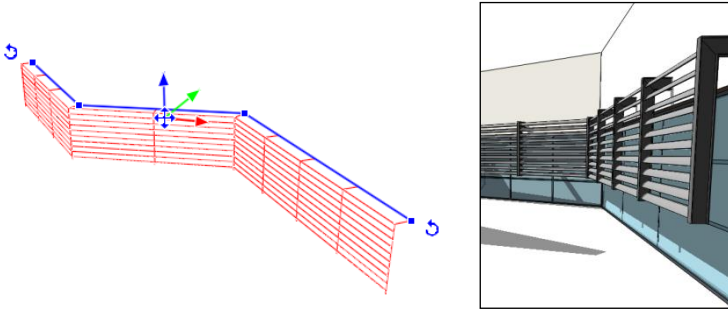
There is no further command in the Toolbox or in the main menu related to the External louvres; you can work with them using the Popup menu and the markers.

Popup menu commands

Define custom frame

To define a custom frame, first draw an open profile, and close the definition by pressing ENTER. Finally click on the insertion point of the profile (the frame will be aligned to the main path by this point)





This command is available only on the floor plan.

Marker menu commands

You can modify the floor plan path by using the following marker commands:

- ❖ Move Node
- ❖ Delete Node
- ❖ Insert Node
- ❖ Offset
- ❖ Turn Into Curved Edge
- ❖ Turn Into Straight Edge
- ❖ Change Arc
- ❖ Change Radius

9.15.1.3. Settings

Position

Relative Height

Elevation from the floor level.

Absolute Height

Elevation including the floor level.

Frame

Frame Type

Horizontal, vertical or custom. You can define a custom frame path by selecting the 'Define custom frame' command.

Frame Size

Length or height of the frame.

Section Profile

Section Profile of the frame.

Material

Material of the frame.

Frame Distribution

Spacing

Distance between frames.

Frames on Path Nodes

If enabled, frames will be placed on each nodes of the floor plan path, and other frames will be distributed among them.

Offset of First Frame

Distance between the beginning of the floor plan path and the first frame.

Offset of Last Frame

Distance between the end of the floor plan path and the last frame.

Distribution Mode

You can align the sequence of frames to the first point or to the endpoint of the floor plan path, or distribute the frames evenly from the first point to the endpoint by changing the spacing value.

Louvres

Section Profile

Section profile of the louvres.

Rotation

Rotation of the louvres.

Material

Material of the louvres.

Different First and Last Lamella

If enabled, first and last louvres can have a different profile and material.

Section Profile

Section profile of the first and last louvres.

Rotation

Rotation of the first and last louvres.

Material

Material of the first and last louvres.

Distribution of Louvres

Spacing

Distance between louvres.

Offset of First Louvre

Distance between the beginning of the frame and the first louvre.

Offset of Last Louvre

Distance between the end of the frame and the last louvre.

Distribution Mode

You can align the sequence of louvres to the first point or to the endpoint of the frame, or distribute the louvres evenly from the first point to the endpoint by changing the spacing value.

Overhang at the First Frame

Distance between the start point of the louvre and the first frame.

Overhang at the Last Frame

Distance between the endpoint of the louvre and the last frame.

9.16. Light Sources

ARCHLine.XP® facilitates the creation and use of the light sources. You can attach a light source to any object. You can edit the properties of light sources and modify their positions in the 3D space. Light manager provides an easy way to manage light sources.

9.16.1. Light Source Types

You can choose between 5 different light source types.



Point



Spot



Line



Polyline



Area

Different light sources are based on different characteristics and have different properties. The type of the light source determines its look on the rendered images.

❖ Point

Point lights do not have any direction; they emit rays from their position in all directions uniformly. You can model for example light bulbs by means of this light source type.

❖ Spot

Spot lights have a well-defined direction. Its typical light cone is based on the light limit and fall-off limit. In the cone defined by the light limit angle the light effects with full intensity. From the border of the light limit cone the intensity of decreases and reaches zero at the border of the cone defined by the fall-off angle. You can use it typically to model spot lamps and reflectors.

❖ Line

Line light sources emit light from a straight line in the 3D space. You can model for example fluorescent lamps by means of this light source type.

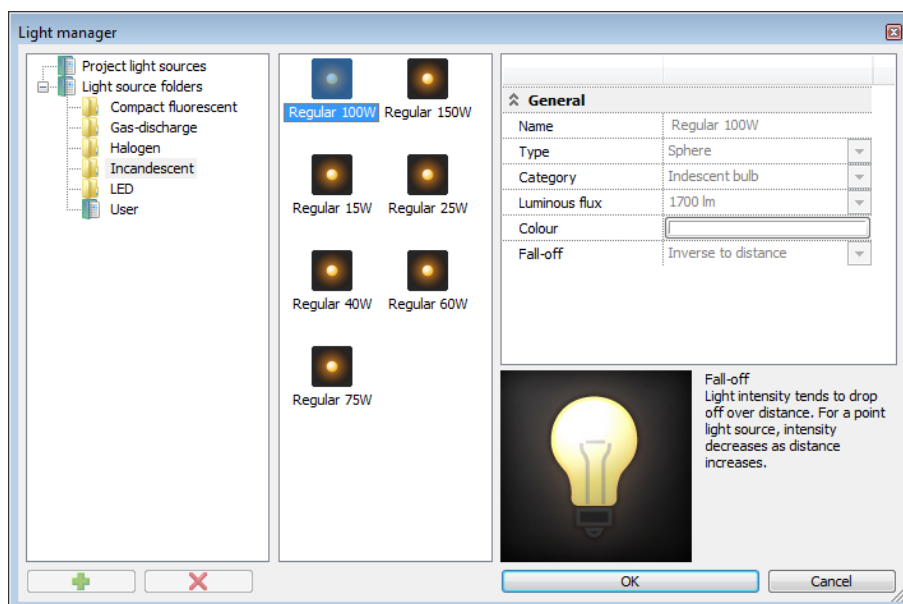
❖ Polyline

Polyline light source practically equals to a chain of line light sources. You can use it typically to model neon signs or hidden lights in suspended ceilings.

❖ Area

Area lights emit light from a surface in the space uniformly. You can model for example office lamps with more fluorescent tubes or surfaces lit with a colour by means of this light source type.

9.16.2. Light browser

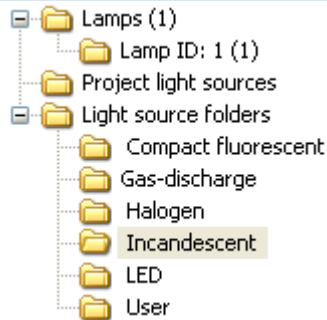


You can browse and edit light sources with Light manager. By means of this tool you can manage all available light sources or the lights effectively placed in the project.

Light manager has three main panels (from left to right): the categories, the light source list and the light source properties.

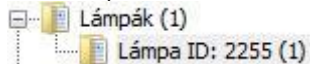
Folder panel

Folders consists of three main groups: Lamps, Project, Light source libraries



Lamps

The „Lamps” folder is available only if you have attached at least one light source to an object.



Under the „Lamps” folder appear the objects with one or more light sources attached to them. By clicking the name of the lamp, the light sources attached to it appear in the middle panel. You can detach the selected light source from the lamp with the Delete button at the bottom of the Folders panel.

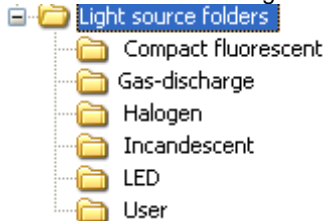


Project light sources

You can find all of the light sources used in the project in the Project light sources folder. By clicking on the Project light sources folder the used light sources appear in the Light sources panel.

Light source folders

Light source folders consist of light sources which are available right after the program has been installed. Here you can add new folders or new light sources as well.




Light Sources panel



The Light Sources panel displays the light sources in the selected folder.

Light Source Properties

| General | |
|---------------|-------------|
| Name | Compact 11W |
| Type | Sphere |
| Category | Compact |
| Luminous flux | 600 lm |
| Colour | |



Luminous flux
 Nominal efficiency (lm/W):
 Incandescent bulb=(16-23);
 Compact=(30-72);
 LED=(50-100);
 Halogen=(10-30);
 Neon=(60-95);

In the Light Source Properties panel you can view and edit the properties of the selected light source

Name

You can add a unique name to the light source. The names of the factory default light sources represent their types and power consumptions

Type

The type is related to the geometry of the light source. You can select between Point, Spot, Line, Polyline and Area

Category

Defining the category of the light source has no effect to the appearance of the light; you can use this setting for classification purposes only. You can choose between incandescent bulb, compact, LED, Halogen and Neon.



incandescent bulb



compact



LED



Halogen



Neon

Luminous flux

You can set the intensity of the light source in lumen

Colour

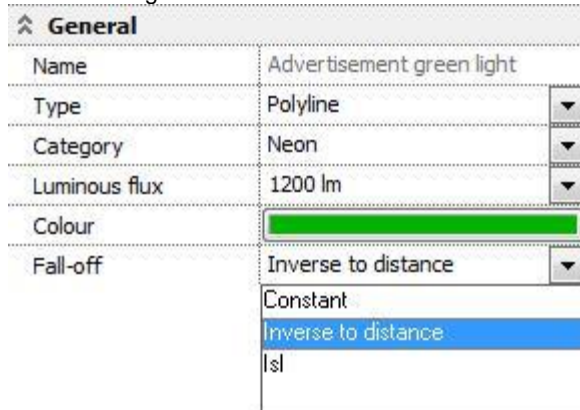
You can set the colour of the light source.

Light sources – Intensity falloff

The falloff option can be:

- ❖ Constant
- ❖ Inverse to distance
- ❖ IsI

Default setting for the falloff is the Inverse to distance. This will result in the most realistic final render.



Creating a light source folder

You can create a light source in a User light source folder in the Light manager. The newly installed program contains folder called „User“ that consists of some sample light source for further editing. You can modify the content of the user defined folders only. Factory default and user defined folders are represented by different icons.

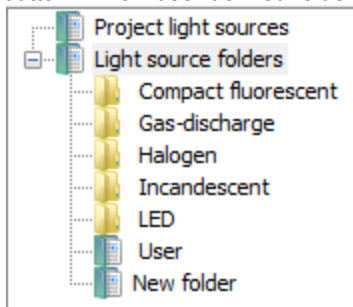


Factory default light source folder



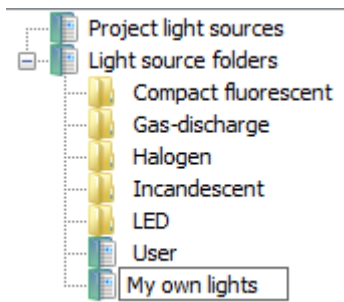
User defined light source folder

You can create your own user defined light source folder, just select the „Light source folders“ and click on the button. A new user defined folder called „New folder“ will be created.




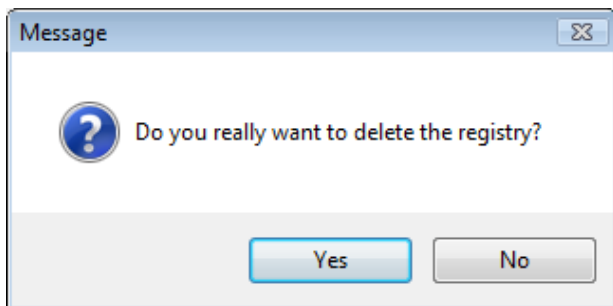
Renaming a light source folder

You can rename a user defined light source folder. First select it and then click on the name of the folder again, type the new name and press ENTER.




Deleting a light source folder

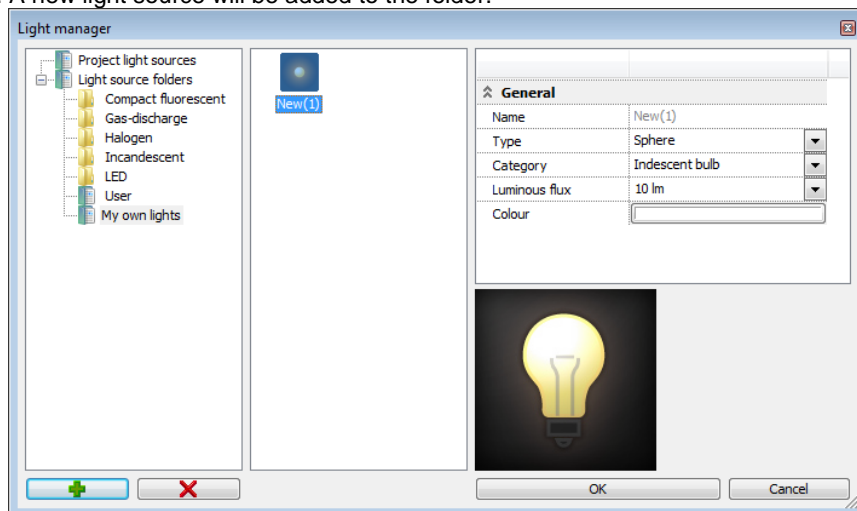
You can delete a user defined light source folder. First select it and then press the  button. If you confirm the appearing dialog box, the folder and its content will be deleted.



There is no way to restore the deleted folders and their contents so be careful when deleting light source folders.

9.16.3. Creating a light source

You can create a new light source in a user defined folder. First select the appropriate folder and press the  button. A new light source will be added to the folder.




Once the new light source is created, you can change its properties on the Properties panel.

Renaming a light source

You can rename a user defined light source. First select it and then click on the name of the light source again, type the new name and press ENTER.



Deleting a light source

You can delete a user defined light source. First select it and then press the  button.

9.16.4. Creating a lamp

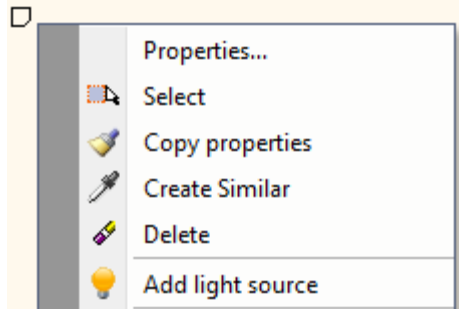
A so called lamp is composed of a library object and one or more light sources attached to it. You can attach a light source only to a library object.

❖ By Toolbox Command

First select the *Light – Add light source* command from the Building group of the Toolbox, and then select a library object. Once an object is selected, the Light manager appears.

❖ From the Popup menu

You can attach a light source to a library object by selecting the Add light source command in its Popup menu as well. If you select this command, the Light manager appears.

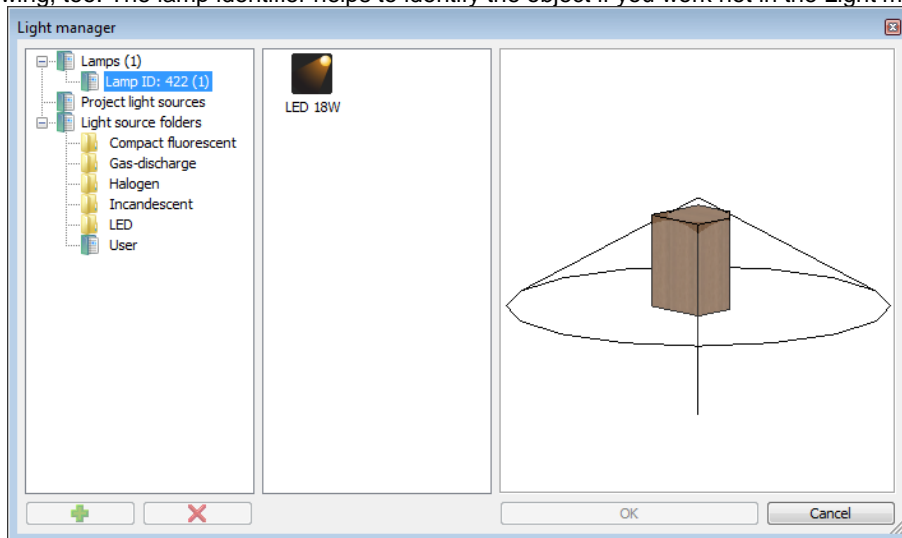


9.16.5. Managing lamps

You can manage lamps and light sources with ARCHLine.XP® even if there are a lot of them in the project.

Identification on the drawing

The program displays the lamps selected in the Lamps folder of the Light manager in the right panel of the manager and on the 2D drawing, too. The lamp identifier helps to identify the object if you work not in the Light manager

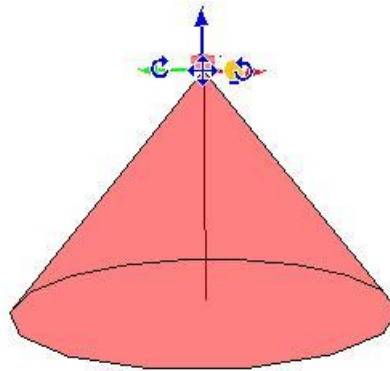


Selecting a light source of a lamp

If you work in a 2D or 3D window and select a lamp with one or more light source attached to it, in addition to the default markers the light source markers appear.

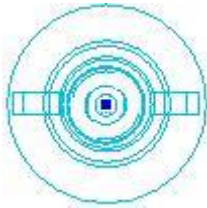


Lamp selected on a 2D drawing

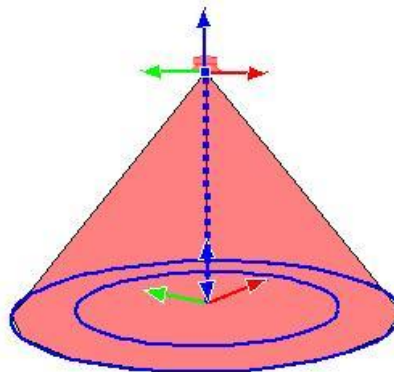


Lamp selected in the 3D model.

By clicking a light source marker some other markers related to the selected light source appear instead of the default library object markers.

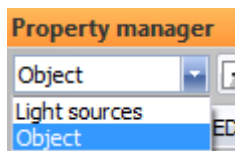


Light source selected on a 2D drawing

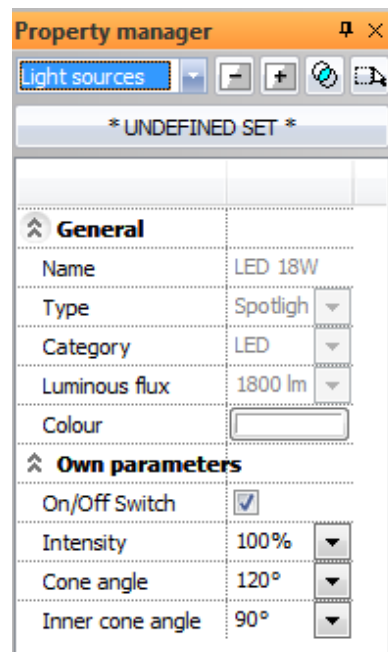


Lamp selected in the 3D model.

If an object has light sources attached to it, you can view and edit their properties by means of the Property manager as well. To do this, select the lamp and choose the Light sources option from the drop-down list of the Property manager.

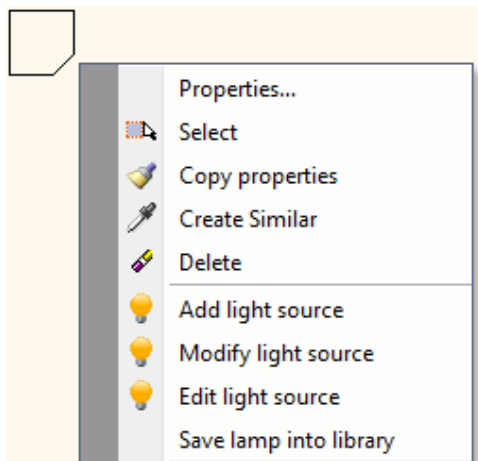


You can view and edit the properties of the selected light sources in the Property manager.



9.16.6. Editing lamps

If a lamp (an object with one or more light sources attached to it) is selected, you can edit it by selecting one of the light source editing commands from the popup menu.



Adding light source

You can attach a light source to a library object by selecting the Add light source command in its Popup menu. If you select this command, the Light manager appears.

Modify light source

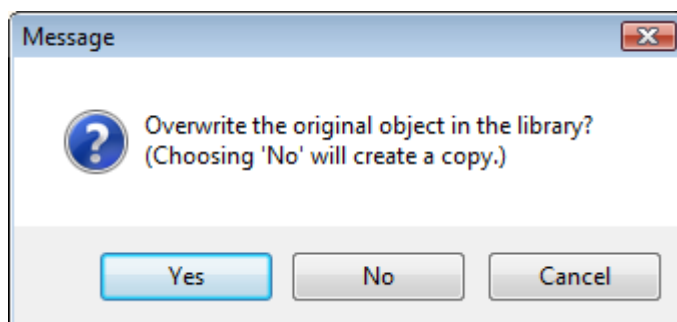
You can modify the properties of the selected light source by selecting the Modify light source command. See the details in the chapter Managing light sources.

Edit light source

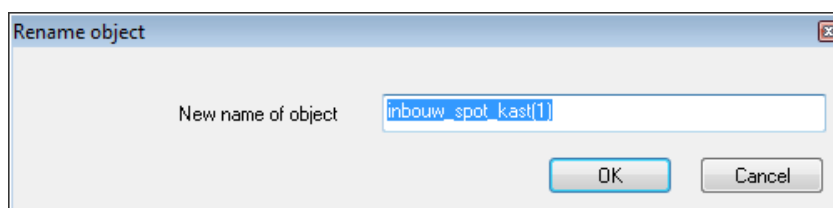
You can edit the geometry of the light source by using its type-specific markers while the light source is selected.

Saving lamp into library

You can save the selected lamp into an object library. You have to decide whether to overwrite the original library object or to create a copy of it.

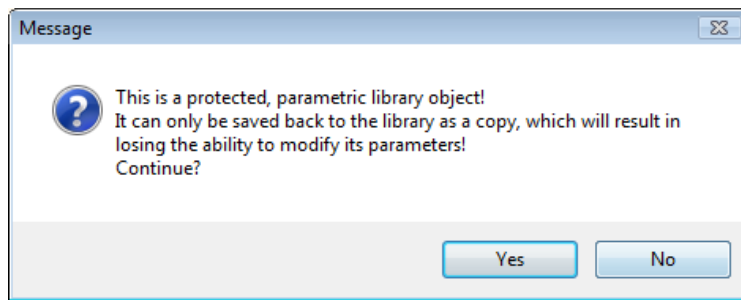


If you confirm the question, the original object will be overwritten, otherwise a new object will be created and you have to name it.



By pressing cancel at this point no object will be saved into the library.

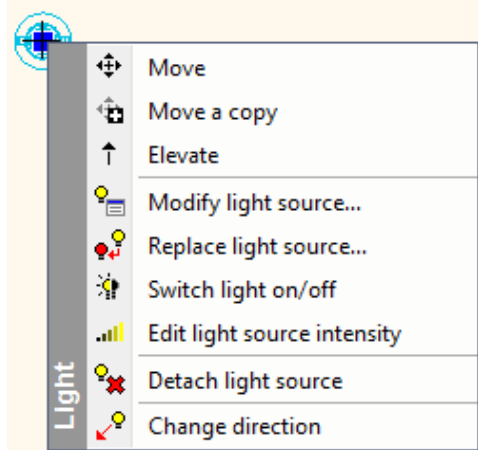
If you try to save an object in a write-only library like factory default objects in the Design Center, the following dialog appears:



If you confirm the question, you have to choose one of the user defined libraries to place the lamp into it, otherwise the command will be cancelled.

9.16.7. Editing light sources

Commands related to editing light sources can be found in the light source marker menus.



Move

You can move the light source relative to the object.

Move a copy

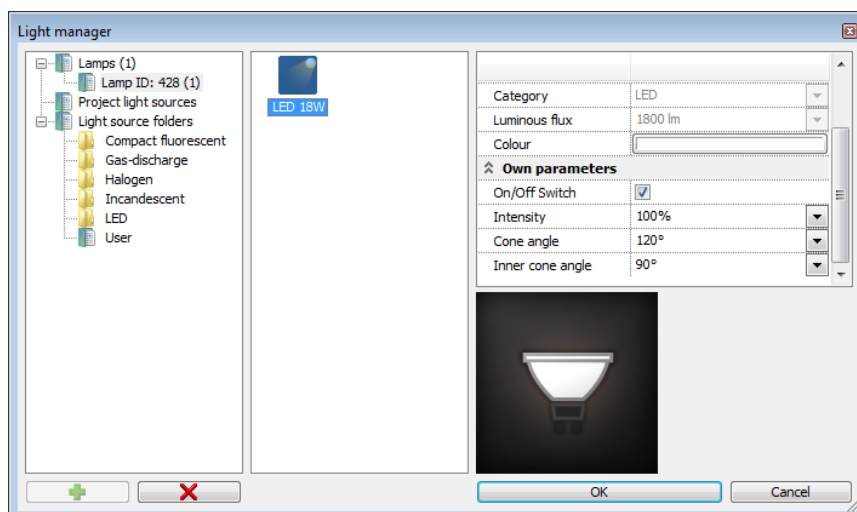
By selecting this command you can copy the current light source to a new position. The original light source remains unchanged.

Elevate

You can elevate the light source relative to the object.

Modify light source

By selecting this command you can modify the properties of the current light source in the Light manager



If you modify a single light source, the Lamps folder in the Light manager contains only one light source, even if more light sources are attached to the current object. You can view and edit the Own parameters below the general ones on the Properties panel.

| Own parameters | |
|------------------|-------------------------------------|
| On/Off Switch | <input checked="" type="checkbox"/> |
| Intensity | 100% ▼ |
| Cone angle | 120° ▼ |
| Inner cone angle | 90° ▼ |

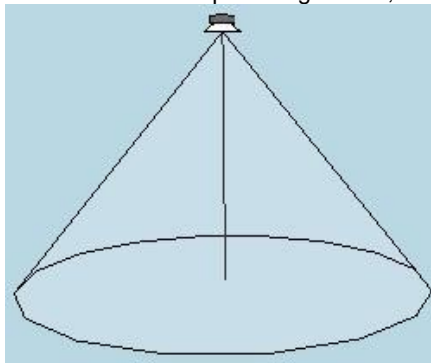
Own properties of spotlight

Replace light source

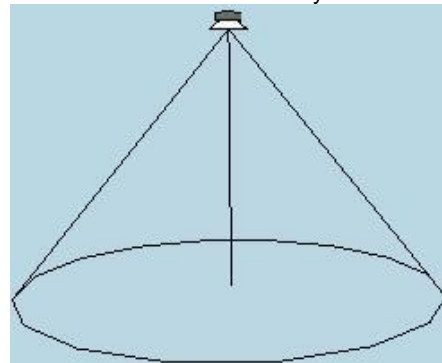
You can replace a light source with another by selecting this command. The original light source will be detached from the object. If the type of the original and the new light source is different, you have to place the light source again.

Switch light on/off

You can switch on or off any light source. You can control the result in the 3D window: the light source which is switched on has a semi-transparent light solid; the one which is switched off has a wireframe only.



Light source switched on



Light source switched off

Edit light source intensity

You can modify the intensity of the light source, relatively to the original lumen value, in per cents. You can modify the intensity of the current instance of the given light source without affecting the other instances of this light source in the project

If you would like to change the intensity of all the instances of a given light source, modify the light source in the project folder of the Light manager.

Detach light source

You can detach the current instance of the light source from the object. This command has no effect to the other instances of this light source in the project

Changing direction

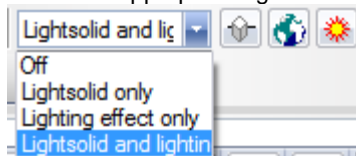
In case of some light types like spotlight the Change direction command appears in the marker menu if the current direction of the light is vertical. You can define another direction for the selected light source.

9.16.8. Representation of light sources

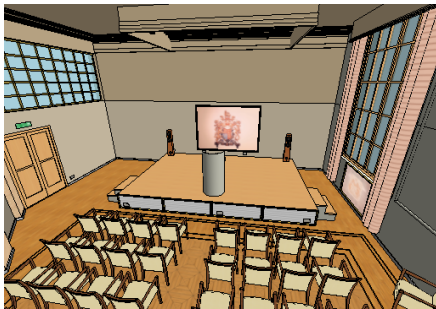
ARCHLine.XP® provides more light representations to support the design process in the early phase, even before rendering any photorealistic images.

Light source representation menu

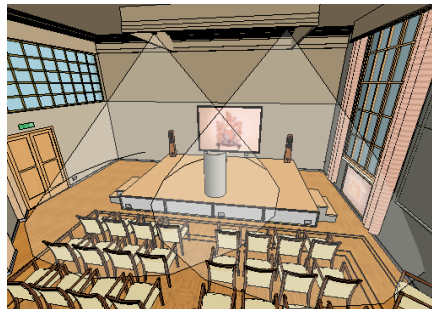
Select the appropriate light source representation in the Light source representation menu in the Sun setting toolbar.



To study the different representations of the light sources switch on the Automatic light management button in the Sun setting toolbar.



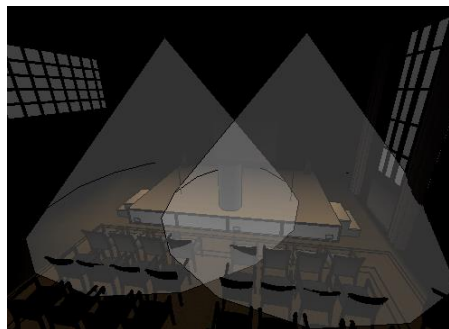
light source representation
switched off



Light solid only



Lighting effects only



Light solid and lighting effects

Off

If the light source representation is switched off, the program does not display any lighting effects or light solids except the sunlight. The automatic light management switch has no effect in this state.

Light solid only

If the light source representation is Light solid only, some shapes representing the lights appear in the model. The program does not display any lighting effects except the sunlight. The automatic light management switch has no effect in this state.

Lighting effects only

If the light source representation is Lighting effects only, some shapes representing the lights appear in the model. The program does not display any light solids. If the Automatic light management is switched on, the intensity of the sun- and ambient light will be reduced to make the lightning effects more intensive.

Light solid and lighting effects

If the light source representation is Lighting effects only, some shapes representing the lights appear in the model. The program displays the light solids, too. If the Automatic light management is switched on, the intensity of the sun- and ambient light will be reduced to make the lightning effects more intensive.

9.16.9. Automatic light management

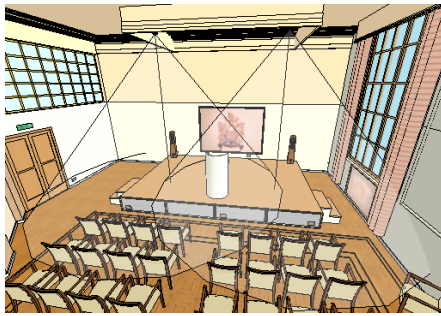
You can switch on or off the Automatic light management by using the Automatic light management button in the Sun setting toolbar.



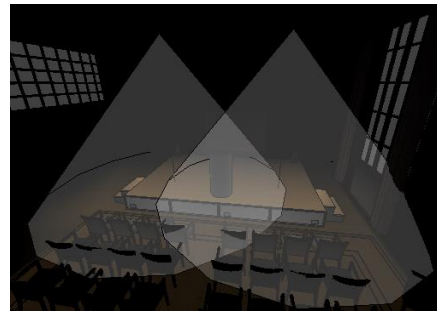
Automatic light management is disabled

Automatic light management is enabled

If the Automatic light management is switched on, the intensity of the sun- and ambient light will be reduced to make the lightning effects more intensive. Turn on the Automatic light management to study the effects of the light sources, use the switch in disabled state while creating or editing architectural objects or to study the model in daylight.



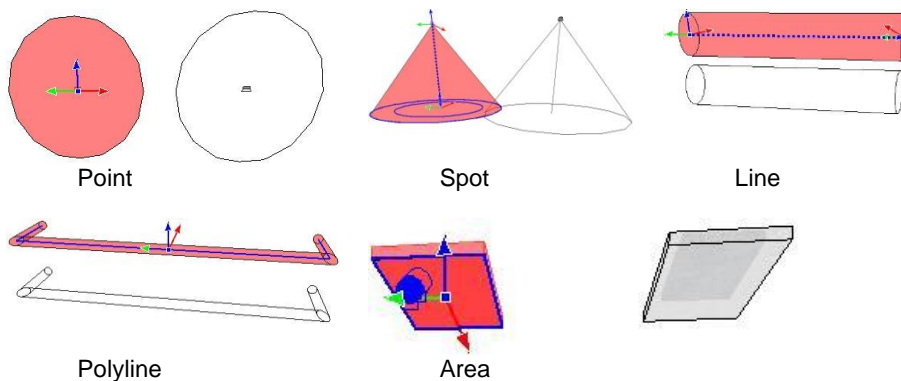
Automatic light management is disabled



Automatic light management is enabled

Representation of light sources

The different types of light sources are represented differently in the 3D model. The following table helps you to recognise the different types.



9.16.10. Lights on the rendered images

The real effect of lamps and light sources appears on the rendered images. You will get different results depending on the used settings. With ARCHLine.XP® you can design the lighting of models and spaces in more versions, and you can show the result as photorealistic images.



9.16.11. Light sources – compatibility

Tools menu – Accessories – Light manager 2009: there is the possibility to switch on/off incompatible light sources that are created with previous versions of the software.

9.16.12. Light sources - Selection

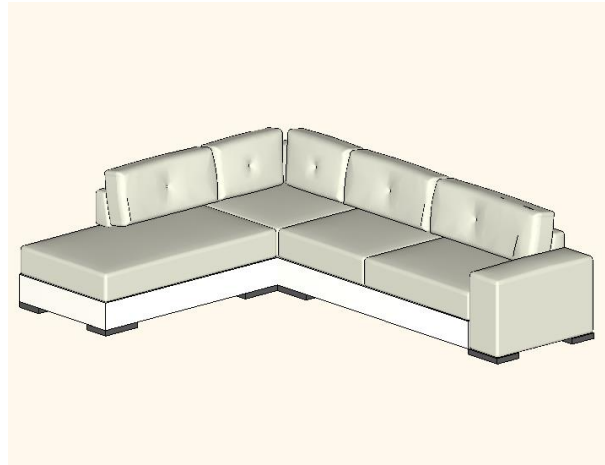
You can select a light source by clicking on its solid, when it is visible in a 3D window. At other situations when the light source solid is not visible, you can select light sources by using the light source markers, previously introduced in ARCHLine.XP® 2010 R1

9.17. Modelling tools

ARCHLine.XP 2013 introduces three new modelling tools, to design complex objects as soft furniture.

Menu (Architecture): Building > Furniture Design

Menu (Interior): Furniture > Furniture Design

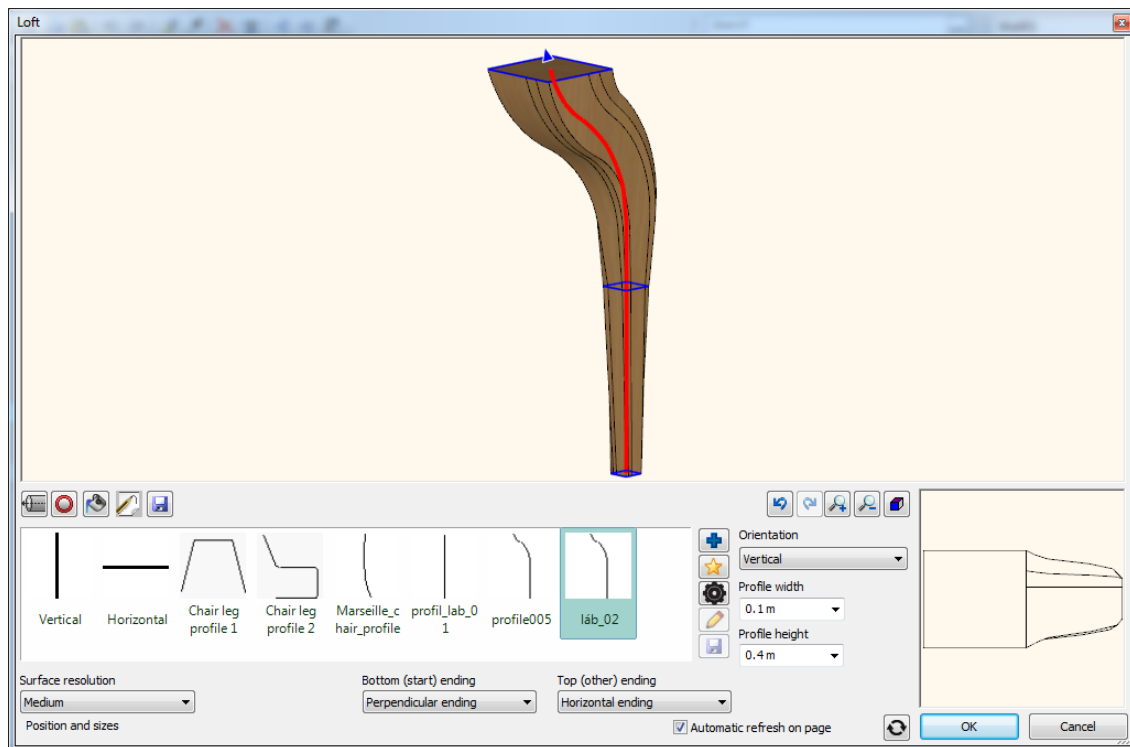


9.17.1. Loft

A loft is a complex 3D solid between several cross sections and extruded along a path. The path can be straight or curved.

Menu (Architecture): Building > Furniture Design > Loft

Menu (Interior): Furniture > Furniture Design > Loft



This picture displays 3D model of a chair leg where three different cross-sections are connected along the curved path.

Cross-Section Steps

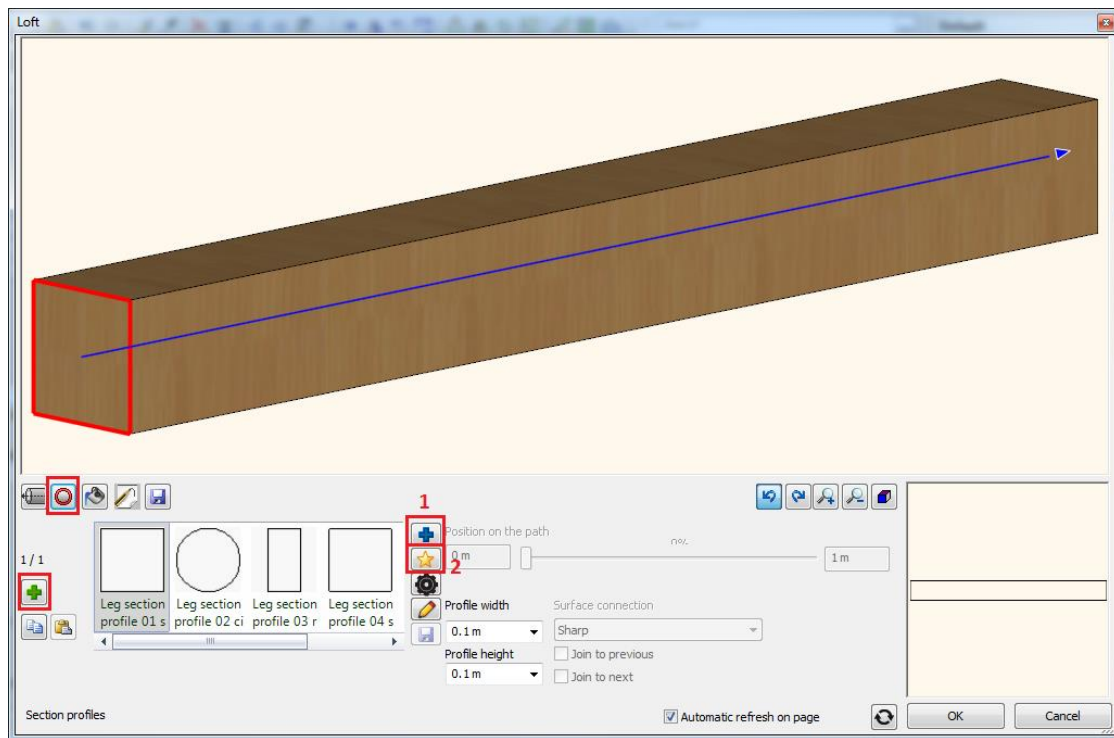
Cross-sections can be defined by two methods:

Selecting existing profile from profile library.

Click first on the red circle icon and then click on the blue plus icon in the middle of the panel.

Select the new cross-section with its reference point in the upcoming Profile dialog. Press Ok to return to Loft dialog.

The selected profile will be inserted into the Favourites List.



Drawing the geometry as a profile.

When you draw the cross-section you must also define its reference point.

Click first on the red circle icon and then click on the yellow five-pointed star icon. The dialog disappears temporary and you can draw the cross-section in the 2D or 3D workspace.

When you finish the profile definition press ENTER and the dialog comes back again.

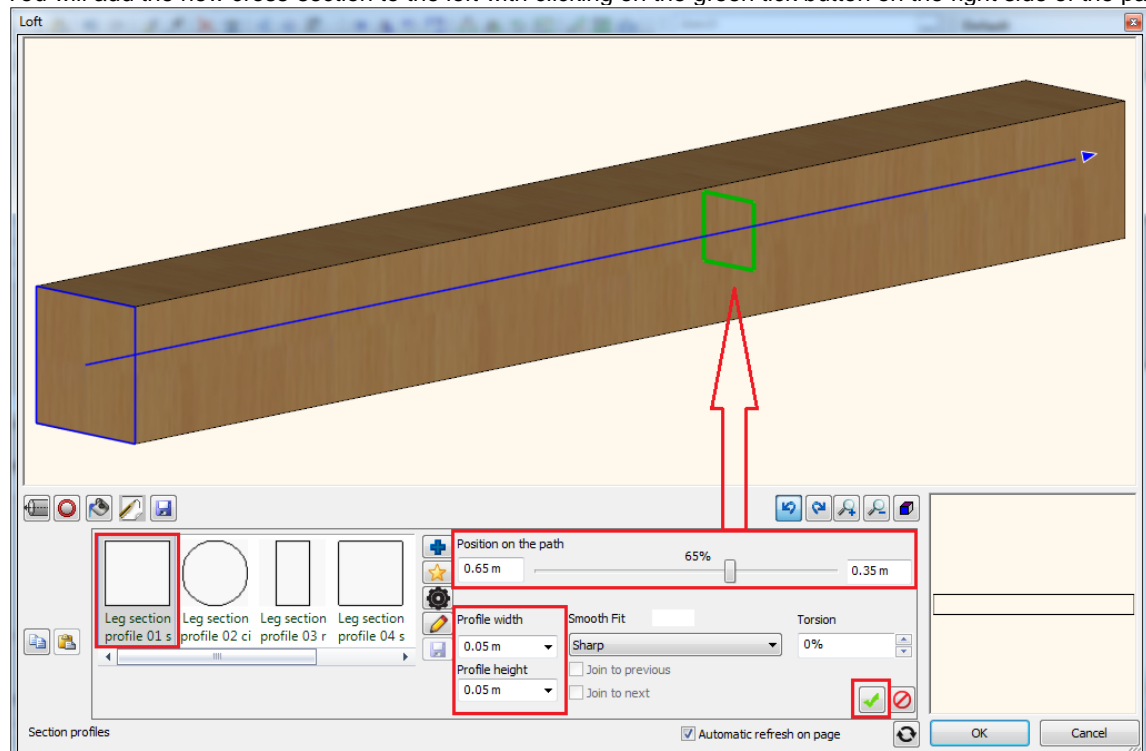
Add next cross-section

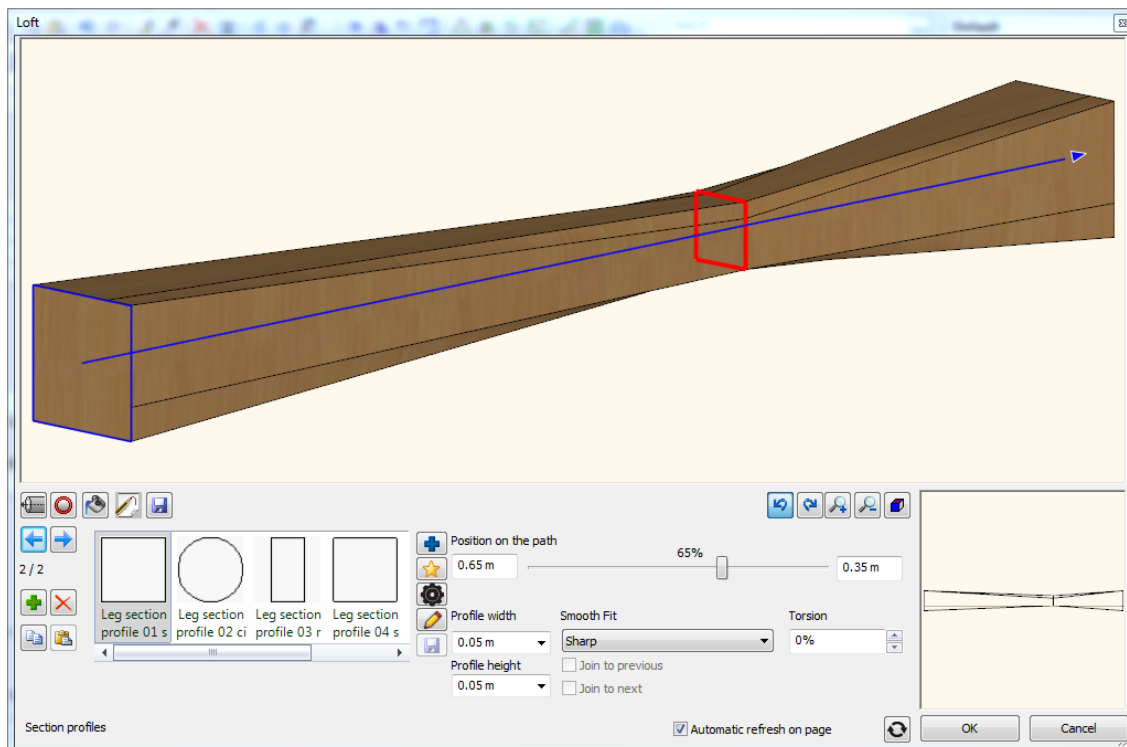
Use the "Prepare new" button on the left side of a panel. This button appears as green plus icon.

You can define the place of the new cross-section along the path with the path slider or type its distance from the path starting or ending point. You can resize the new cross-section width and height or change its profile with clicking on another profile from Favourites or as written in point 1 and 2 either.

See on the picture below. The above mentioned controls are marked with red frames. The new cross-section is displayed with green shape.

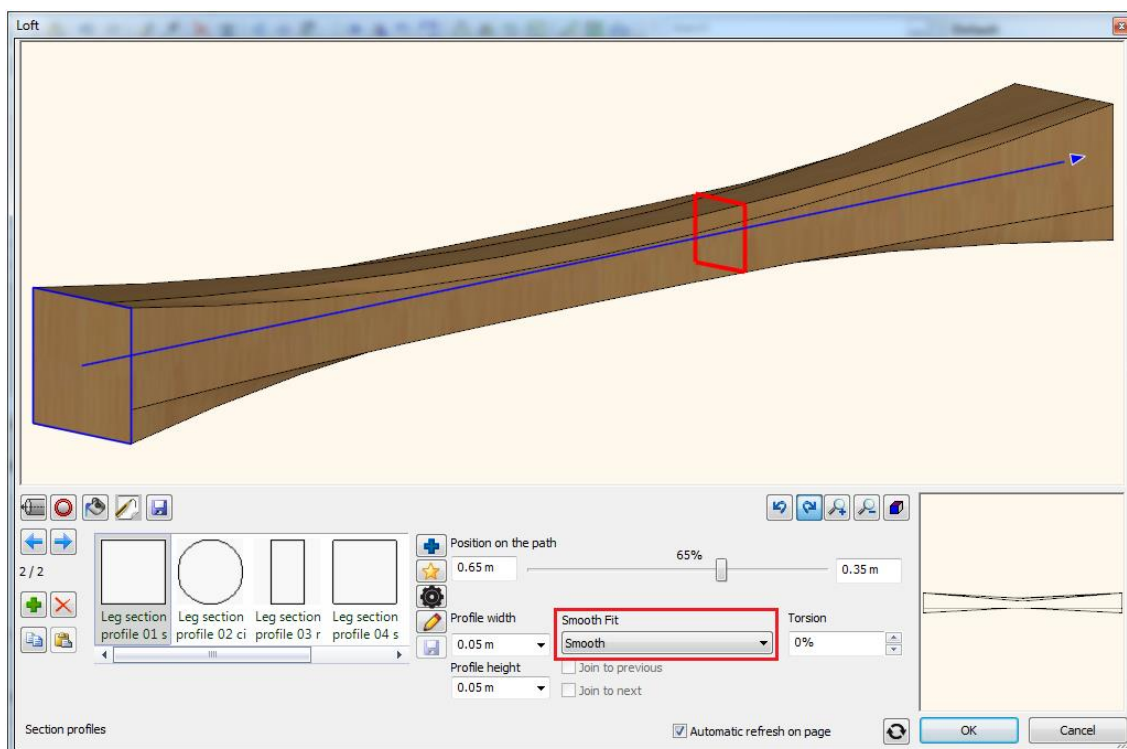
You will add the new cross-section to the loft with clicking on the green tick button on the right side of the panel.





Smooth fit

Specifies that a smooth surface or sharp edge is drawn between the cross sections. See the smooth connection for the same loft below.

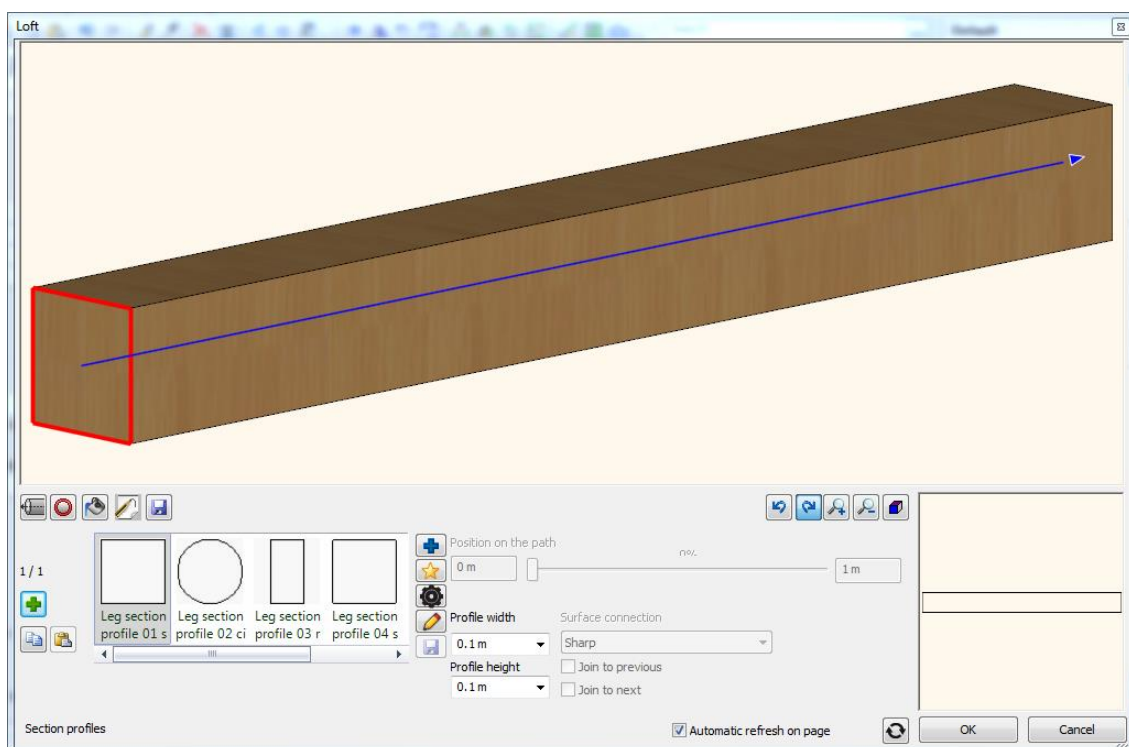
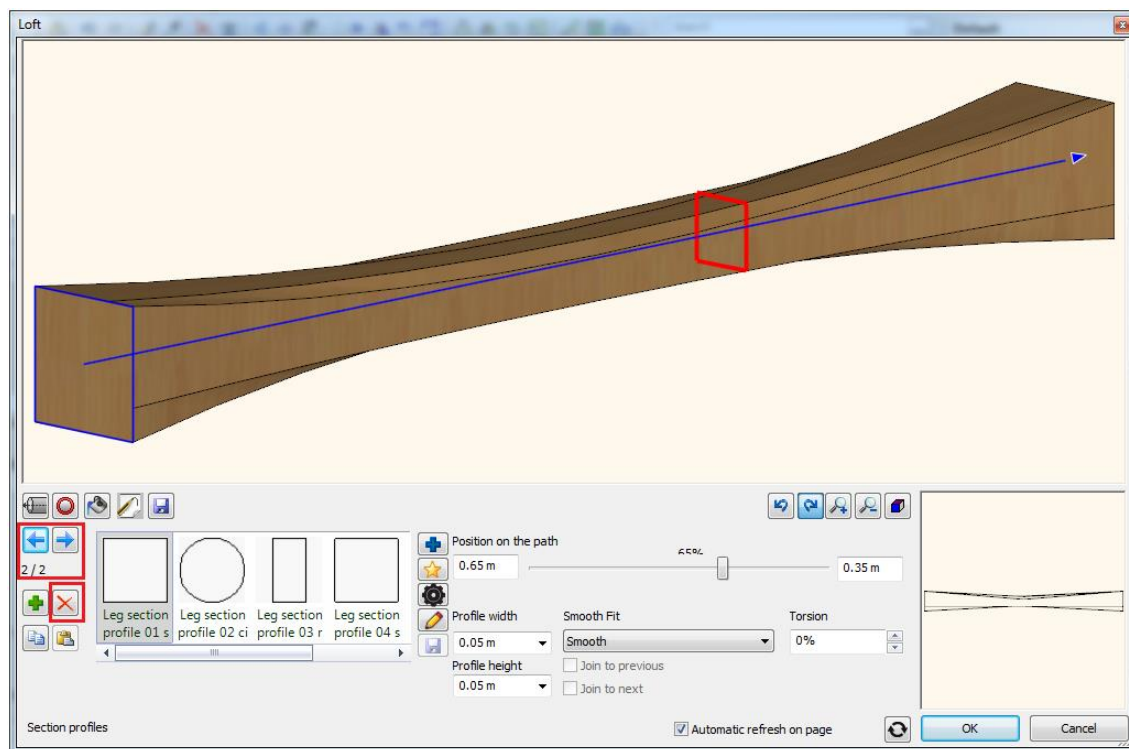


Delete cross-section

The actually selected cross-section is highlighted with red colour. You can select the previous or the next cross-section with the Object index.

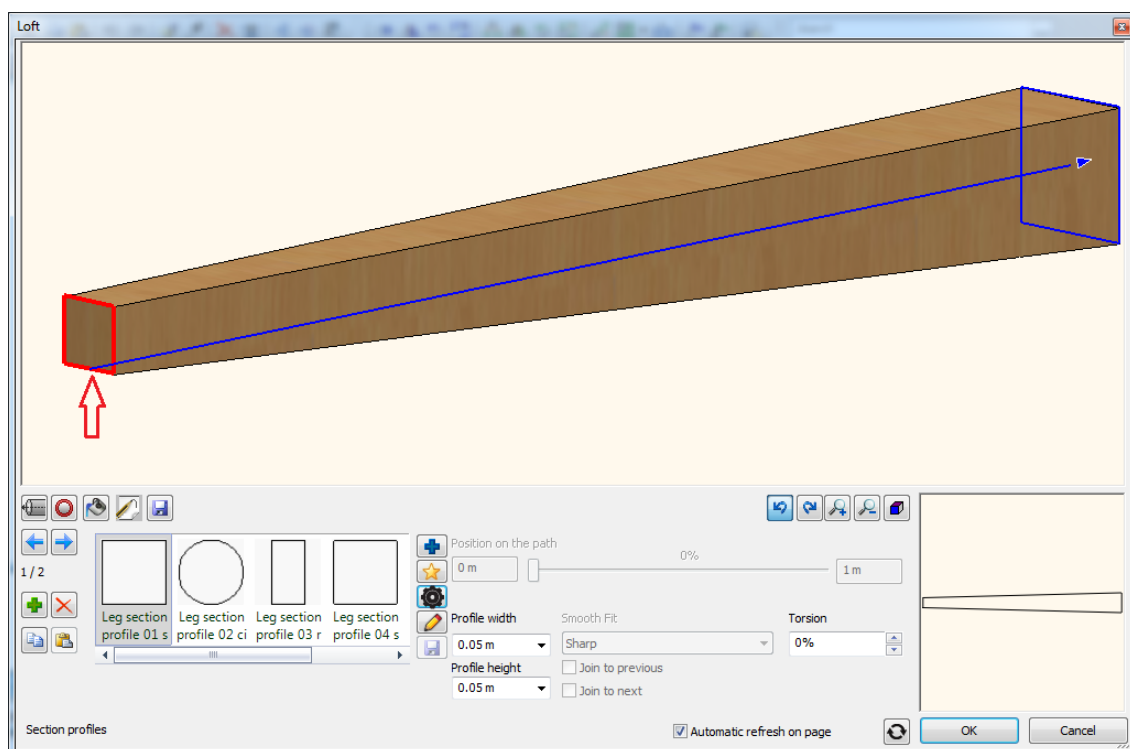
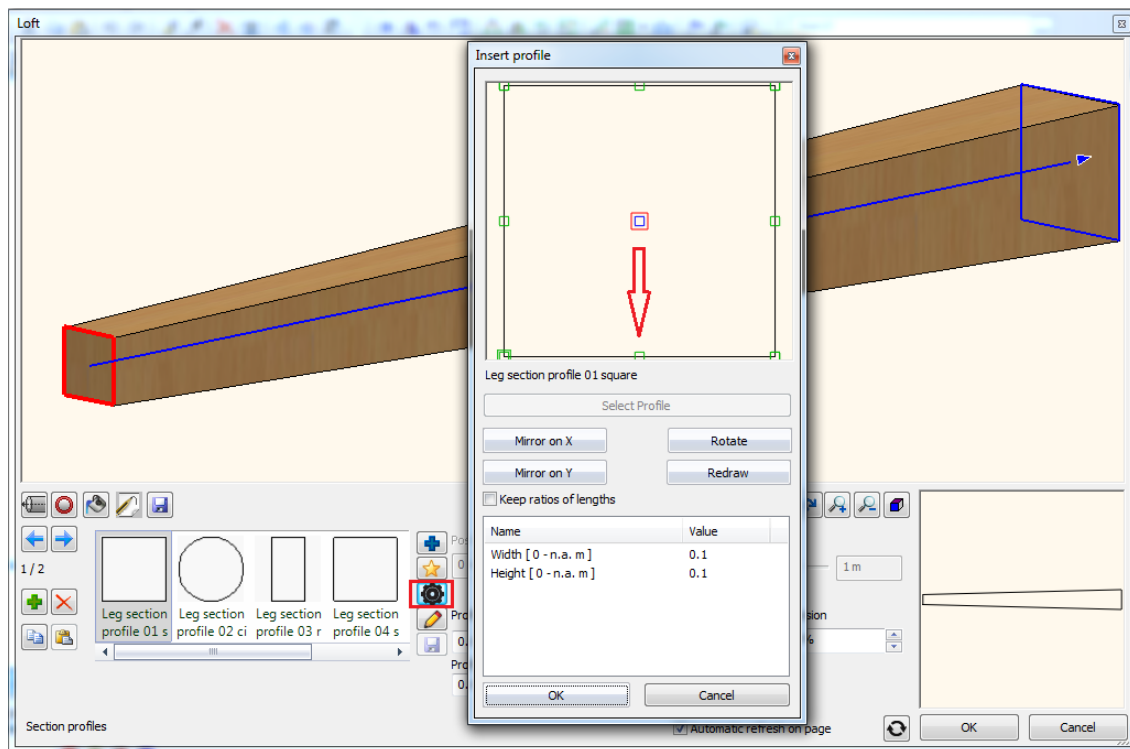
The object index list appears at the left side of the panel on top of the Prepare new / Remove actual buttons. It consists of two numbers separated by a "/" mark. The first number is the sequence number of the current object. The second number is the total amount of the available objects.

Click on "Remove actual" button to delete the actually selected cross-section.



Hotspot control

The path intersects the cross sections on the cross section hotspot. Click on the black gear like icon to change the hotspot position.



Path definition

Cross-sections can be defined by two methods:

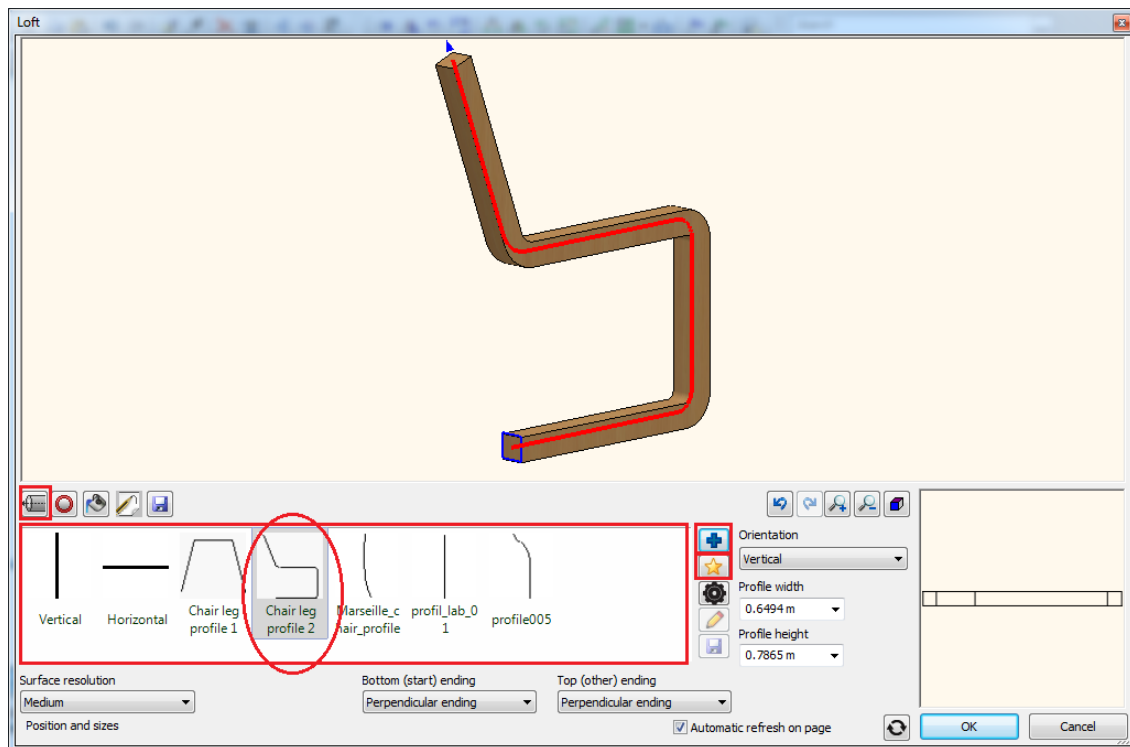
Path can be defined by two methods:

Selecting existing profile from profile library.

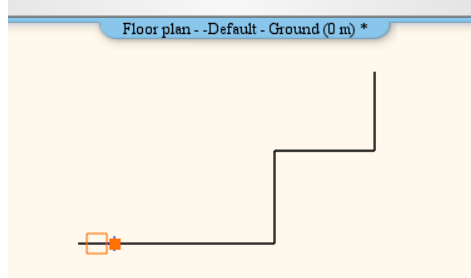
Click first on left on the path like icon and then click on the blue plus icon in the middle of the panel.

Select the new profile in the upcoming Profile dialog. Press Ok to return to Loft dialog.

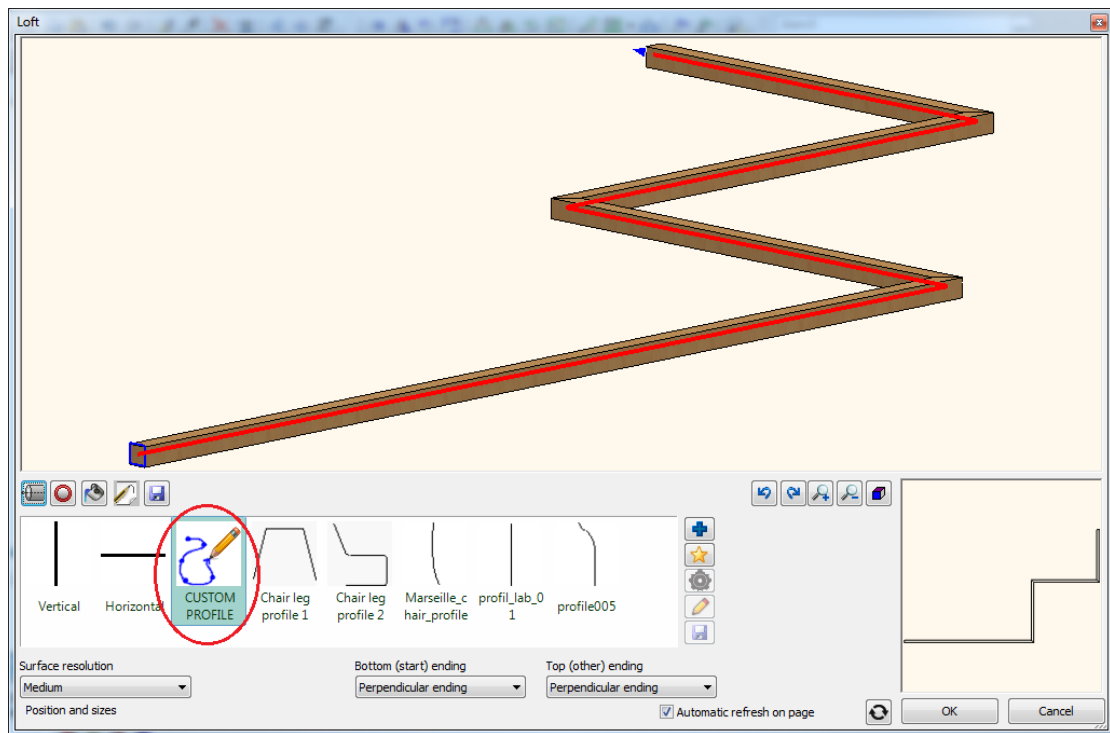
The selected profile will be inserted into the Favourites List.



Drawing the geometry as a path.
 Draw the path as a polyline before you start the Loft command.

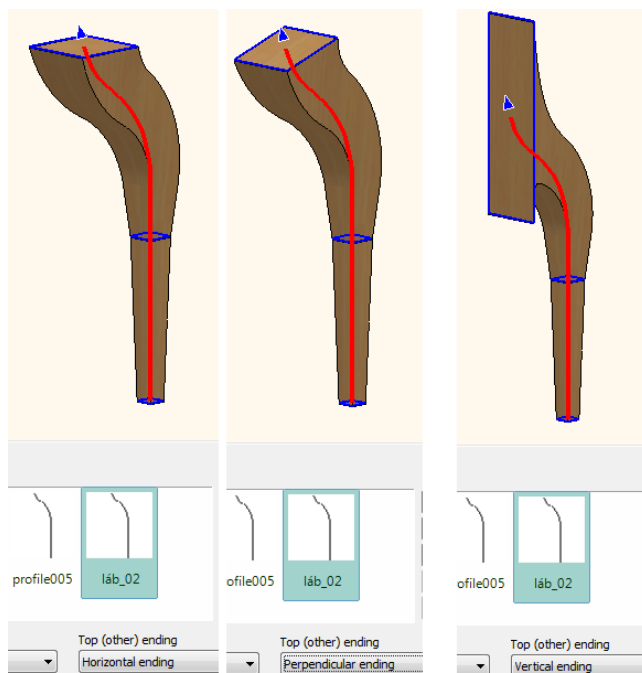


Click on the yellow five-pointed star icon. The dialog disappears temporary and you can select the objects drawn previously in the 2D or 3D workspace.
 When you click on an object and the dialog comes back again. The new path is inserted into the Favourites List as CUSTOM PROFILE.



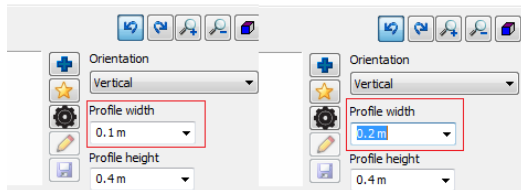
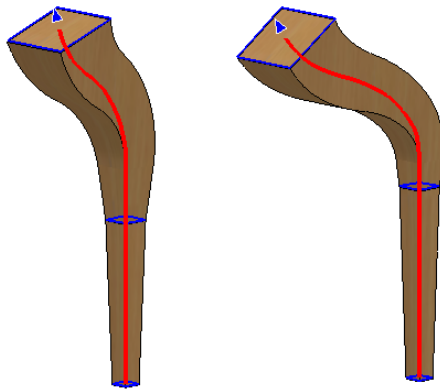
Ending conditions

You can edit the beginning and end section of a loft upon your design request as horizontal, perpendicular or vertical separately. See this example:



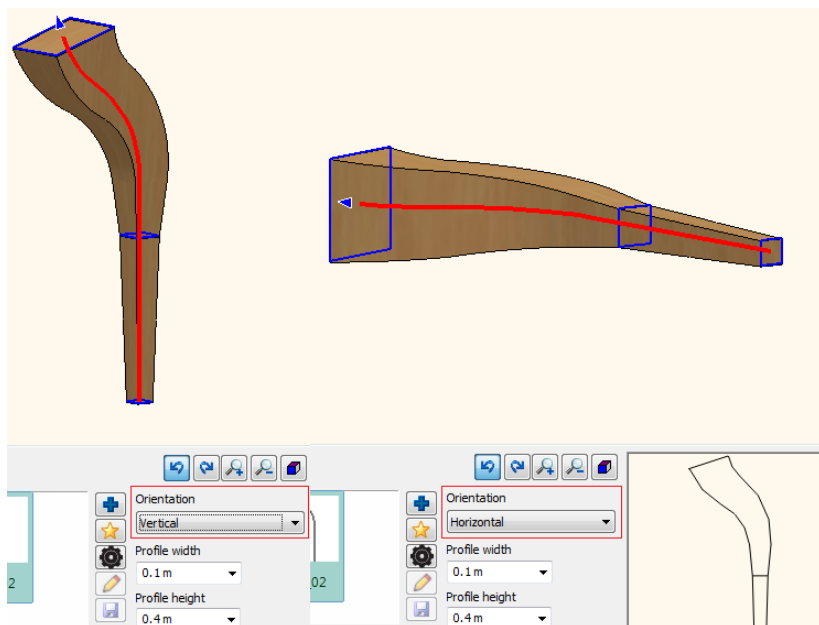
Enclosing box control

The dialog displays the size of the actual path. Changing these values you can stretch the loft in both direction. See this example:



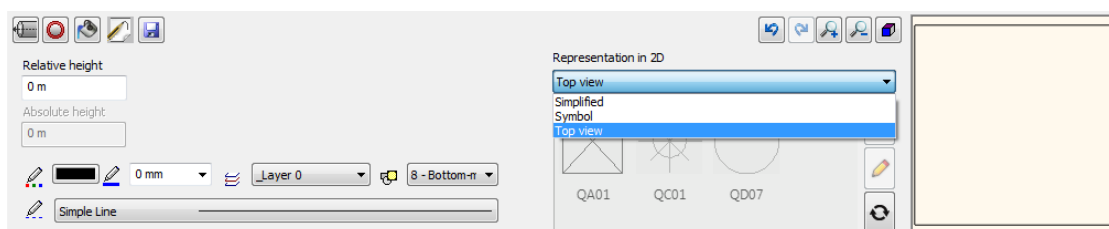
Orientation

The loof can have a vertical or horizontal orientation. You can switch between horizontal and vertical in the dialog box Orientation list. See this example:



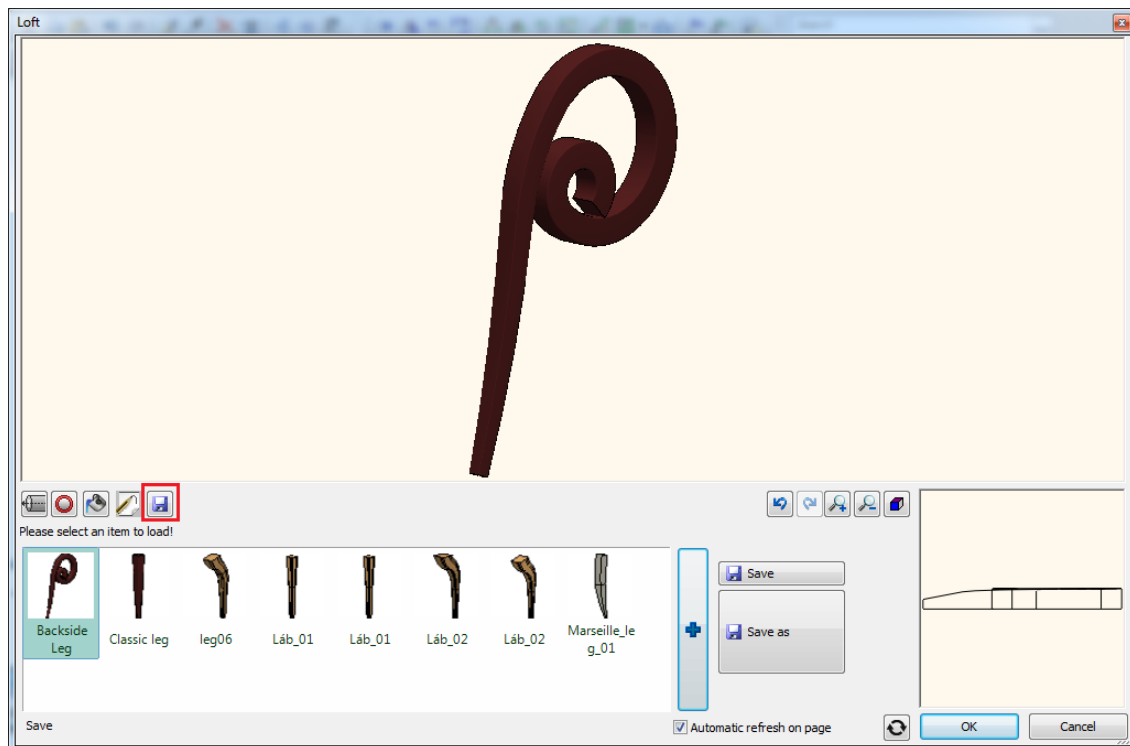
2D general properties

The 2D general properties contain the loof 2D representation properties as Layer, colour, etc. In addition you can choose the loof 2D representation as simplified, symbol or top view.



Save loof into OLI library

The Save panel allows you to save the 3D model into Objects library. The saved model will be inserted into the Favourites List, so you can choose it directly to continue the editing on it. The Save as button allows saving a new object with a different name.



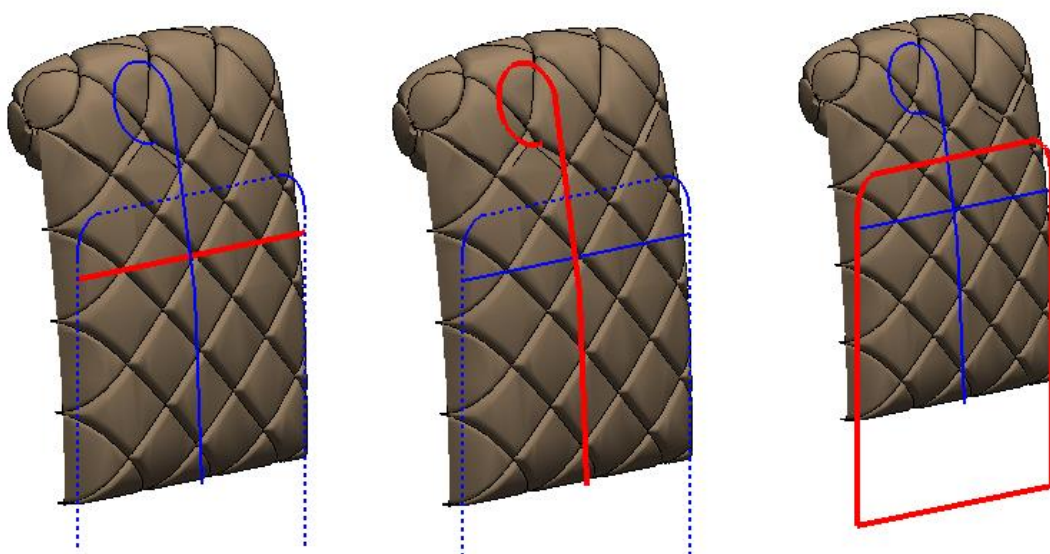
9.17.2. Smart Object Parts

Smart object parts is a revolutionary 3D solid creator tool that enables to design as an example upholstery furniture parts as seat, armrest or backrest cushion with textured surface.

Menu (Architecture): Building > Furniture Design > Smart object parts

Menu (Interior): Furniture > Furniture Design > Smart object parts

Smart object part consists of two guides, a horizontal and a vertical guide and a cross section profile. Guide curves and cross section profile control the shape of the 3D solid.



This picture displays the 3D model of a backrest cushion.

Guide curves

Guide curves are series of lines or curves that define the form of the solid.

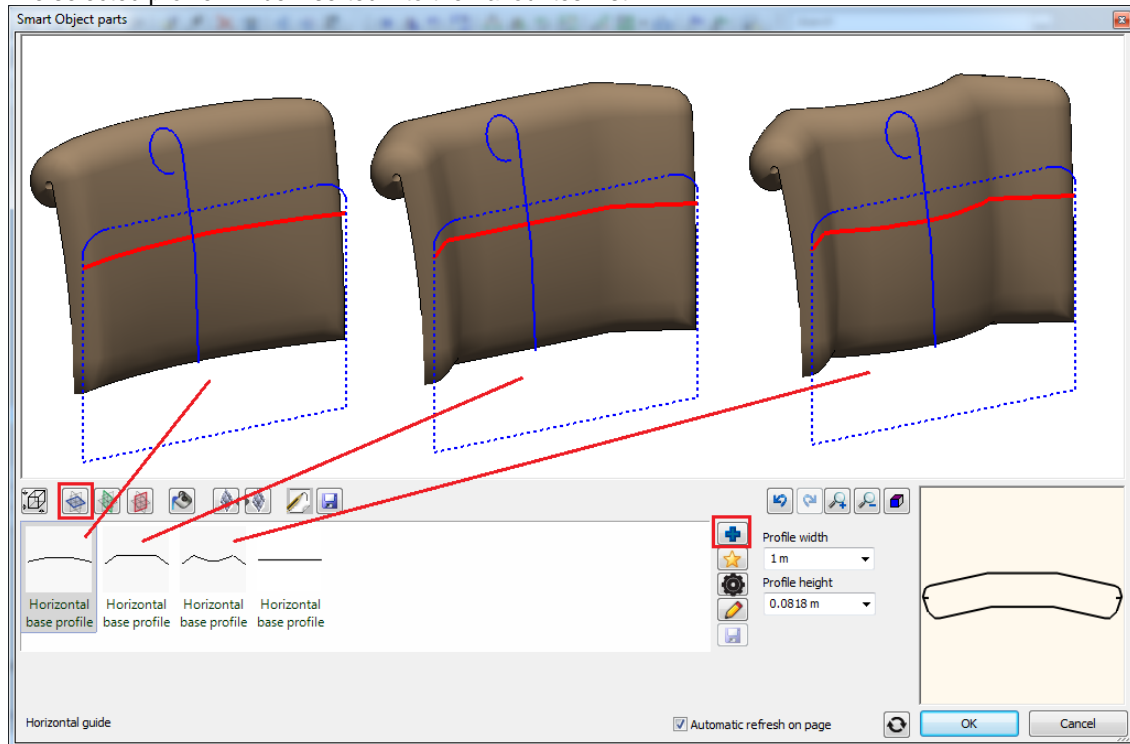
Guide-curves can be defined by two methods:

Selecting existing open profile from profile library.

Click on the blue plus icon in the middle of the panel.

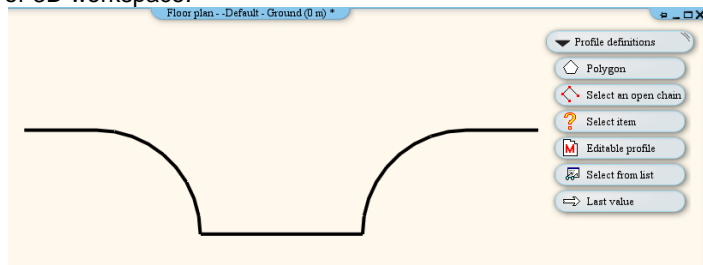
Select the new open profile in the upcoming Profile dialog. Press Ok to return to Smart object parts dialog.

The selected profile will be inserted into the Favourites List.

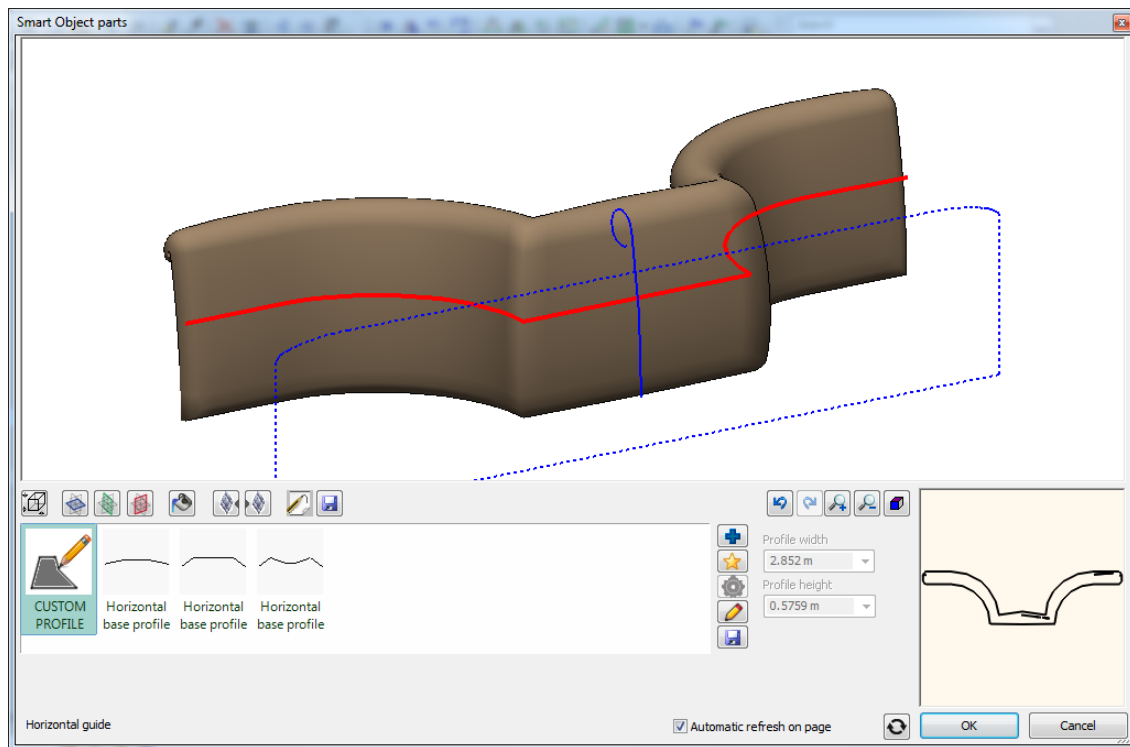


Drawing the guide curves.

Click on the yellow five-pointed star icon. The dialog disappears temporary and you can draw the guide curves in the 2D or 3D workspace.



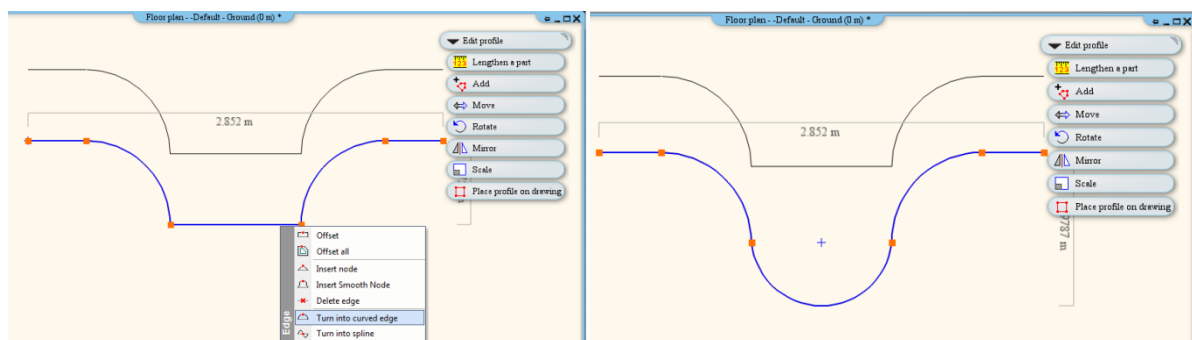
When you finish the guide curves definitions press ENTER and the dialog comes back again displaying the smart object part with the new guide curves. The new guide is inserted into the Favourites List as CUSTOM PROFILE.

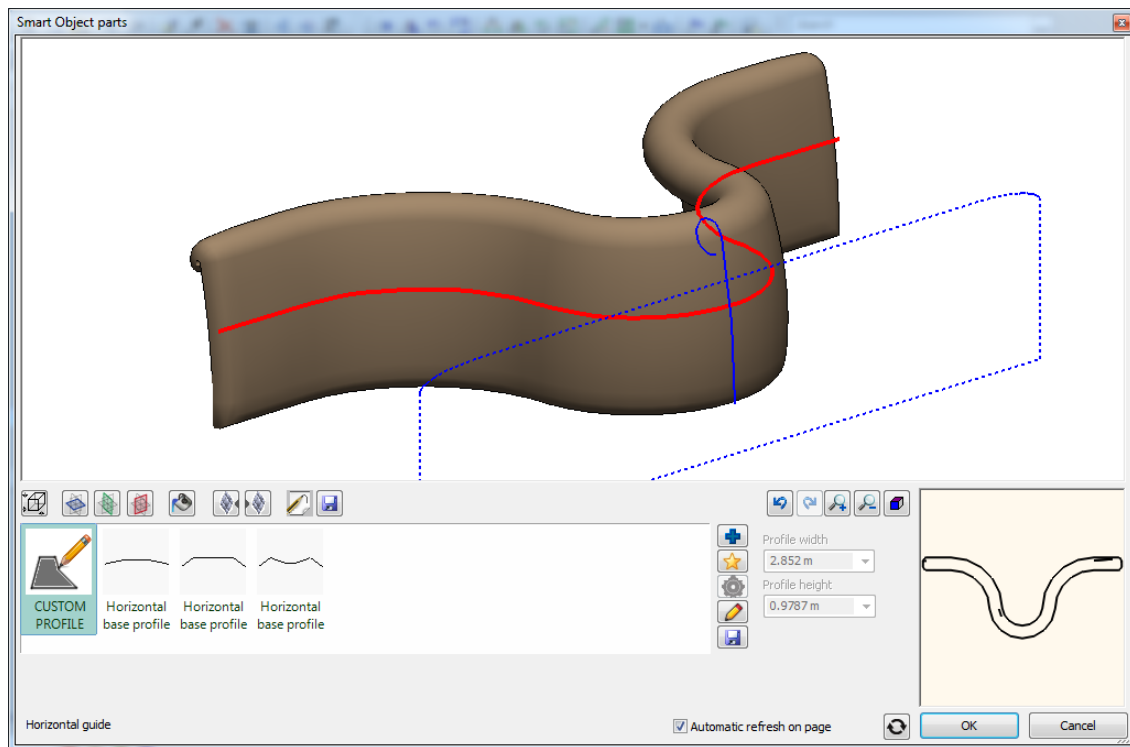


Modify the guide curves

Use the “Modify profile” button on the left side of a panel. This button appears as pencil icon.

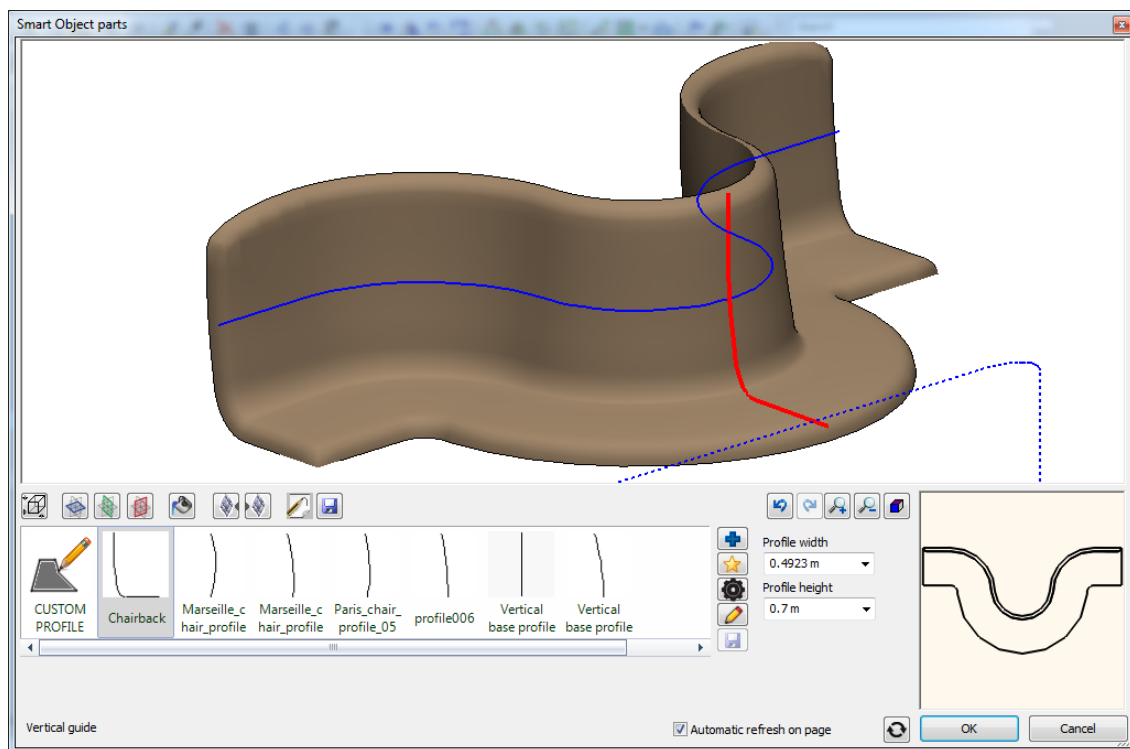
You have to place the guide curves on the drawing and edit it with clicking on the curves or corner points. When you finish the guide curves definition press ENTER and the dialog comes back again displaying the smart object part with the new guide curves. See on the picture below. .

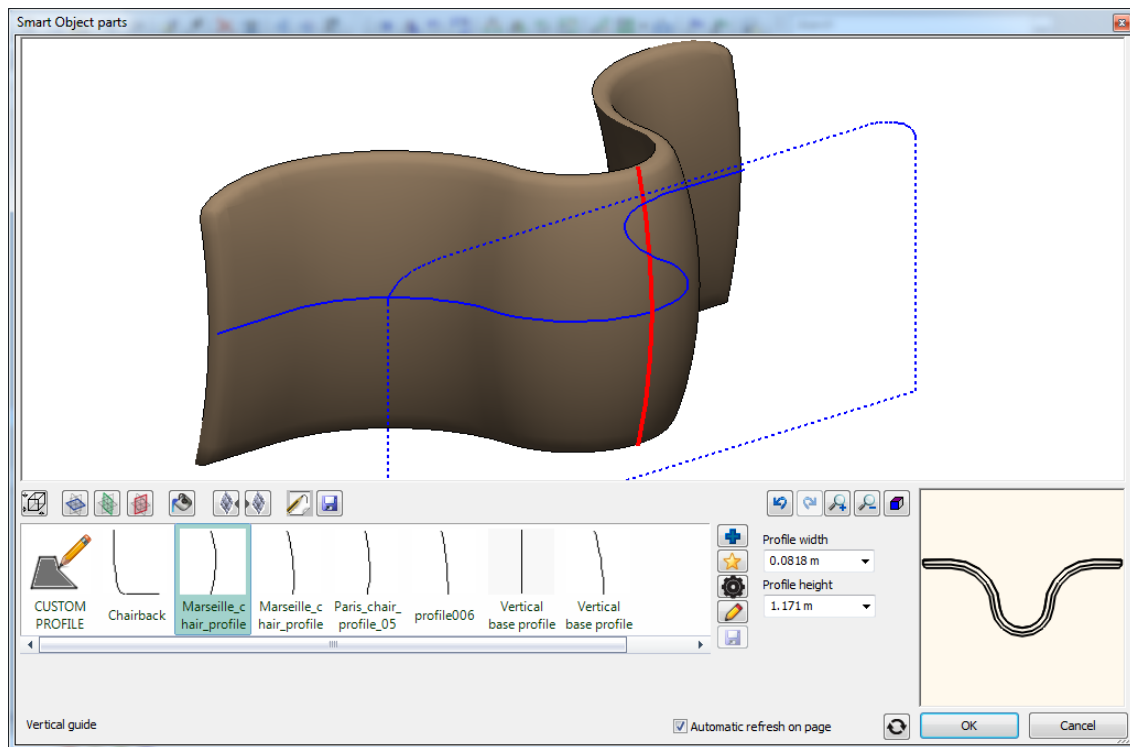




Vertical guide curves

Vertical guide curves can be defined in the same way as horizontal guide curves.





Cross-Section

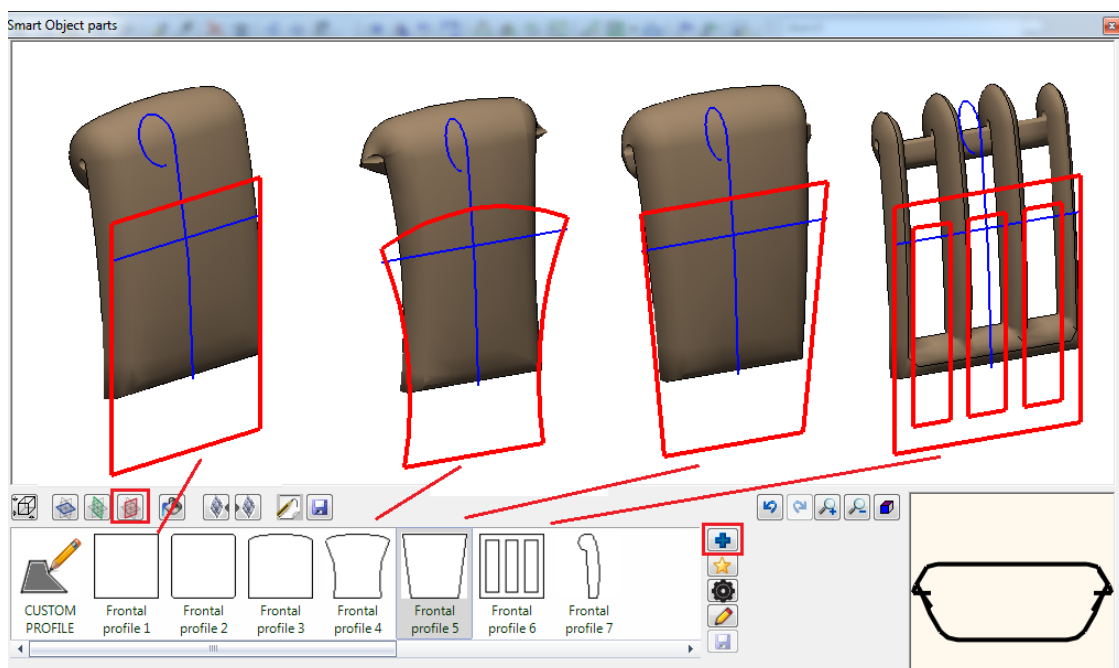
Cross-sections can be defined by two methods:

Selecting existing profile from profile library.

Click first on the red circle icon and then click on the blue plus icon in the middle of the panel.

Select the new cross-section with its reference point in the upcoming Profile dialog. Press Ok to return to Smart Object parts dialog.

The selected profile will be inserted into the Favourites List.



Drawing the geometry as a profile.

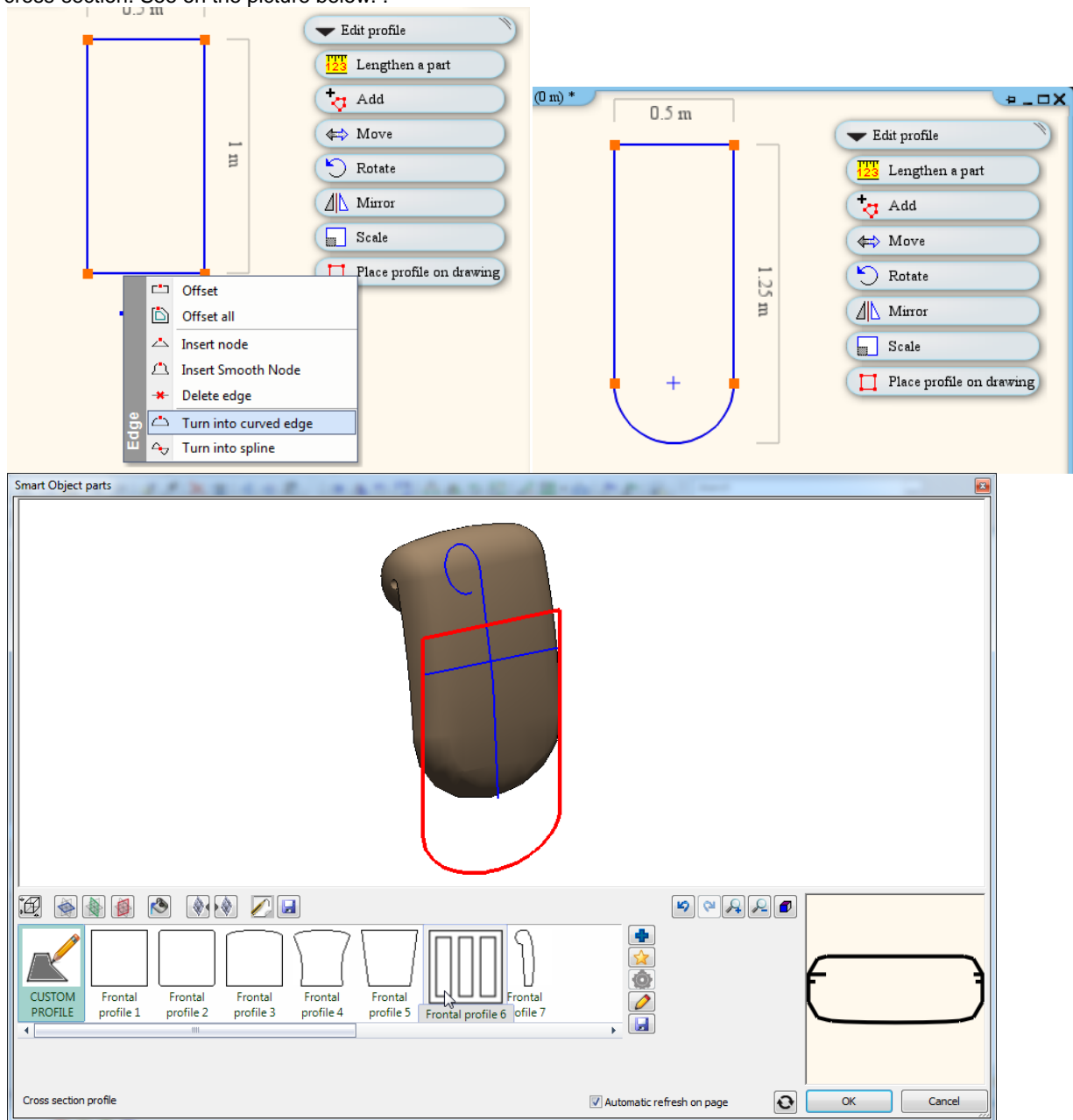
When you draw the cross-section you must also define its reference point.

Click first on the red circle icon and then click on the yellow five-pointed star icon. The dialog disappears temporary and you can draw the cross-section in the 2D or 3D workspace.

When you finish the profile definition press ENTER and the dialog comes back again.

Modify the cross-section

Use the “Modify profile” button on the left side of a panel. This button appears as pencil icon. You have to place the cross-section on the drawing and edit it with clicking on the curves or corner points. When you finish the cross-section definition press ENTER and the dialog comes back again displaying the smart object part with the new cross-section. See on the picture below. .



Textured surface effects

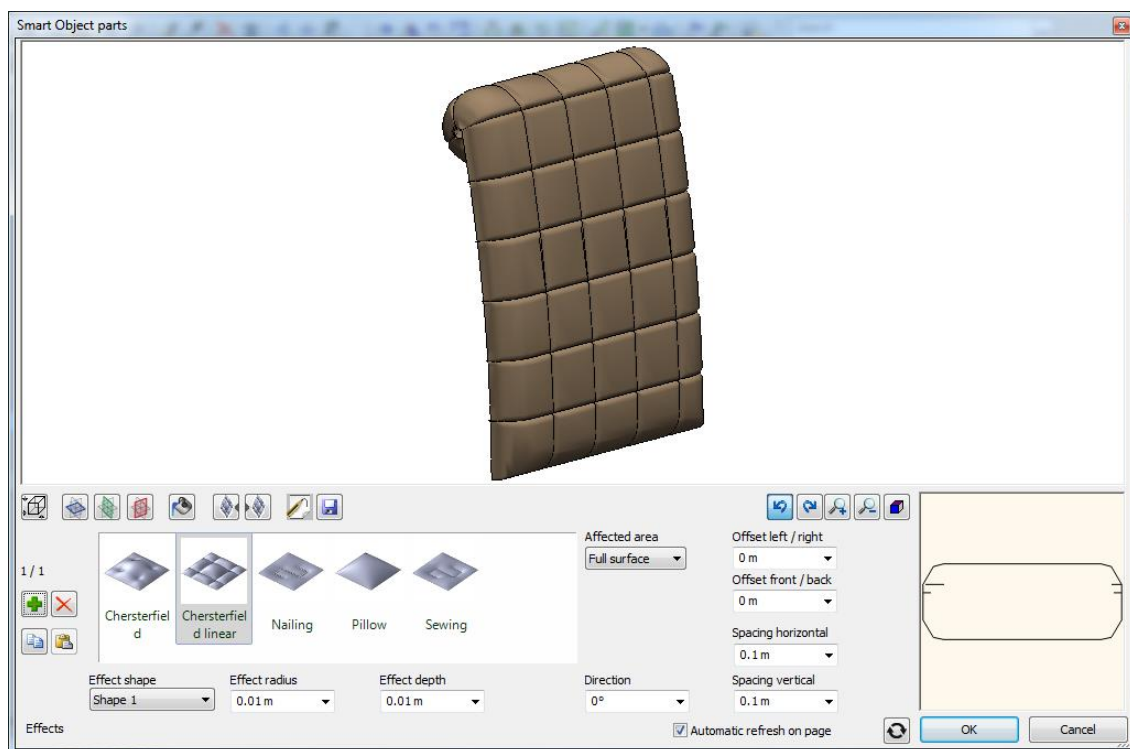
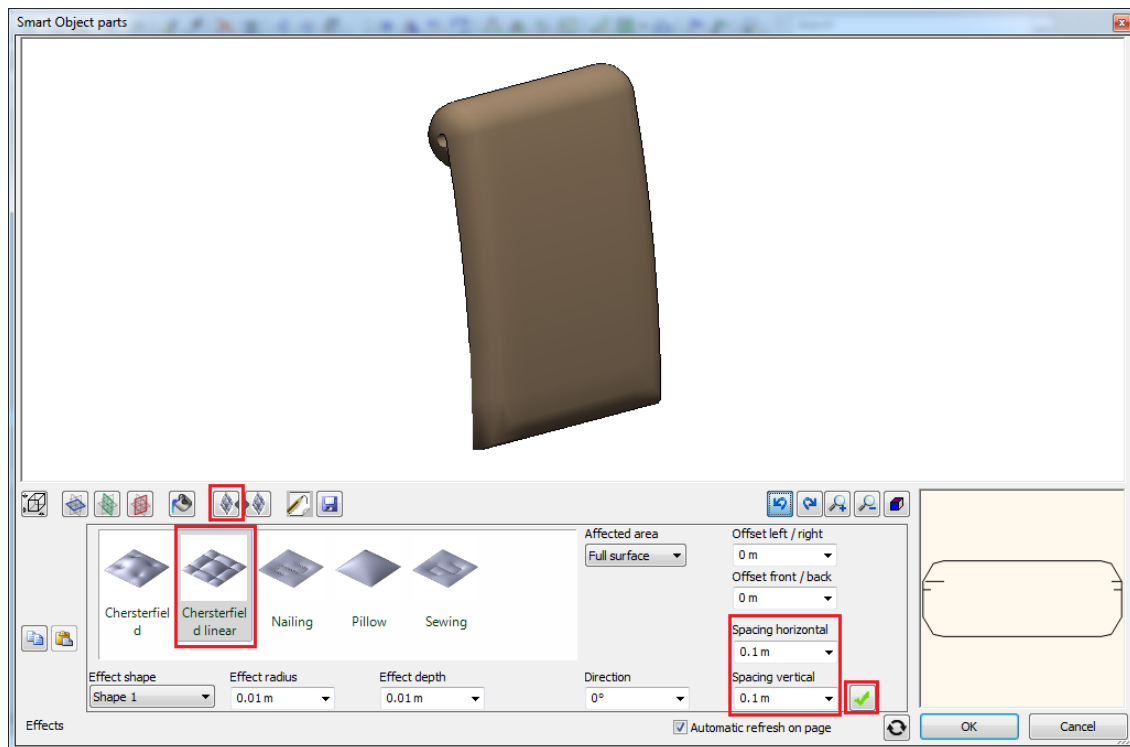
You can assign textured various surface effects to the front and backside separately:

Add the first effect

Use the “Effects” button on the top side of a panel. This button appears as textured surface icon.

Chose an effect from the predefined list. When you click on an effect the dialog will display the appropriate parameters of the effect. You can set always the affected area and the effect geometry.

You will add the new effect to the smart object part with clicking on the green tick button on the right side of the panel.

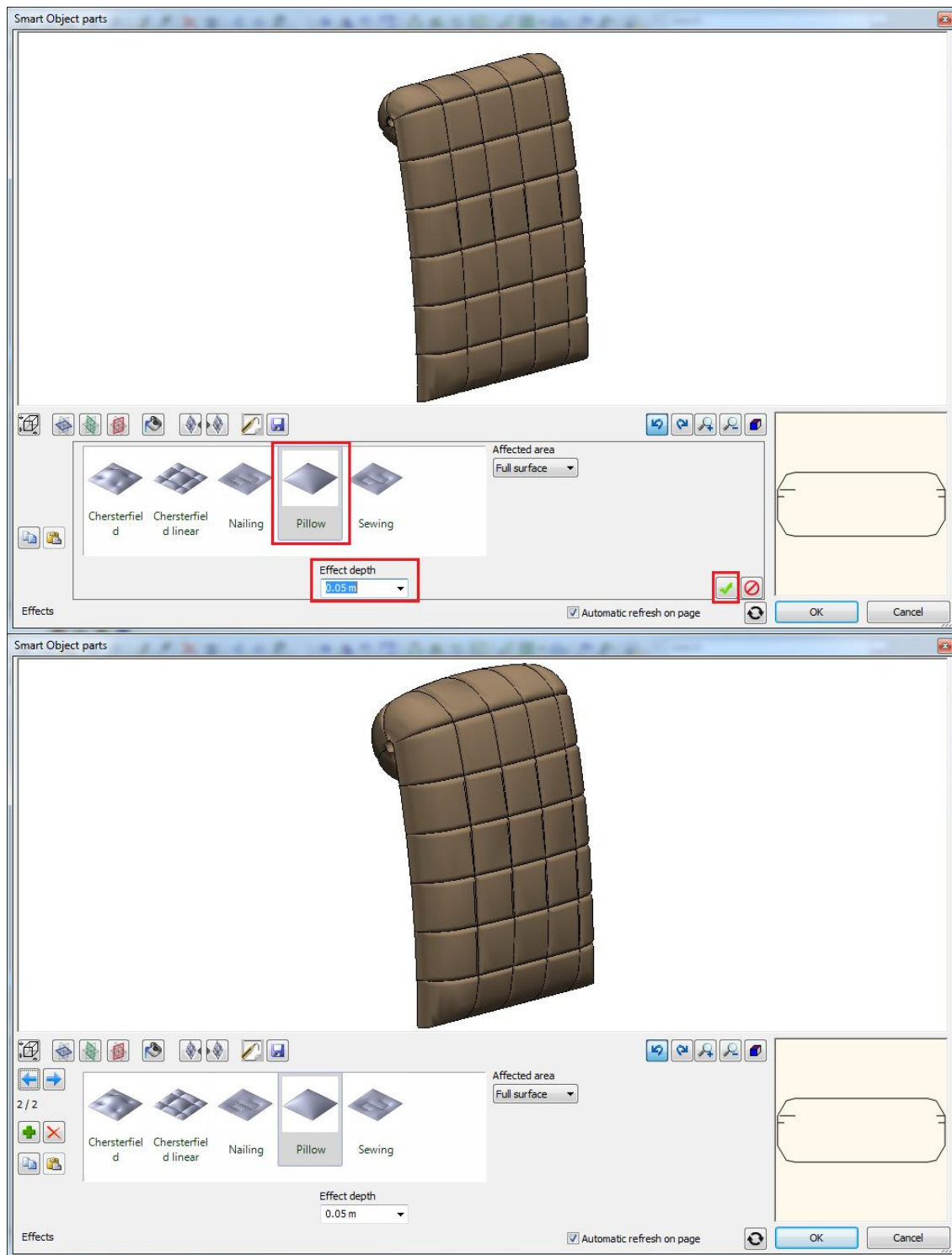


Add next effect

Use the “Prepare new” button on the left side of a panel. This button appears as green plus icon.

Choose another effect from the predefined list. When you click on an effect the dialog will display the appropriate parameters of the effect. You can set always the affected area and the effect geometry.

You will add the new effect to the smart object part with clicking on the green tick button on the right side of the panel.

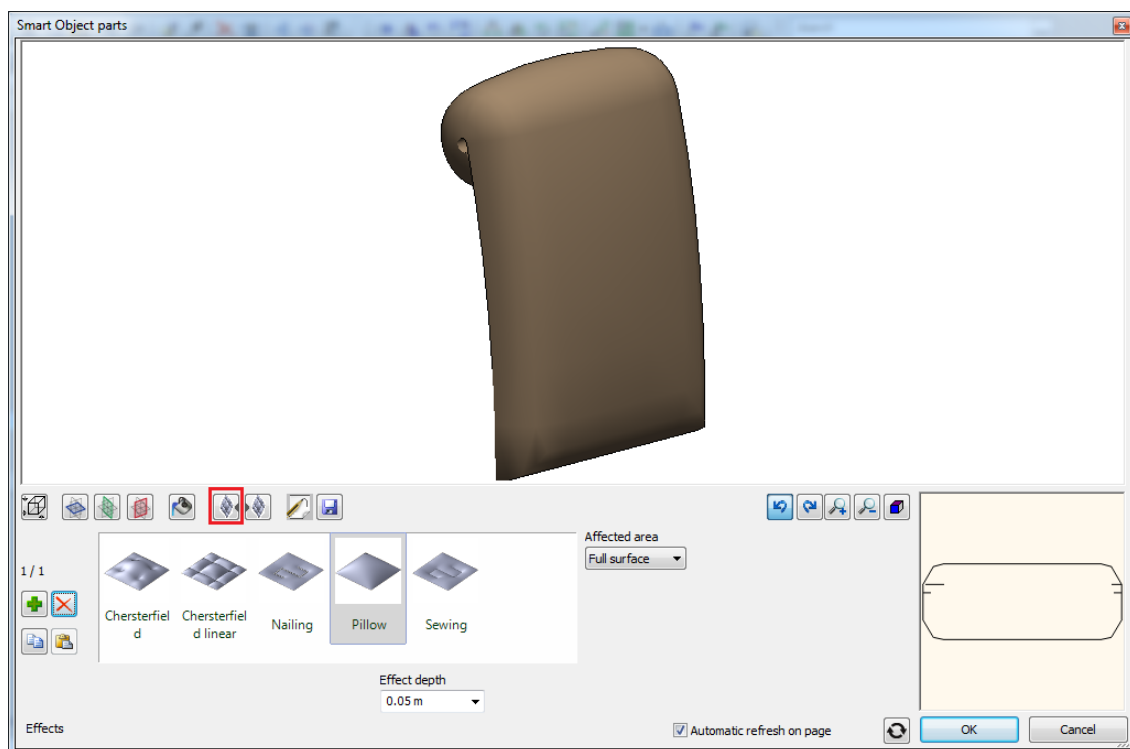
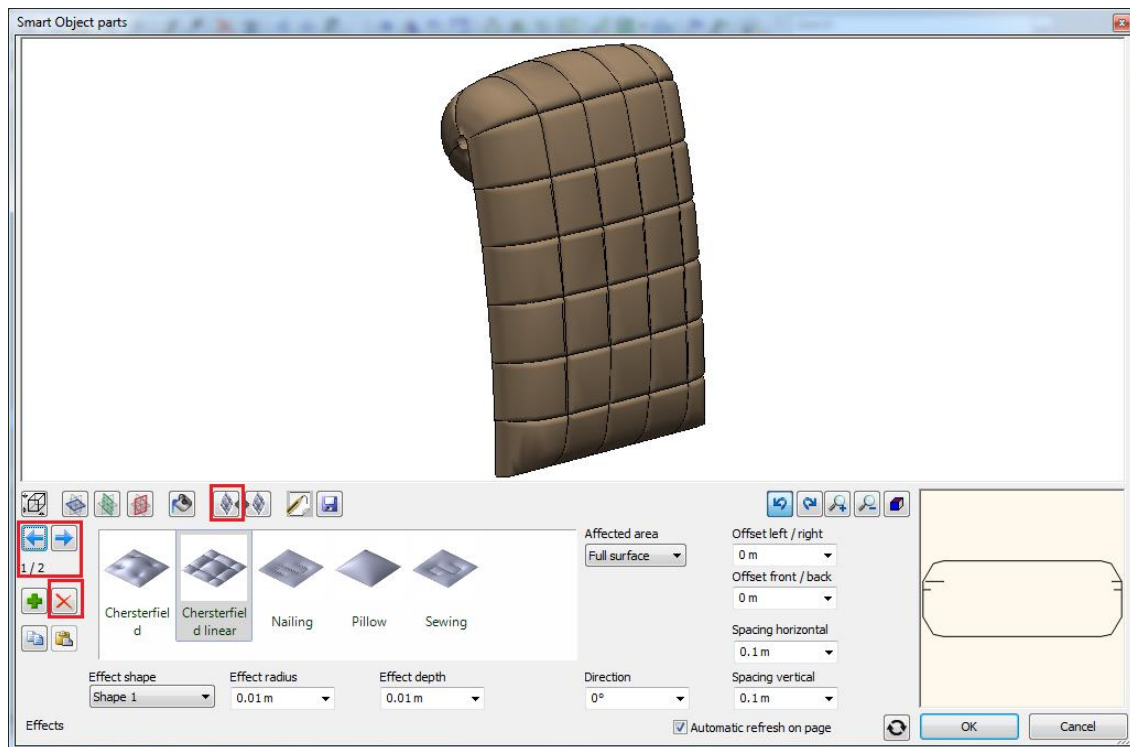


Delete an effect

The actually selected Effect- is highlighted in the Favourites list. You can select the previous or the next Effect with the Object index.

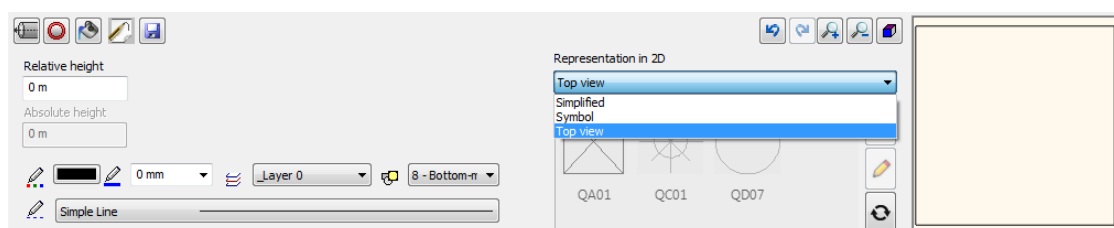
The object index list appears at the left side of the panel on top of the Prepare new / Remove actual buttons. It consists of two numbers separated by a "/" mark. The first number is the sequence number of the current object. The second number is the total amount of the available objects.

Click on "Remove actual" button to delete the actually selected Effect.



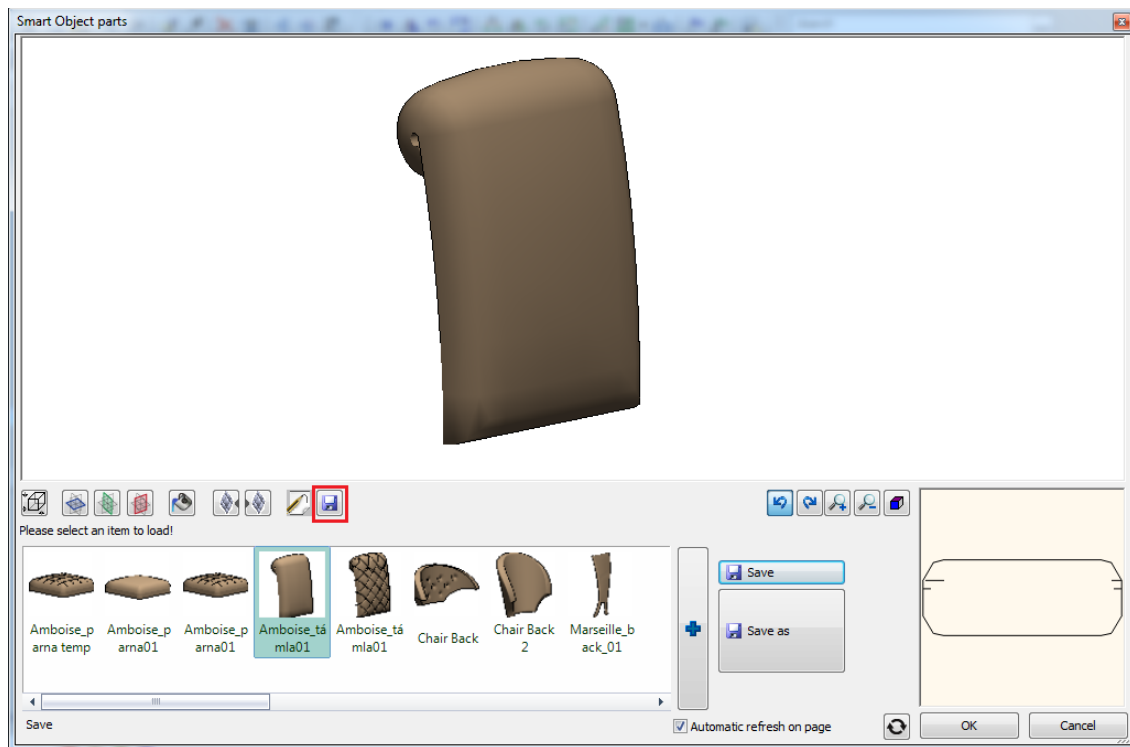
2D general properties

The 2D general properties contain the loft 2D representation properties as Layer, colour, etc. In addition you can choose the loft 2D representation as simplified, symbol or top view.



Save smart object part into OLI library

The Save panel allows you to save the 3D model into Objects library. The saved model will be inserted into the Favourites List, so you can choose it directly to continue the editing on it. The Save as button allows saving a new object with a different name.

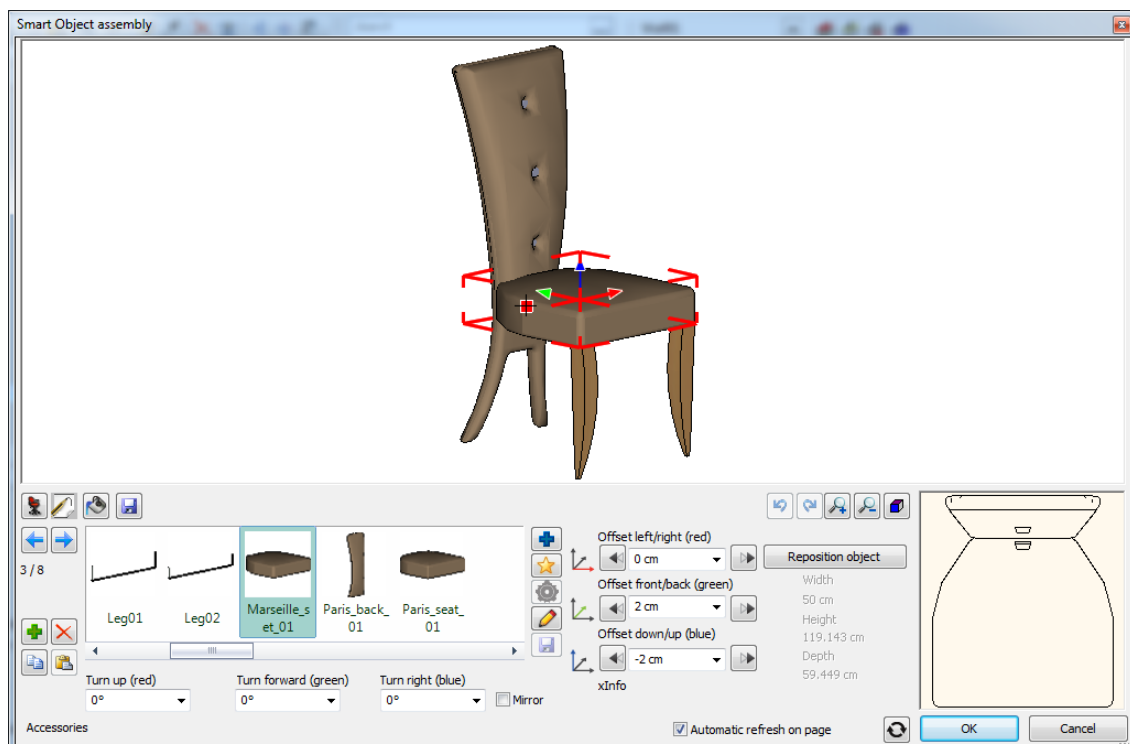


9.17.3. Furniture Assembly

Furniture Assembly is a platform that integrates flexible tools to compose complex furniture that consists of multiple pieces and requires assembly.

The dialog consists of the following easy to use 3D panels:

-Accessories:



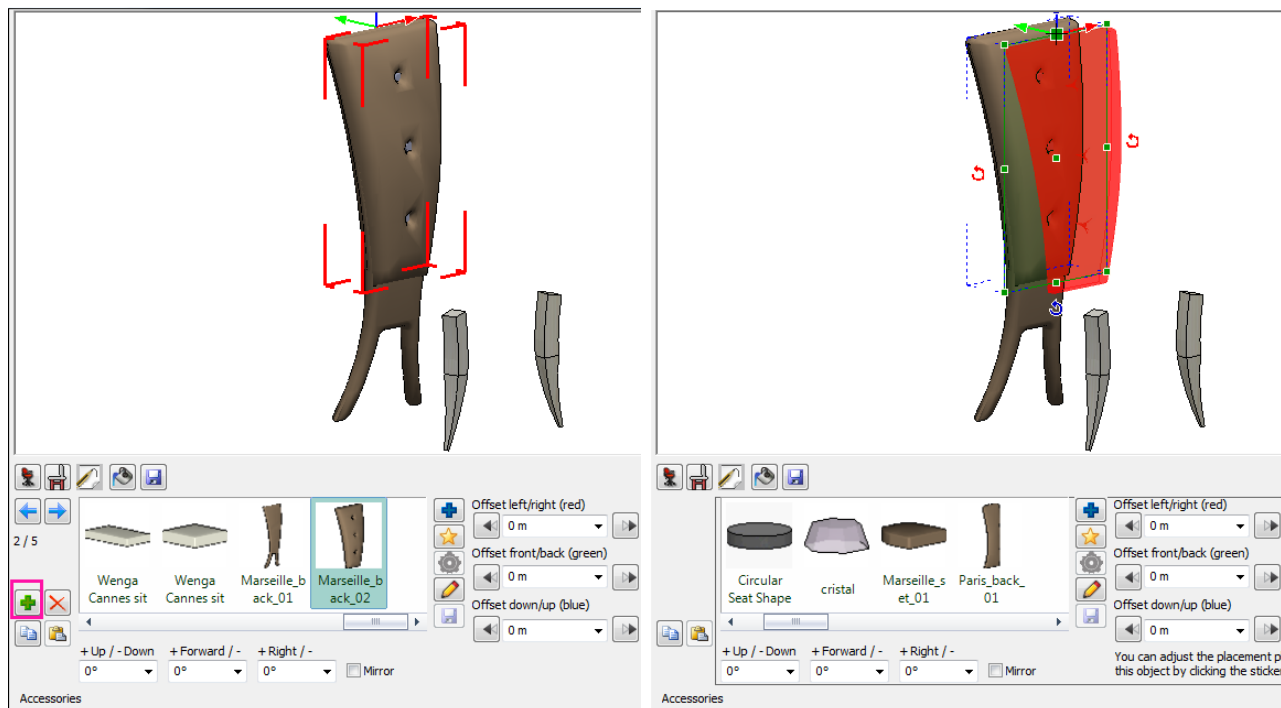
Accessories can be defined by this method:

Click on an existing object, displayed with red enclosing box.

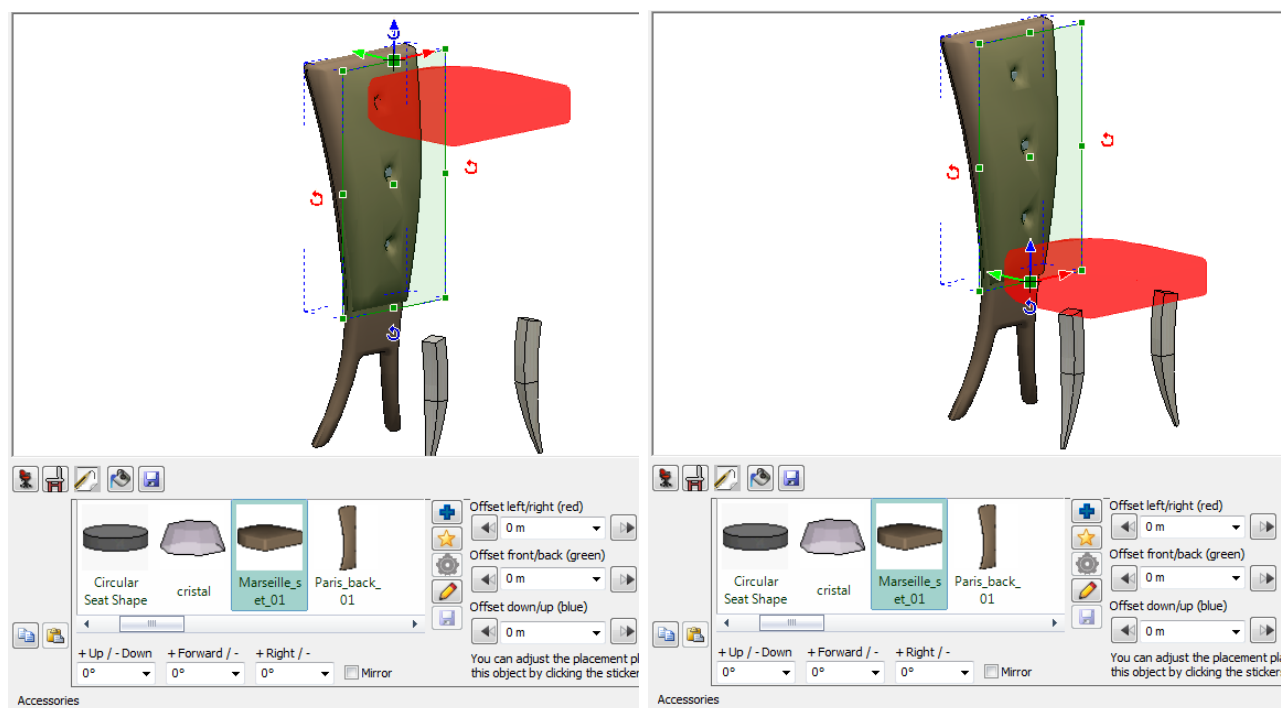
Click on the green plus icon in the left side of the panel.

The selected object will be duplicated displaying the new object. If you wish to select another one choose from the Favourites list or insert a new one with a click on the blue plus icon...

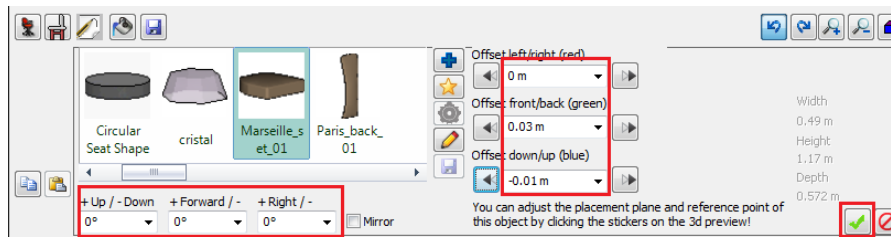
The new object will replace the actually selected one.



You can adjust the placement plane and reference point of this object by clicking on the green or red stickers on the 3D preview.

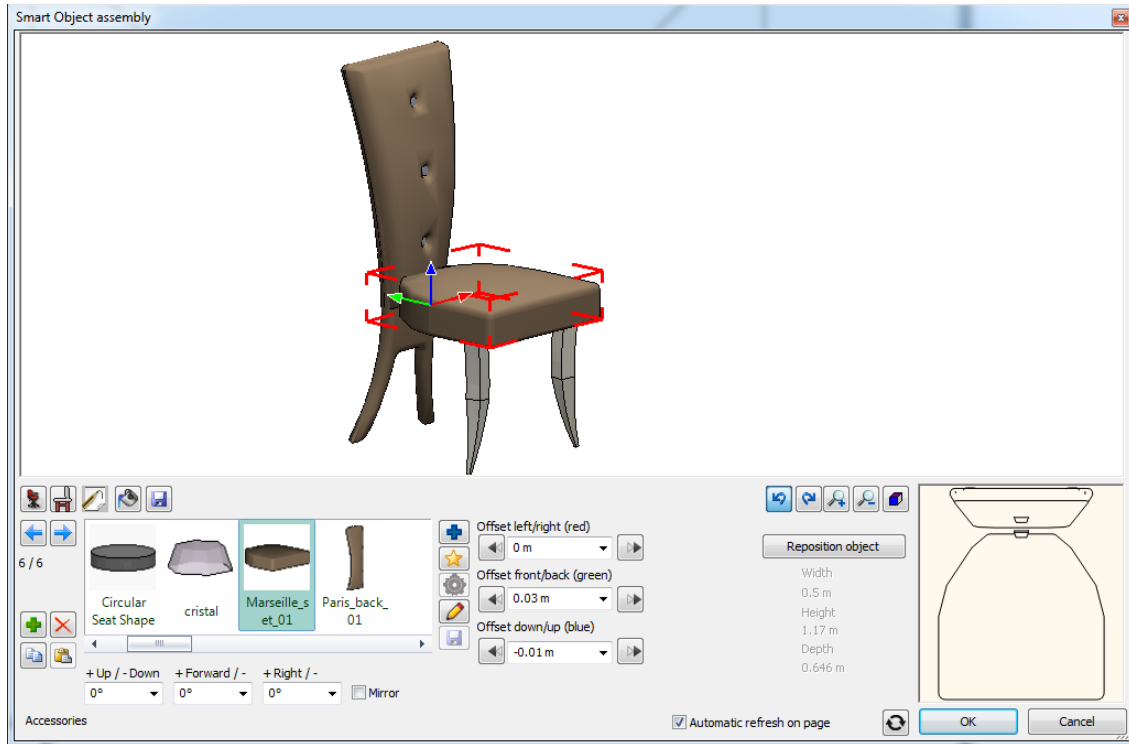


You can change the position and the orientation of the new object before fixing it with the green tick icon.



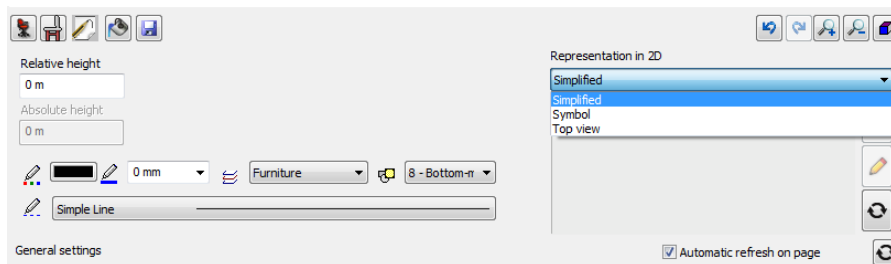
The new object is integrated now into the assembly.

There is no need to be very precise in this phase as you can change the position later as well.



2D general properties

The 2D general properties contain the loft 2D representation properties as Layer, colour, etc. In addition you can choose the loft 2D representation as simplified, symbol or top view.

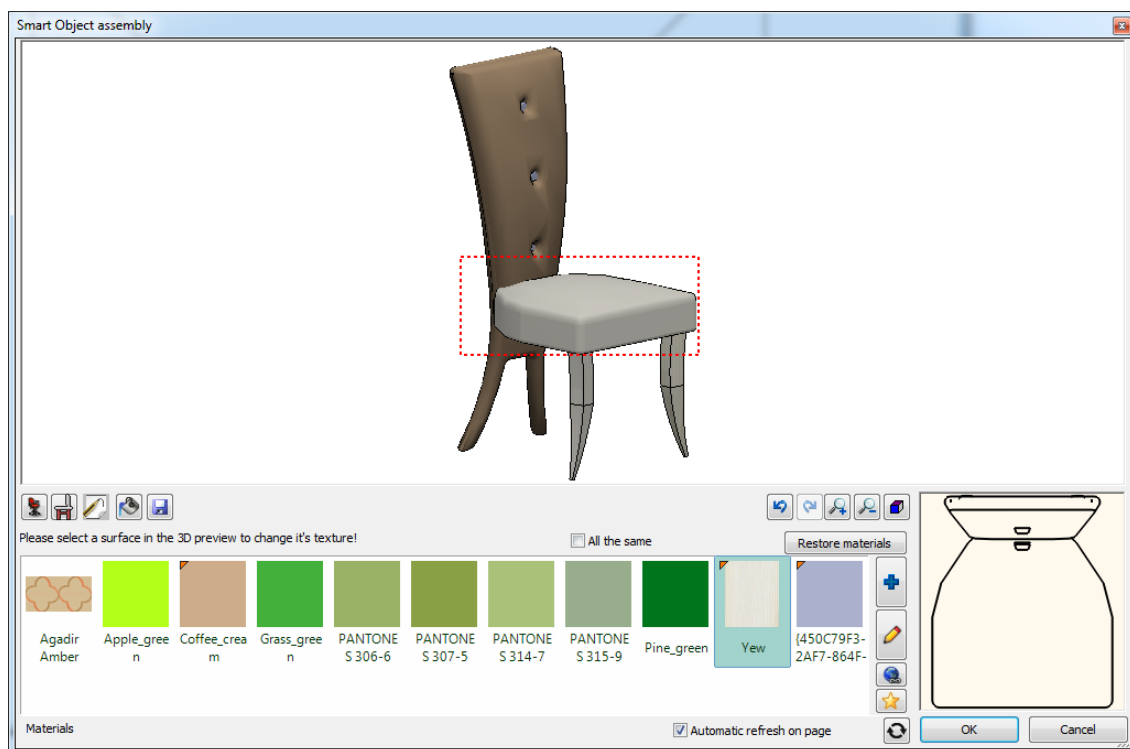
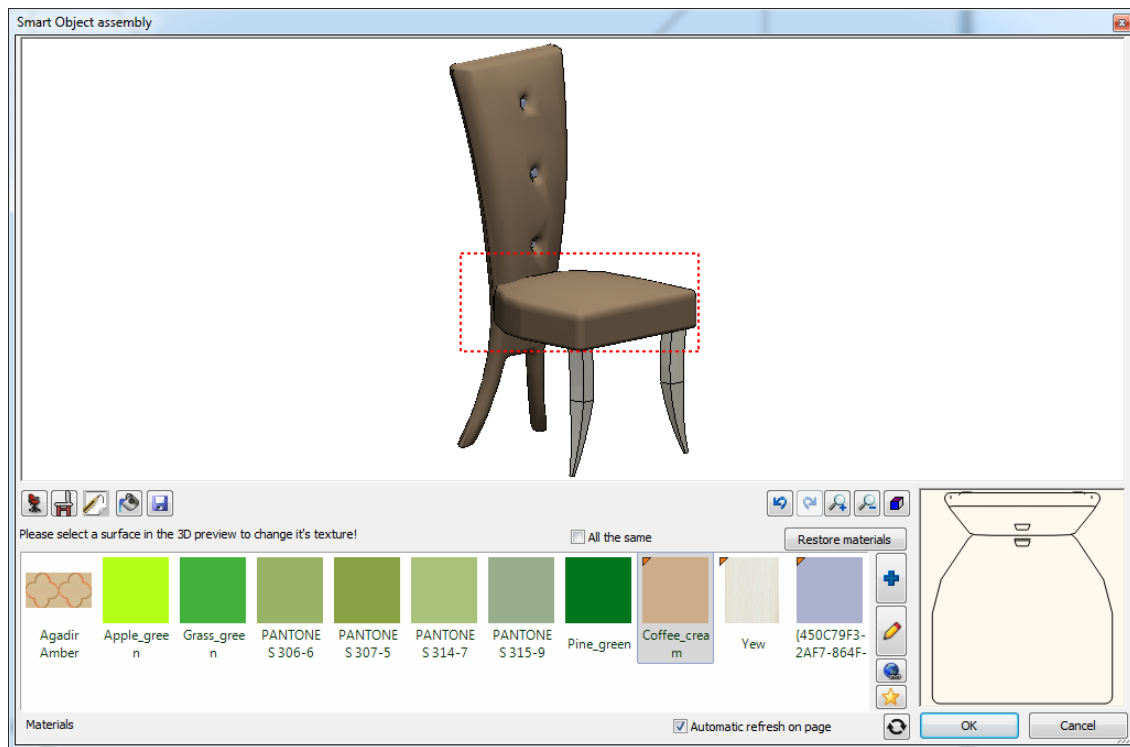


-Materials

The furniture itself is composed of different materials. Using the Material Panel you can change the material on the selected surface.

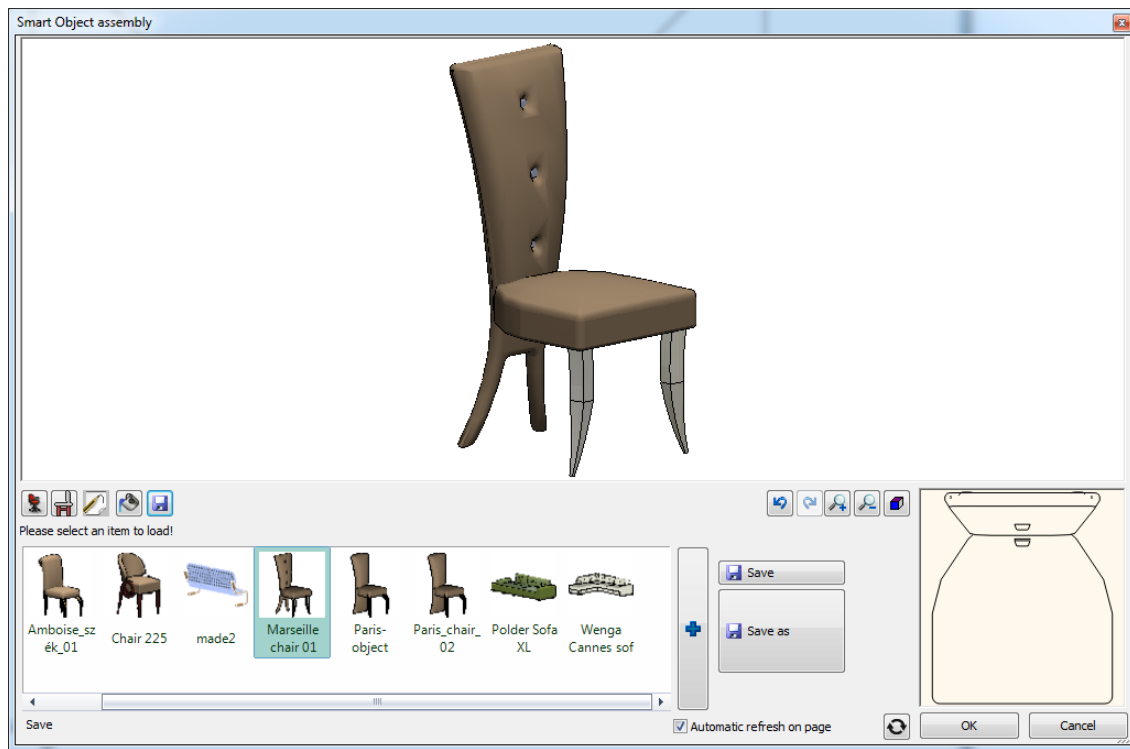
All the same option:

All the same option allows you to handle all the surfaces in one step when defining the material on their surfaces. When this option is on you can handle all similar surfaces together. When this option is off you can handle the selected surface only.



Save into OLI library

The Save panel allows you to save the assembled 3D model into Objects library. The saved model will be inserted into the Favourites List, so you can choose it directly to continue the editing on it. The Save as button allows saving a new object with a different name.



10. Dimension

Introduction

This chapter describes the dimension properties and commands available for dimensioning drawings and how to use them. The dimension tools are essential part of creating clear and precisely measured drawings.

Dimension

Certain dimensioning types – called **associative dimensioning** – are related to objects or to special points of objects. When applying associative dimensioning the program automatically modifies the dimensioning if you modify any object. Example: if you delete a wall, the program deletes the relevant dimensioning as well. You can remove **associative property of dimensioning**.

Any object of dimensioning (dimension line, text, marker, extension line, etc.) can be freely edited.

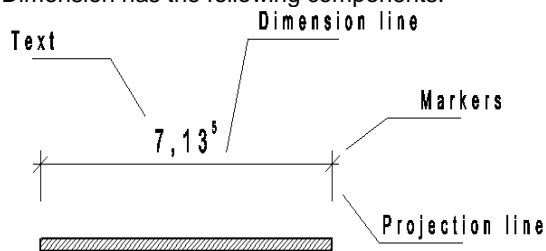
The **Quick dimensioning** command automatically collects the most often used types of line, distance, radius, diameter, angle and parallel dimensioning.

The **Wall dimensioning** command places the next dimensions in one step parallel to the wall:

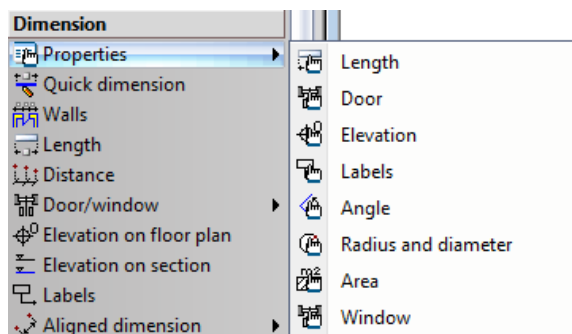
- ❖ wall endpoints and door and window axes,
- ❖ wall endpoints and door and window endpoints,
- ❖ wall connection points and wall endpoints,
- ❖ wall endpoints only,

10.1. Dimension properties

Dimension has the following components:



Before dimensioning the objects, set the appropriate dimension properties. Click on the *Dimension Toolbox - Properties* icon or select the *Dimension menu – Properties* command.



The following *Dimension properties* dialog box appears:

The Properties dialog box is divided into several sections:

- Dimension general properties:** Includes color, line width (0 mm), layer (Dimension01), and priority (8 - Bottom-most).
- Text parameters:** Includes font (Arial), style (Regular), size (200 mm), and spacing (5 mm).
- Dimension text properties:** Includes 3D dim. - text alignment fixed, text alignment (Parallel), and dim text on the other side, start angle (90.00).
- Arrowheads:** Includes arrowhead type, size (5 mm), and shape of arc length dimension (until 90°).
- Format parameters:** Includes format (SIA 0.5 cm), digits (0,12), and various substitution characters for format.
- Dimension line:** Includes show dimension line, value multiplier (1), parallel dist. (400 mm), and extension line settings.

You can set the following properties:

- ❖ *General properties, text, arrowhead*
- ❖ *Text parameters*
- ❖ *Format parameters*

10.1.1. General dimensioning properties, text, arrowhead

General dimensioning properties

Specify the general properties of dimensioning: colour, line width, layer and priority.

This section shows the following settings:

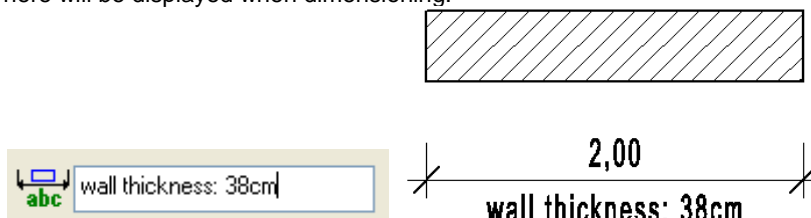
- Color: Black
- Line width: 0 mm
- Layer: Dimension01
- Priority: 8 - Bottom-most



See the detailed description of:

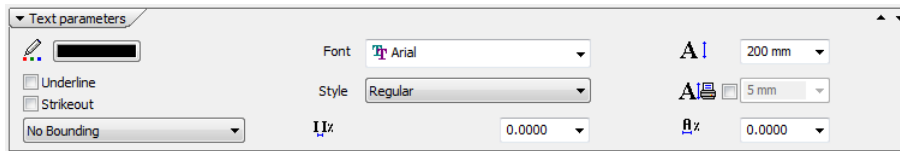
- ❖ *General properties* in Chapter 3.2.1. *Specifying general properties.*
- ❖ *Sets* in Chapter 3.2.3. *Using sets of properties.*
- ❖ *Cost variables* in Chapter 3.2.4. *Assigning cost variables.*

The **Extra text** field is activated when you modify any property of an already existing dimensioning. The text you enter here will be displayed when dimensioning.



Text

You can set the text properties of dimensioning here.

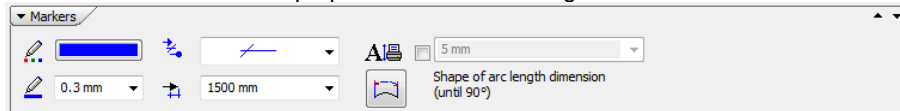


You can specify:

- ❖ the colour,
- ❖ the line width (selecting an object of the list or entering the desired value directly),
- ❖ the font type (selecting a Windows True Type font),
- ❖ the style (regular, italic, bold, bold italic),
- ❖ the character height (defining the height of the text character cells of dimensioning) of the text.

Arrowhead

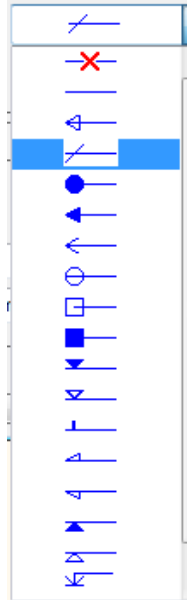
You can set the arrowhead properties of dimensioning here.



You can specify:

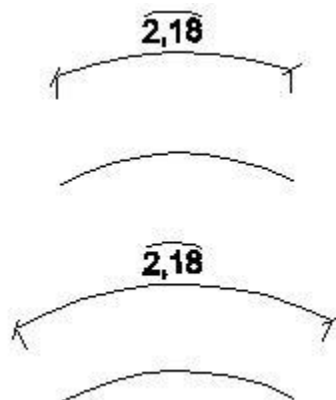
- ❖ the colour,
- ❖ the line width (selecting an object of the list or entering the desired value directly),
- ❖ the type,
- ❖ the size (at both ends of the dimension line) of the arrowhead.

- ❖ Select a type from the list. You can see the available maker types on the right:



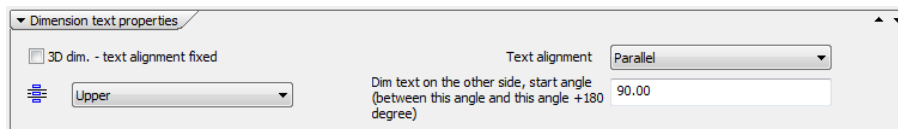
Shape of arch length dimension

You can set the arc's extension line to be radial or extension-directed in case of central angles under 90 degrees.



10.1.2. Text parameters

You can set other parameters related to the text of dimensioning by selecting the Text parameters option.



Placing

You can set the actual position of the text.

- Upper** The text is placed above the dimension line.
- On** The text is placed on the dimension line.
- Below** The text is placed below the dimension line.
- Outside** The text is placed on the side of the dimension line farthest away from the defining points.
These options useful at DXF/DWG import/export operations.

Text direction

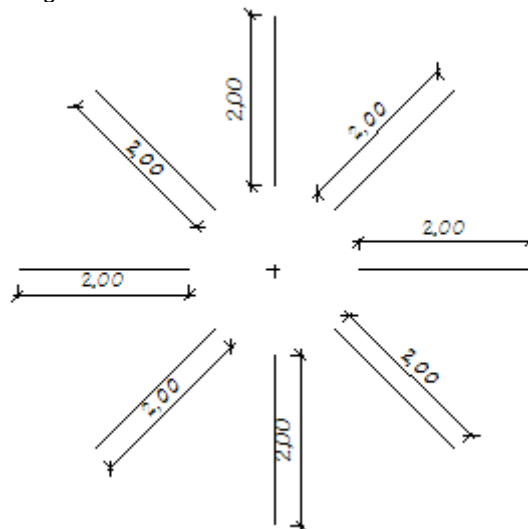
This option sets the current direction of the text.

- Off** Default text direction (in compliance with ISO standards. If the text is placed between 75 and 105 or 255 and 285 degrees it is placed perpendicular to the dimension line.
- In** The angle is marked horizontally, inside the arc.
- Out** The angle is marked horizontally, outside the arc.
- Perpendicular** The values of length and distance are marked perpendicular to the dimension line.
- Parallel** The text direction is always parallel with the dimension line.
- Fix 0, 90, 180, 270:** The text of dimensioning is rotated from the horizontal line with the selected angle and fixed.

Dimension text to other side, starting angle

You can specify the starting angle from which the dimension text can be moved to the other side by rotating it with less than 180°. The default setting of the starting angle is 90°.

This figure shows that – at 90° – the dimension text will be placed on the other side, if the angle of the line is more than 90° and less than or equals to 270°.

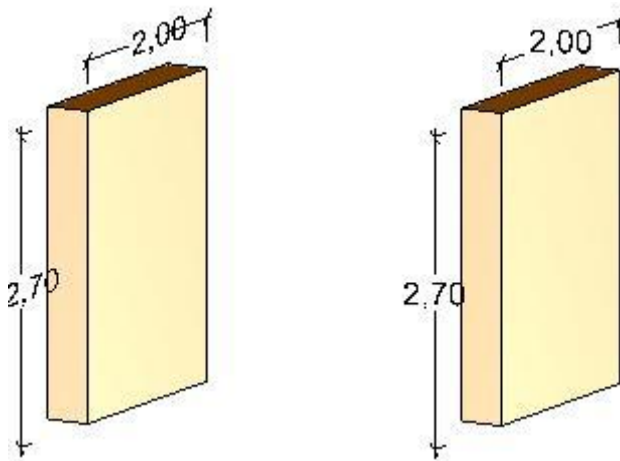


Text direction of 3D dimensions

You can fix the text direction of 3D dimensions on the projection with the help of switch according to the graphic:

Off

On



10.1.3. Format parameters

Click on the Format parameters or Dimension line option. You can set further properties of format, extension line, or other display characteristics of dimensioning.

Parallel distance

Set the distance between the texts in case of parallel dimensioning.

Scale factor

Set the current scale of the dimension figures. The dimension figures are multiplied by the set scale factor and are displayed in the dimension text.

Show dimension line

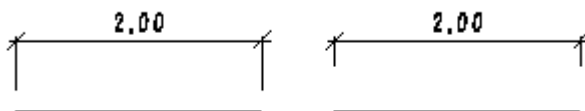
Shows or hides the dimension line.

Extension line

This checkbox allows showing or hiding the extension line.

You can set the extension line length relative to the arrowhead or dimension base line.

Activate the *Distance from object* or *Distance from dimension line* option and enter the desired value.

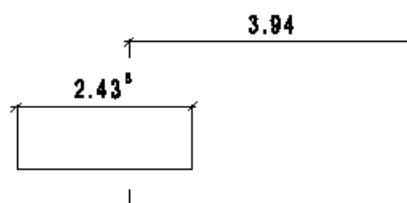


Distance from object or object:
200 mm

Distance from dimension line:
200 mm

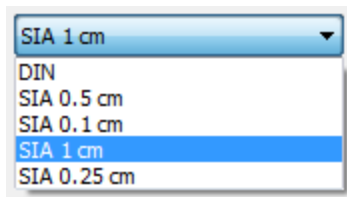


You can cut out a part of the extension line by selecting the **Dimensioning shortcut menu – Delete from extension line** command.



Options

You can select the standard of dimensioning for both length and angle dimensioning:



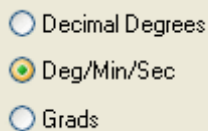
In compliance with the technical standard.
 In compliance with the architectural standard, with an accuracy of 0.5 cm.
 In compliance with the architectural standard, with an accuracy of 1 mm.
 In compliance with the architectural standard, with an accuracy of 1 cm.
 In compliance with the architectural standard, with an accuracy of 25 mm.

In the following table the DIN standard is set to an accuracy of four decimals, the SIA set for 1 cm rounds the value up to the second decimal while in the other two cases the accuracy of 1 mm or 0.5 cm is indicated by a superscript respectively.

| | |
|--|------------|
| | DIN |
| | SIA 0.5 cm |
| | SIA 0.1 cm |
| | SIA 1 cm |



To use the SIA standard, set the current unit of measurement to meter in *File menu – Options – General – Unit* dialog box.



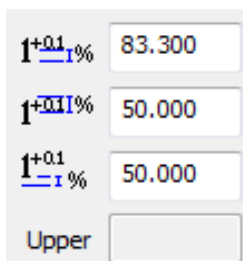
You can select any of the following options of angle dimensioning here:
 It displays the angle in decimal units (e.g.: 30.5°).

Degrees, Minutes, and Seconds (e.g.: 30°30'00")

Grads (unit of measurement in engineering) 400 degrees

Tolerance options

It specifies the tolerance of length dimensioning in case of *SIA 0.1* and *SIA 0.5* standards. The program displays the upper values of dimensioning according to the selected standard.



The distance between the lower corner of tolerance and the bottom of the dimension text as the percentage of the height of the dimension text.

The level of tolerance as the percentage of the height of the dimension text.

The distance between the bottom of the dimension text and the dimension line as the percentage of the height of the dimension text. It is relevant to all dimensioning standards.

Length and Angle

Suppress trailing zeros

If this option is on the non-significant zero decimals at the end of the index number for length or angle are hidden.

Length decimals

This option sets the current number of the decimals to be displayed when dimensioning. The program rounds off the figure appearing on the dimension line to the given number of decimals.

When the Din norm is used, the maximal number of decimals is 6. If you work in meters, it means micron accuracy.



The number of decimals can only be set for the DIN standard. This property cannot be interpreted for the SIA standard.

Length format

This option specifies the format of the dimension text. The „#“ character stands for the measured value and can be replaced or supplemented with other characters.



For detailed description see Chapter 10.3.12. *Format text*.

Angle decimals

This option sets the number of decimals in the angle index to be displayed. Specify a negative value to display only decimals different from zero.

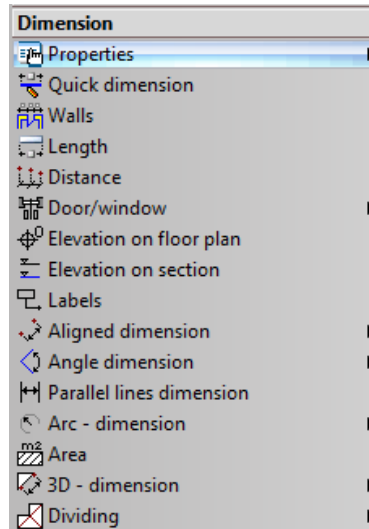
Angle format

With this option you can set the text format of the angle index number displayed.

10.2. Creating dimensions

You can activate the dimension commands from the *Dimension menu* or the *Dimension toolbox*.

You can find different type of dimensioning: length, distance, parallel, angle dimension and so on.



10.2.1. Quick dimensioning



The **Quick dimensioning** command automatically collects the most often used types of length, distance, radius, diameter, angle and parallel dimensioning.

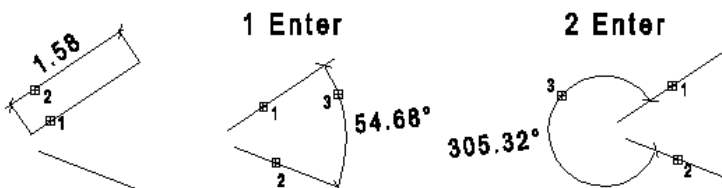
Click on the *Dimension Toolbox – Quick dimensioning* icon.

Quick dimensioning can identify the different drawing objects and can apply the following types of dimensioning within one command: distance, radius, diameter, and angle dimensioning as well as dimensioning of parallel lines.

- ❖ You can activate any dimensioning function by clicking on the corresponding object. Use the cursor to display the format of the current dimensioning. You can move between the dimensioning commands by pushing Enter.

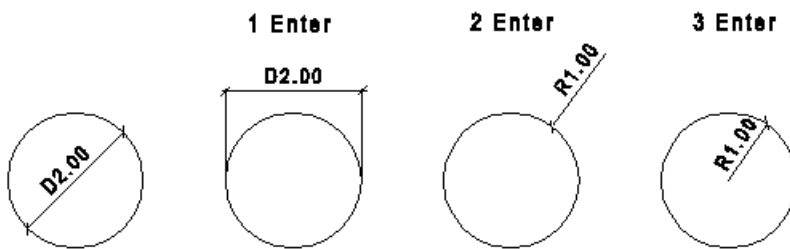
If the selected object is a Line or a Polygon:

- Select an object for dimensioning.
- The program performs the **Length dimensioning** command, or
- **Enter** Moves on to the **Angle dimensioning** command.
- (If the second object is parallel to the first one, the program performs the **Parallel lines dimensioning** command), or
- **Enter** Moves on to the Auxiliary angle dimensioning command.
- Select the second object.
- Specify the position of dimensioning.



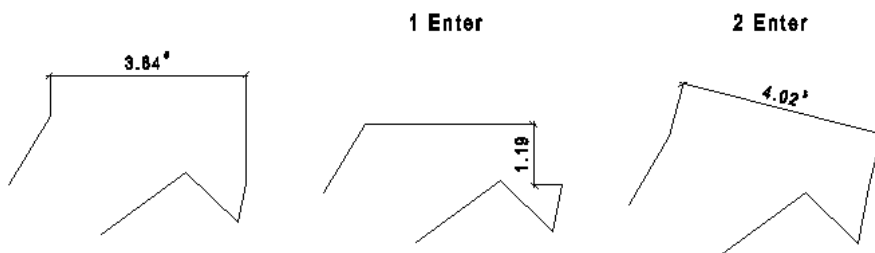
If the object selected first is a Circle or an Arc:

- Select an object for dimensioning.
- The program performs the **Diameter dimensioning** command, or
- Enter Moves on to the Radius dimensioning through centre command, or
- Enter Moves on to the General radius dimensioning command.
- Specify the position of dimensioning.



If the point selected first is close to an endpoint of an object:

- Select an object for dimensioning.
- The program automatically snaps to a special point. Then the program waits for the specification of another point to perform the dimensioning for the distance between the two points.
- Specify the other point (the change of the cursor will sign the identification of a special point). The program performs the **Distance dimensioning (X offset)** command, or
- Enter Completes the Distance dimensioning (Y offset) command, or
- Enter Performs another Distance dimensioning command.
- Specify the position of dimensioning.



The process is not as complicated as it might look on the basis of the description. See it for yourself!

10.2.2. Wall dimensioning

The program places a dimension string parallel to the wall or group of walls selected by automatically snapping to the following special points:

- ❖ wall connection points and wall endpoints,
- ❖ wall endpoints and door and window endpoints,
- ❖ wall endpoints and door and window axes,
- ❖ wall endpoints only,
- ❖ Wall connection points and wall endpoints with wall layer thickness.

You can specify the sequence of the parallel dimensioning.
After activating the command the dialog box will appear.

- Specify the desired option in the dialog box.
- Press the **Add** button. The selected option is added to the bottom list.

Specify the next option.

The program places the dimension strings in a sequence outwards from within, according to the specified order of options.
In case you wish to delete any option, click on the bottom list and press the **Delete** button.

Door / Window dimensions.

In the appearing dialog window you can set, that which parts of the openings will be on the dimension line in case of *Door/Window frame and wall endpoints*.



See the detailed description in chapter 9.3.1.5. *Visualization group*.

Dimensioning refer to middle of walls

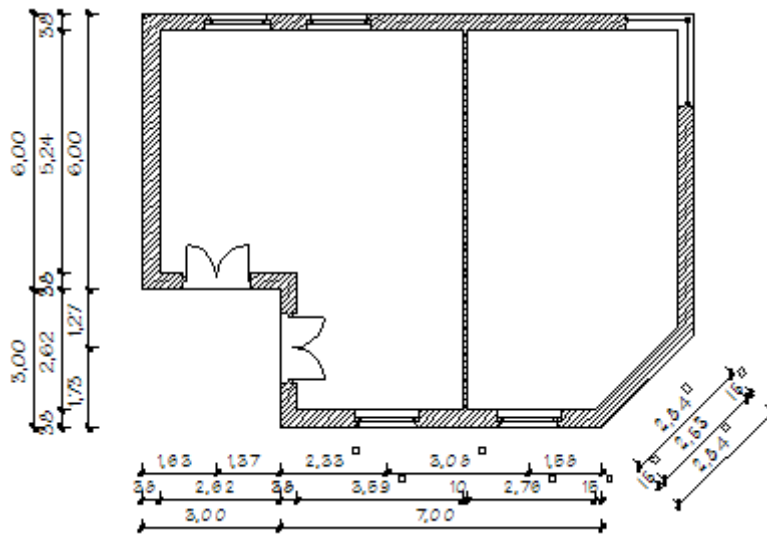
The program will dimension the wall middles, if you switch on the option.

- **OK** Closes the dialog box.

Dimensioning wall by wall

The most often used way of dimensioning is done by dimensioning the building by its outer walls.

- Specify the outer side of the first wall for dimensioning.
- By moving the cursor you can display a rubber line indicating the position of the innermost dimension lines. Specify the position of the dimension line.
- Specify the next wall on the same front. The program displays the dimensioning in a distance from the wall similar to the previously specified one. This way the dimensioning on the same front.
Enter Closes the dimensioning on the same front.
- Continue dimensioning on the next front. **Enter**.
Enter Completes the command.

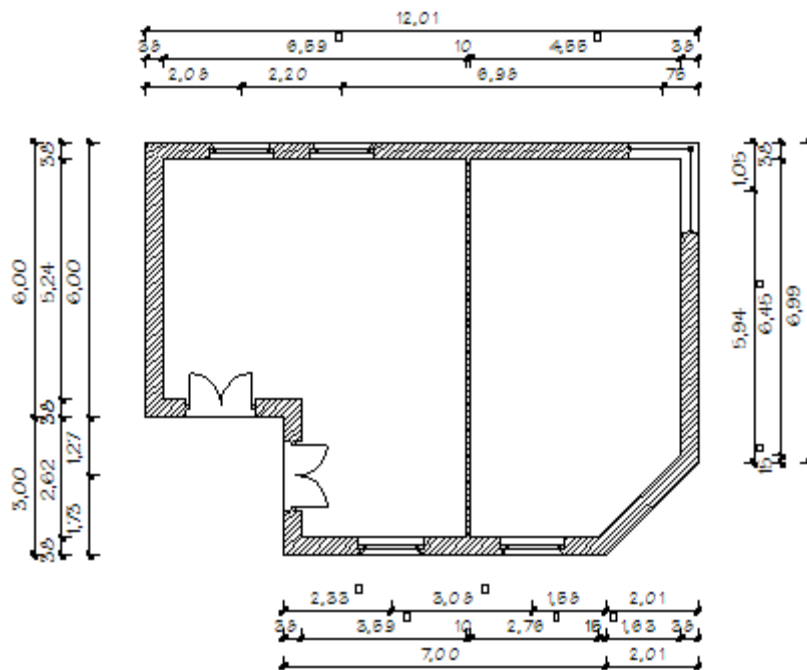


In case the distances within the same front are different, after pressing **Enter** you can continue dimensioning by specifying the next distance.

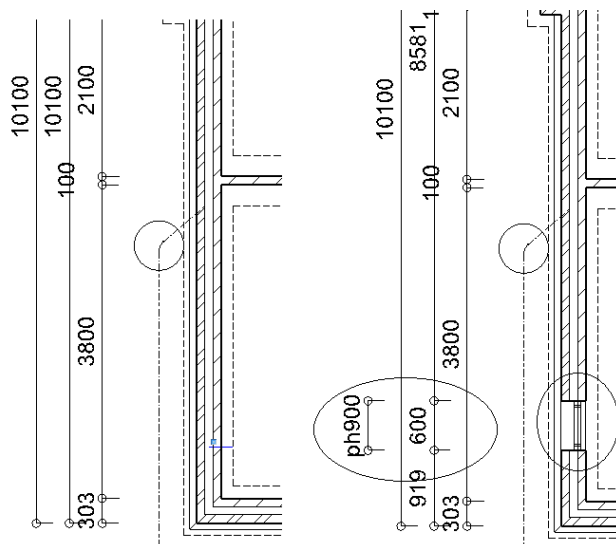
Dimensioning the complete building

You can do the dimensioning of the complete building in one step. In case the program skips a wall segment from the process of dimensioning (see the example below), follow the above described method.

- Click somewhere out of the corner points of the selected walls enclosing box.
Enter Completes the command.
- By moving the cursor you can display a rectangle indicating the position of the innermost dimension lines. Specify the position of the dimension line, or
if the front of the building is not parallel with either main axis (X, Y), select the **ANGLE** option. Now you can use either the **LIKE** option or the options of the **Define angle menu** to place the dimensioning parallel to the walls. Select the object on the drawing whose angle you refer to.
- **Enter, Enter** Completes the command.



The inserted door, window, joined new wall or deleted wall connection updates automatically the related dimensions..



To change the position of an already existing dimension string in one step, use the *Shortcut menu – Edit group of dimensioning – Move dimension string* command.
Use the *Dimensioning properties – Format parameters – Parallel distance* option to specify the distance between parallel dimension strings.

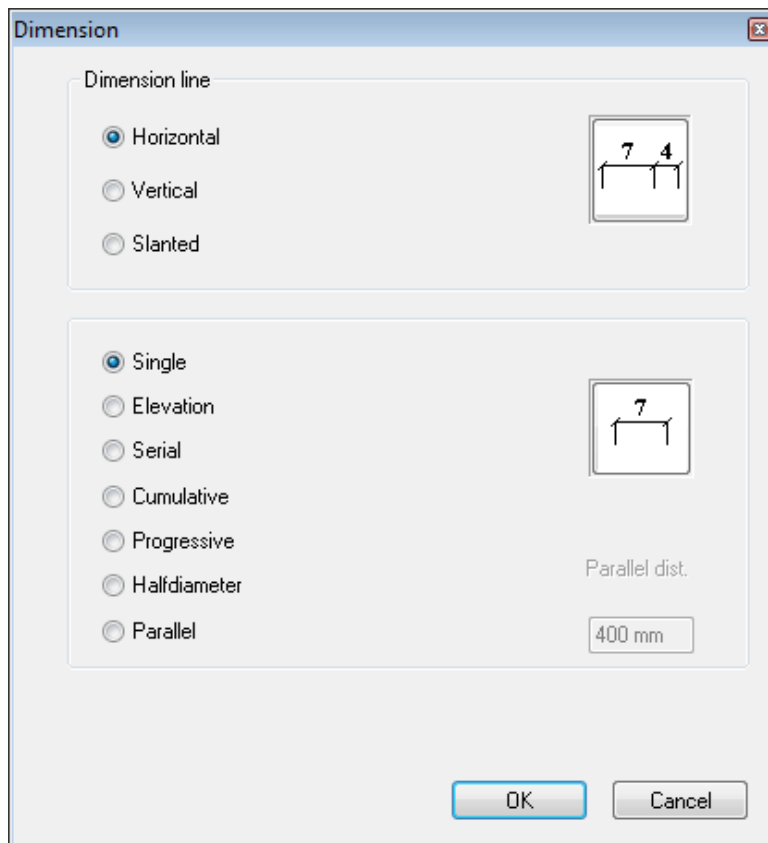
10.2.3. Distance dimensioning

This dialog box allows you to select from seven types of distance dimensioning in three directions:

Direction of dimensioning

Specify the direction of dimensioning. Between two points you can define:

- ❖ a horizontal dimension line,
- ❖ a vertical dimension line, or
- ❖ a dimension line at a given angle.



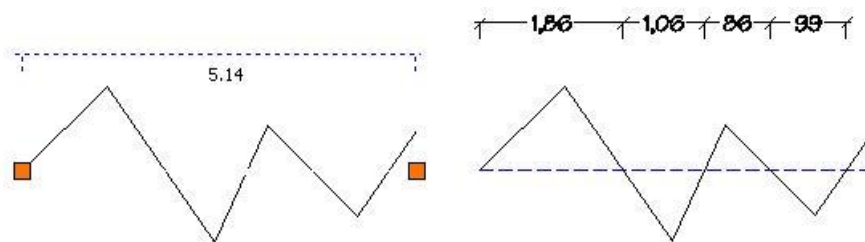
Type of dimensioning

Select a type of dimensioning from the following:

| | |
|---------------------|--|
| SINGLE | Distance dimensioning between two points. |
| ELEVATION | For creating architectural elevation dimensioning. |
| SERIAL | Dimensioning of distances between points is placed in a sequence. |
| CUMULATIVE | It creates the dimensioning of the distance of points from an origin. There is no arrow added at the end of the dimension lines closer to the basis. |
| PROGRESSIVE | It creates the dimensioning of the distance of points from an origin. The dimension lines appear at the drawing of the arrow. |
| HALFDIAMETER | diameter dimensioning with radius determine |
| PARALLEL | It creates the dimensioning of the distance of points from an origin. The new dimension lines are moved to a certain distance. |

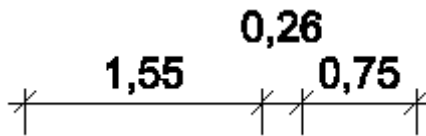
All cutting points

The program dimensions automatically the virtual section points between the first and second point of dimensioning according to the graphic:



Automatic text alignment

With this option, at serial dimensioning, the dimension text will be lifted up or dropped down automatically when there is not enough room to place the text between two consecutive points we use for the serial dimensioning.



- Specify the origin of the dimensioning (point 1).
- Specify the second point.
- Specify a point of the dimension line.
- Specify the third point.
- Define point n°.

Enter Completes the procedure.

Enter Completes the command.

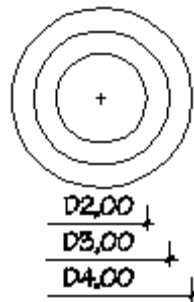
HALF DIAMETER:

This option can be used for the dimensioning of symmetrical objects. First define a point of the symmetry axis then the extreme points of the desired objects. The program displays the double value of the measured distance on the dimension line and marks it as diameter.

- Specify a point of the symmetry axis.
- Specify the point of the object to be dimensioned.
- Specify a point of dimensioning.

Enter Completes the command.

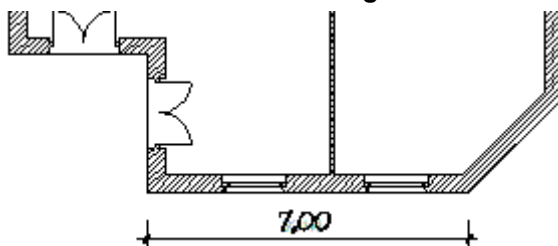
The picture on the left illustrates the dimensioning of the horizontal half diameter.



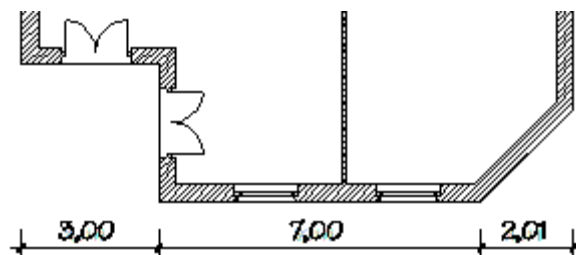
Characteristics of dimensioning:

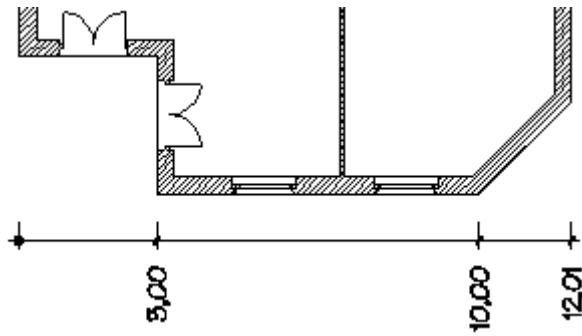
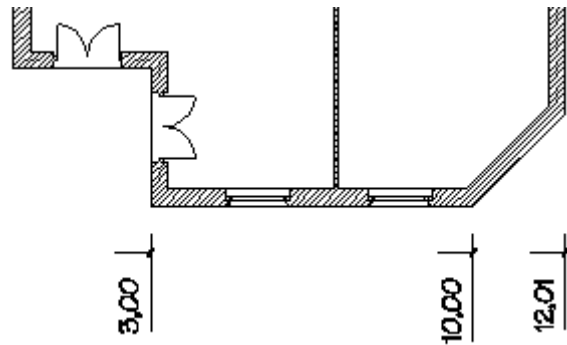
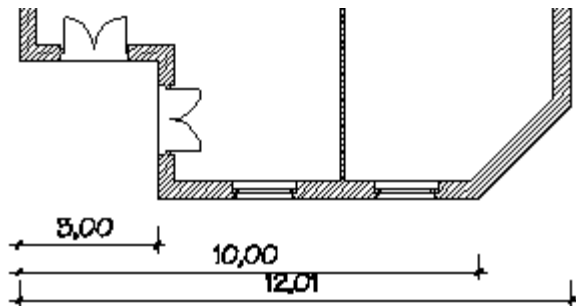
- ❖ If a special point (endpoint, centre point or half point) is selected, the dimensioning is related to that point and is associative.
- ❖ In case of serial, cumulative or progressive dimensioning you can move the text if it overwrites the arrow or another dimension text. Press Enter to move the text to its original position.
- ❖ In case of parallel dimensioning you can specify the distance between the dimension lines. See the description of dimensioning properties.
- ❖ To insert or delete a dimension line in the series, use the *Dimensioning shortcut menu – Edit group of dimension - Insert dimension, Delete dimension* commands.

Examples of horizontal dimensioning:



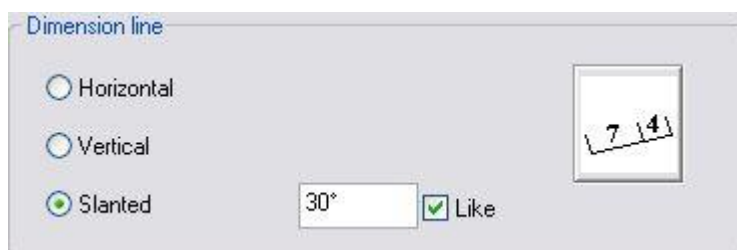
Single

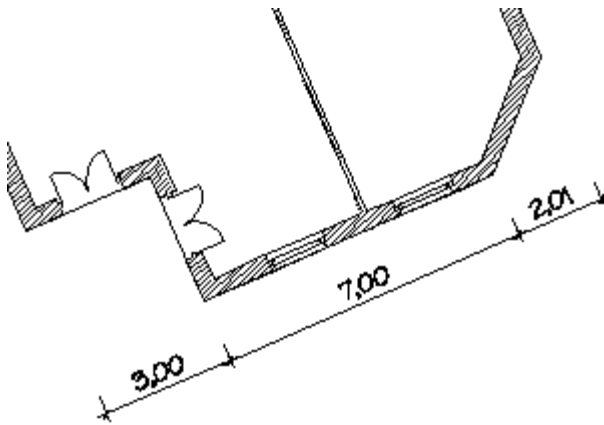


Serial**Cumulative****Progressive****Parallel****Example of slanted dimensioning:**

In case of slanted dimensioning enter the angle of the dimension line or select the *Like* option, and then specify the object in the drawing whose angle you refer to.

Use slanted dimensioning when the objects to be dimensioned are not parallel with either of the main axes (X, Y).

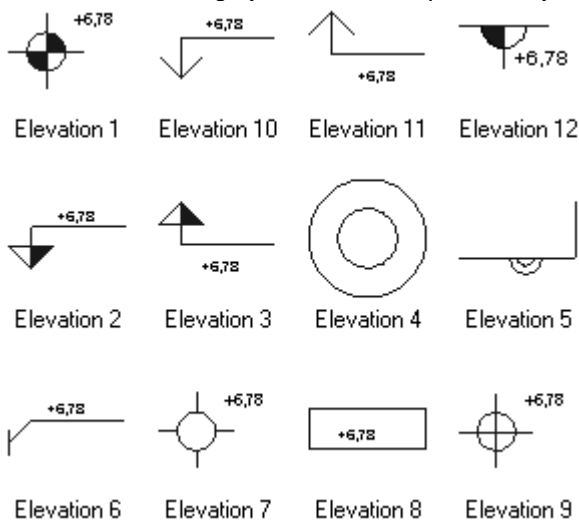




Serial

10.2.4. Elevation on floor plan

You can indicate the elevation of walls, slabs, roofs or objects in the floor plan using predefined or user-defined symbols. In the *Elevation* category under the *Groups* directory in the Design centre you find various predefined symbols:



Symbols have two types:

- ❖ In the case of **Symbol with text**, when inserting the symbol the program automatically displays the elevation value in the specified unit.
- ❖ In the case of **Symbol without text**, the elevation value is not displayed.


Define customized symbols

You can create customized symbols with or without text in the following way:

- Draw the symbol in the floor plan.
- Insert a text next to the symbol if you want the elevation value to be displayed. The elevation value will be inserted in the place of the text.
- Create a new 2D group including the symbol and the text. Adding the text to the 2D group is again optional, of course.
- Save the 2D group under a name that begins with ElevationXP2 (e.g., ElevationXP2_gaspipes). It is on the basis of the group name that the program recognizes that it is a particular group used to indicate elevation.

Place elevation symbol



- Choose the Dimension tool-  Elevation on floor plan command
- Choose an object to measure it.
- Choose the point of the selected object the elevation of which you wish to display.
- Define whether the point of your selection is the lower or upper point of the object.
- Then in the dialog box the elevation value of the selected point is displayed. You can modify this number as you like.
- From the displayed group dialog choose an elevation symbol.
- Insert the elevation symbol into the floor plan.

Place elevation symbol from Design centre

- Find the predefined or customized symbol in the Design centre you wish to use to indicate elevation.
- Click the symbol with the left mouse button and holding it down drag the symbol over the floor plan. Having released the left mouse button, select the wall, slab, roof or object the elevation of whose point you want to display.

- Choose the point of the selected object the elevation of which you wish to display.
- Define whether the point of your selection is the lower or upper point of the object.
- Then a dialog box will appear where in the entry field the elevation value of the selected point is automatically displayed. You can modify this number as you like.
- Insert the elevation symbol into the floor plan.

The program will handle the inserted elevation as a group.



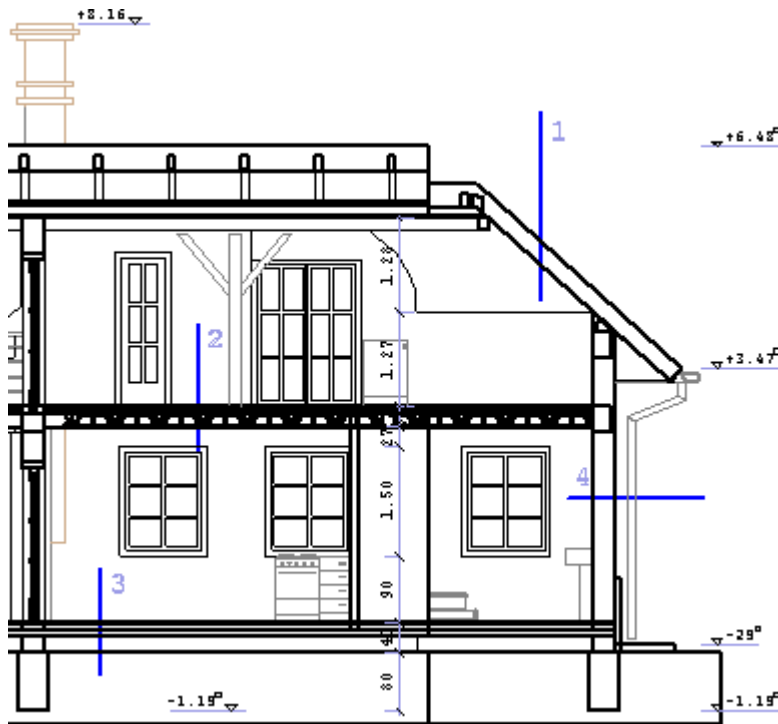
This parameter is not associative; the modification of the object will not affect this value. Elevation can be assigned to such objects only, what have existing 3D model.

10.2.5. Elevation on section

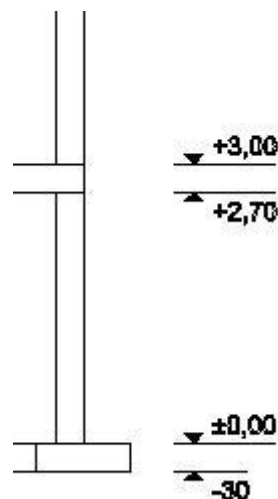
Use this command to create the elevation dimensioning of the drawing by specifying the elevations points one by one.

- Specify the first point of dimensioning to serve as a reference point for the program from which to measure all the other values.
- Specify the next point to be measured.
- Specify the location of the dimension line.
- Repeat the process until you have measured the elevation of all the desired points.

Each dimensioning is placed on the dimension line specified for the first point.



The placing of the text depends on that what kind of arrow ending we set. That means, that if we place the arrow down, then it sets the text down and, if to the top, the text will be on the top too.



10.2.6. Door/Window

This command

- ❖ creates the dimensioning of the selected door/window according to the values given in the **Door/Window properties – Dimensioning** dialog box, or
- ❖ Modifies the dimensioning direction of the placed door/window.

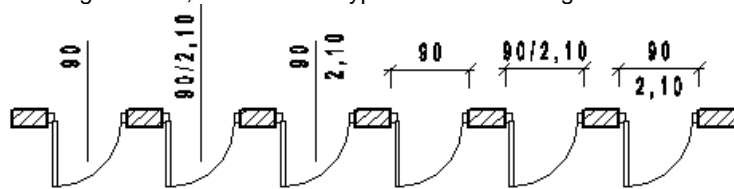
The type of door/window dimensioning depends on the values specified in the *Door/Window properties – Dimensioning* dialog box.

Dimensioning

- Select the doors/windows to be dimensioned. In case of window the value of the parapet height is placed on the clicked side.
or
- Select the **ALL** option to create the dimensioning of all the doors/windows in one step. The value of the parapet height is placed automatic on the inner side of the window.

Example:

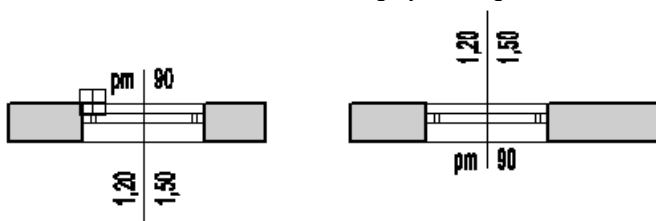
Door width: 0.9 m,
door height: 2.1 m, with different types of dimensioning:



Modifying the direction of dimensioning

This command places the dimensioning of the selected door/window on the desired side.

- Select the door/window to which the door/window dimensioning belongs.
Place the door/window dimensioning by clicking on the desired side.



Use the *Modify menu – Copy properties* command to copy the properties of the door/window dimensioning.

Modifying the values of dimensioning

By changing the door/window dimensioning values you can quickly modify the main parameters of a door/window. This means that the width, height and parapet height parameters can be modified through the dimensioning values.

- Click on the door/window dimensioning value.
- Specify a new value in the input field. The door/window will follow the change.



You can dimension the door/window from the shortcut menu of door/window.

10.2.7. Deleting door/window dimension

Use this command to delete the dimensioning of selected doors/windows.

- Click on the dimensioning to be deleted, or
- Select the **ALL** option to delete each door/window dimensioning.

10.2.8. Labels

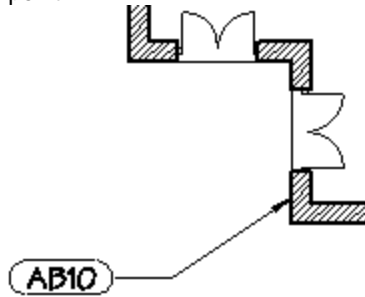
Use this command to place the given text labelled with an arrow pointing to a given direction.

The pointer consists of a poly line (with a maximum number of two segments) with an arrow at the end.

You can specify the object to which the labelled text with the arrow refers. From then on the pointer is assigned to the specified object, so for example if you delete the object, the pointer will be automatically deleted as well. However, if you delete the pointer, it does not mean the automatic deletion of the object.

If you do not specify any object, the pointer is not assigned to anything.

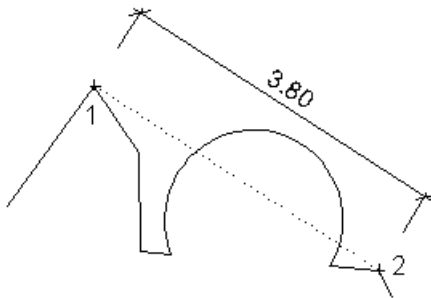
- Enter the desired text in the dialog box.
- Specify the object to which you want to assign a dimensioning pointer or press **Enter** to have a pointer not assigned to anything.
- Place the text on the drawing by its centre point.
- Specify the first segment of the pointer by its endpoint (the starting point is the centre point of the text). The first segment can only be either horizontal or vertical.
- Specify the second segment of the pointer by its endpoint (the starting point is the endpoint of the first segment), or
- **Enter** The pointer consists of one segment only.
The program draws the pointer.
- **Enter** Completes the command.



10.2.9. Aligned

You can measure the distance between two points as well as create their dimensioning. The direction of the dimension line can be similar to that of the line crossing the two points as well as horizontal or vertical.

- Specify the first point.
- Specify the second point.
- The default setting of the program draws a dimension line of a direction similar to that of the line crossing both points, or
- **ENTER** if you want to have a horizontal dimension line, or
- **ENTER** if you want to have a vertical dimension line, then
- Place the dimensioning.
- **Enter** Completes the command.



10.2.10. Length (horizontal, vertical)

This command creates the dimensioning of an object so that the dimension line crosses a selected point and is parallel with the object or either horizontal or vertical.

- Select the object to be dimensioned.
- The default setting of the program draws a dimension line of a direction similar to that of the line crossing both points, or
- **ENTER** if you want to have a horizontal dimension line, or
- **ENTER** if you want to have a vertical dimension line, then
- Place the dimensioning.
- **Enter** Completes the command.

10.2.11. Length aligned

The command projects the dimensioning of a selected object through a specified point in a given direction.

- Specify the direction of the extension.

Options:

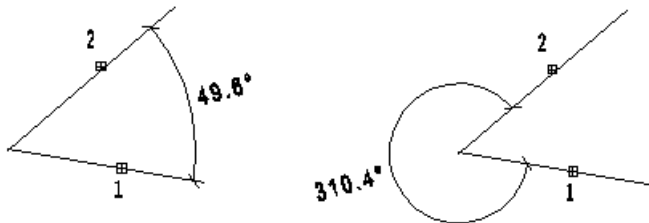
| | |
|--------------------------|---|
| PICK UP | Applies an angle similar to that of the drawing object. |
| Type the value... | Numerically defined angle |
| ENTER | Applies the current angle. |

- Select the object to be dimensioned.
- Specify the place of dimensioning.
- **Enter** Completes the command.

10.2.12. Angle

This command creates the angle dimensioning of two specified object through a selected point.

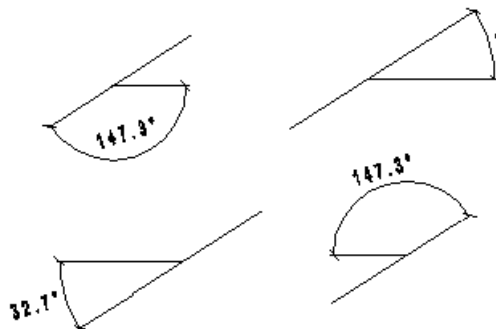
- Select the first object.
- Select the second object.
- Place the dimensioning, or
- **Enter** Measures an auxiliary angle.
- **Enter** Completes the command.



10.2.13. Angle (Horizontal)

The program creates the angle dimensioning of the selected object (or tangent) and the positive X axis through a given point.

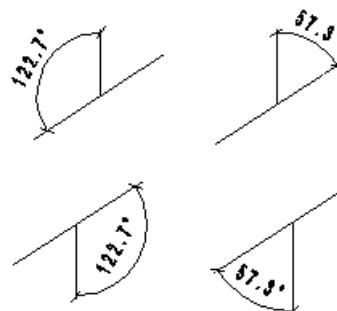
- Select the object.
- Specify the position of the dimensioning, or
- **Enter** Measures the auxiliary angle.
- **Enter** Completes the command.



10.2.14. Angle (Vertical)

The program creates the angle dimensioning of the selected object (or tangent) and the positive Y axis through a given point.

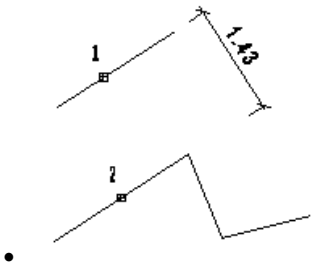
- Select the object.
- Specify the position of the dimensioning, or
- **Enter** Measures the auxiliary angle.
- **Enter** Completes the command.



10.2.15. Parallel lines

The program creates the distance dimensioning of two parallel objects through a given point.

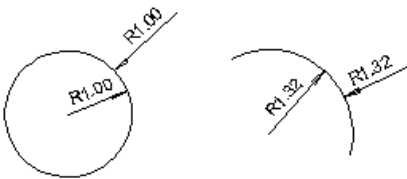
- Select the first object.
- Select the second object.
- Place the dimension.
- **Enter** Completes the command.



10.2.16. Arc - Dimension

This command creates the radius dimensioning of a circle or an arc of a circle. The dimension line can be placed either outside or inside the circle. If it is inside the circle its starting point is the centre of the circle and the text is placed at the middle of the radius. If the dimension line is placed outside the circle, the text is put where you click on.

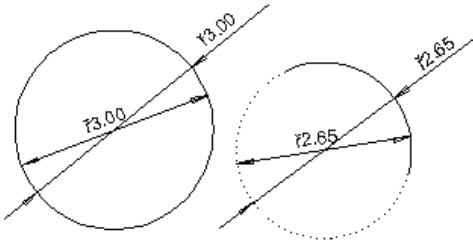
- Select the circle or arc of circle to be dimensioned.
- Specify the place of the dimensioning.



10.2.17. Diameter

The command creates the diameter dimensioning of a circle. The dimension line crosses the centre point of the circle and the specified point. The text can be placed either outside or inside the circle. If the dimension line is outside the circle, the text is placed where you click on; otherwise it is placed at the middle of the diameter.

- Select the circle or arc of circle to be dimensioned.
- Specify the place of the dimensioning.



10.2.18. Diameter at given angle

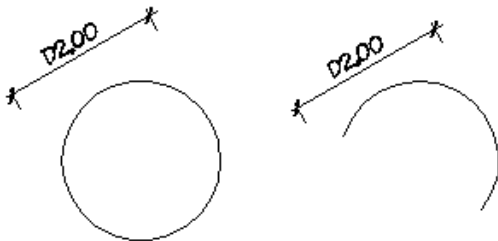
The command creates the diameter dimensioning of a circle as well. Here you have to specify the angle of the dimension line (and the positive X axis). The dimensioning can be placed both outside and inside the circle.

- Specify the direction of the dimensioning.

Options:

| | |
|--------------|--|
| PICK UP | Uses an angle similar to that of the drawing object. |
| FIXDIRECTION | Specifies the angle graphically. |
| ENTER | Uses the current angle. |

- Select the circle to be dimensioned.
- Specify the place of the dimensioning.



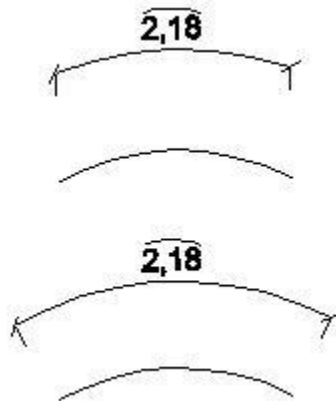
10.2.19. Arc length

The command creates the arc length dimensioning of a circle or arc as well.

- Select the circle or arc to be dimensioned.
- Specify the place of the dimensioning.

In the *Dimension* properties dialog you can set the Shape of arch length dimension:

The arc's extension line to be radial or extension-directed in case of central angles under 90 degrees.



10.2.20. Area

With this command you can create the area dimensioning of the following objects:

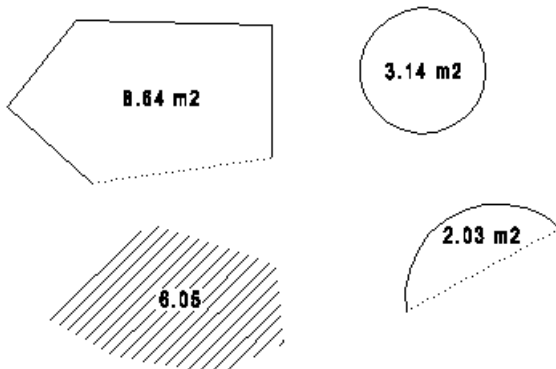
| | |
|--------------------------------|---|
| polyline, polygon | Calculates the area of a polygon. |
| open polyline (spline) | Calculates the area of an imaginary closed polyline. |
| circle, arc | Calculates the area of a circle or a segment of a circle. |
| ellipse, arc of ellipse | Calculates the area of an ellipse or a segment of an ellipse. |
| hatching | Calculates the area of the hatching. |

- Select the object to which you want to assign the area dimensioning.

Options:

| | |
|-----------------|---|
| SPOLYGON | Creates the dimensioning of a closed polygon. Use the objects in the Profile definition menu to create the contour. |
|-----------------|---|

- Specify the position of the dimensioning.
Enter Completes the command.



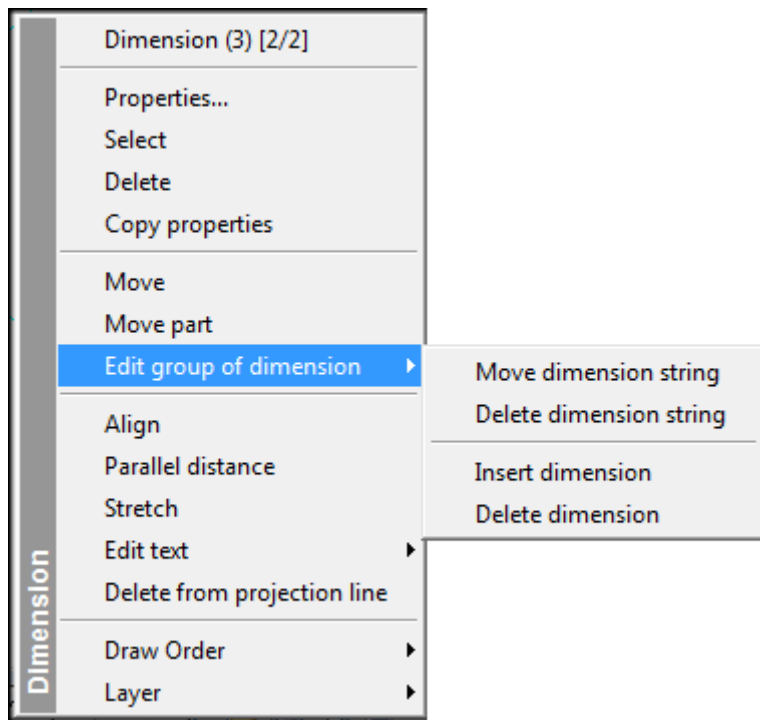
Polygon diagonal measuring

By this command area of free polygons can be divided into triangles using the diagonal measuring method. The program divides the polygon into triangles and creates a list, including the area of each triangle and sum of the triangle areas. This method is used as a verifying procedure for area dimensioning.

This method can be used even for arched walls. In this case we have to define the resolution of the arc.

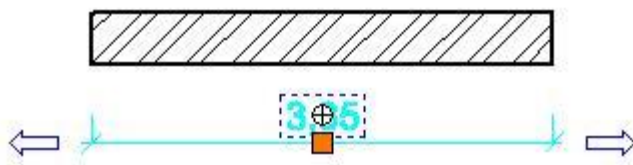


See the chapter 9.5.6. *Diagonal measuring*



❖ **Graphical editing:**

Using of grips and controls.



10.3.1. Moving

You can change the position of the whole dimensioning by using the „rubber line” cursor.

- Specify the new position of the selected dimension line.

10.3.2. Moving dimension string

You can change the position of the whole dimension string by using the „rubber line” cursor.

- Specify the new position of the selected dimension string.

10.3.3. Deleting dimension string

Use this command to delete the whole dimension string in one step.

10.3.4. Moving a part

This command moves only a segment of the dimensioning.

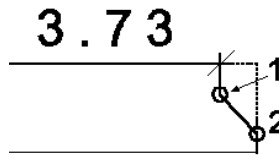
- Select a dimension line. Mark the part you want to modify:

If the selected part of the dimensioning is actually the **extension line**,
You can move the endpoint of the extension line closer to the point with dimensioning.

Options:

| | |
|---------------|--|
| NODES | Breaks the extension line of the dimensioning with a node. |
| DELETE | Reconstructs the original extension line. |

- Select the dimension line where you want to insert a node.
- Select the **NODE** option.
- Specify an inner point on the extension line.
- Specify the position of the next node.



If the selected part of the dimensioning is actually the **dimension line**, you can move the endpoint of the extension line closer to the point where you have clicked on dimensioning.

If the selected part of the dimensioning is the **text**, you can move it to a new place along the dimension line.

If the selected part of the dimensioning is the **arrow**, you can move it to a new place (inside or outside).

- Specify the new position of the part of the dimension line. Use the „rubber line” to assist the moving of the selected part.

10.3.5. Moving text

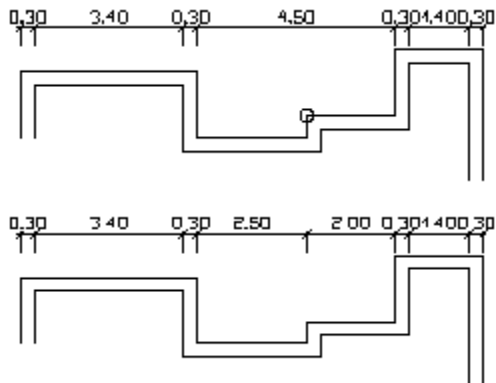
This command freely moves the dimension text anywhere.

- Specify the new position of the text.

10.3.6. Inserting dimension

This command inserts a new point into the dimension string.

- Specify a new point within the dimension string.
- The command deletes the specified object of the dimension string and inserts two new objects into it, according to the adjacent points and the new point.



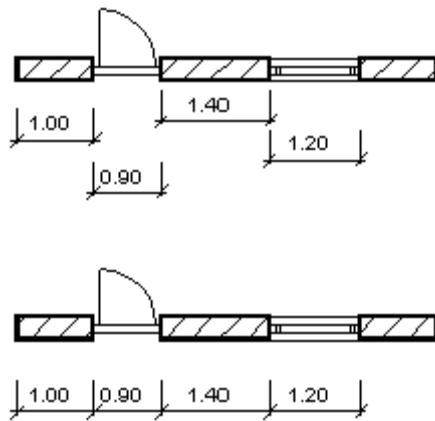
10.3.7. Deleting dimension

This command deletes the selected object of the dimension string and extends the closest object to the first adjacent point.

10.3.8. Aligning

This command aligns the parallel dimensioning.

- Select the dimensioning to be aligned.
- Give the reference point of the parallel dimensioning.



10.3.9. Parallel distance

This command modifies the distance of the parallel dimension lines.

- Enter the distance of the parallel dimension lines next to one another.
- Select the two parallel dimensioning to modify the distance between them.
- **Enter** Completes the selection.
- Specify the reference point of the parallel dimensioning.

10.3.10. Stretching

This command stretches the extension line of a dimensioning, this way changing its angle with the extension lines. The dimension text remains the same.

- Specify the new position of the selected dimensioning. Use the „rubber line“ cursor to assist the stretching.

Option:

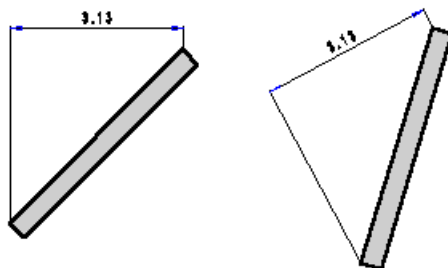
| | |
|--------------|---|
| ANGLE | Enter the angle of the dimension line and the extension line. |
|--------------|---|



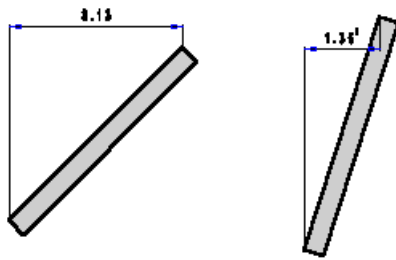
You can only use this command when length dimensioning.

10.3.11. Transforming with object

Use the options to switch on or switch off the transformation with object function (when rotating or mirroring). You can only use this command in case of dimensioning related to special points or objects. It is enabled by default, so the dimensioning moves together with the object. If it is off, only the direction of the dimensioning is fixed. It is a global option.



On – the dimensioning moves together with the object.



Off – the direction of the dimensioning is fixed.

10.3.12. Format text

Use the **Format text** command to modify the measured value of the dimensioning. You can modify the dimension text marked by a double cross in the *Current text* dialog box.



If you replace the character „#” by a value, the program will display this value on the dimension line instead of the measured one. Keep in mind, that the program will always keep the given value, even if you modify the object itself. If you replace the entered value by the character „#”, the program will automatically calculate and display the actual values of the dimensioning again.

•

Special characters:

| | | |
|-----|----|--------------------|
| # | -> | value of dimension |
| \$u | -> | unit |
| \$- | -> | plus-minus sign |
| \$2 | -> | superscript 2 |
| \$3 | -> | superscript 3 |
| \$d | -> | degree sign |
| \$# | -> | # sign |

You can use any other character as usual.

Example:

If the measured size is 45.87, and you would like to have it displayed in the following format: "L=45.87 m", enter the next sequence of characters in the format field: "L=# \$u".

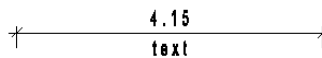


The diameter and the radius automatically signed by „D” or „R” before the value respectively. The maximum length of the character string is 255.

10.3.13. Second text

You can place another text under the original text of dimensioning.

- Enter the text to be added.
- Select the dimensioning whose properties you want to modify.
- **Enter** Completes the selection.



You can activate this command and also modify the second text added by it, if you select the **Dimensioning Shortcut**

menu – Modify command. The **Second text** field



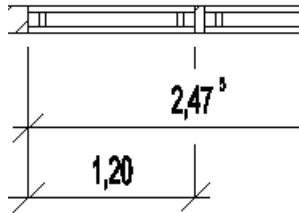
second text

in the *Properties* dialog box is activated, and you can enter or change the second text here.

10.3.14. Delete from extension line

This command deletes a segment of the extension line between two given points. Use this command to eliminate a breakage of the extension line.

- Select the first point of the breakage in the extension line.
 - Select the second point of the breakage in the extension line.
- The program will break the extension line between the two points.

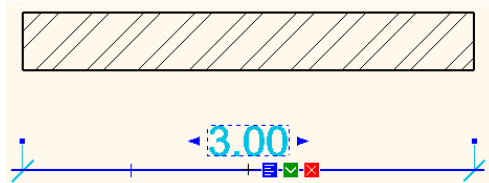


Option:

| | |
|-------------|--|
| JOIN | Eliminates the breakage of the extension line. |
|-------------|--|

10.3.15. Quick graphical editing of dimensioning

It is possible to modify dimensioning quickly as follows:



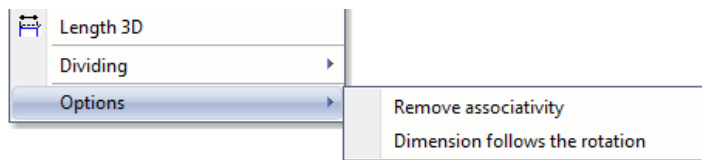
- ❖ By clicking on the text of the selected dimensioning, an input field will appear where you can enter the required text after the #character. (Analogous to the *Format* setting you find in the *Shortcut menu*– *Edit text* command).
- ❖ The dimension line can be moved with the group found in the middle of the dimension line.
- ❖ With the control found at the ends of the dimensioning line, the extension of the dimension line can be modified graphically.

10.3.16. Dimension - Remove associativity

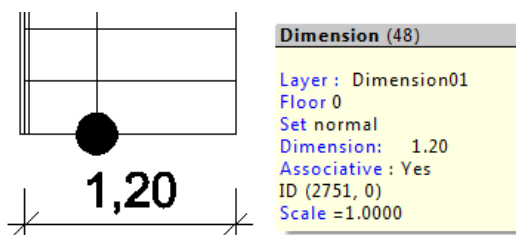
With the help of this command the length and distance dimensioning can be converted to non-associative dimensioning. The command does not change the non-convertible dimensioning like radius, diameter etc.

The command is available in the *Dimension menu* – *Options submenu*.

With this command it is possible to copy wall dimensioning (created and converted to non-associative on a floor) to another floor if the walls are identical on both floors. So it is not necessary to create the same dimensioning again.

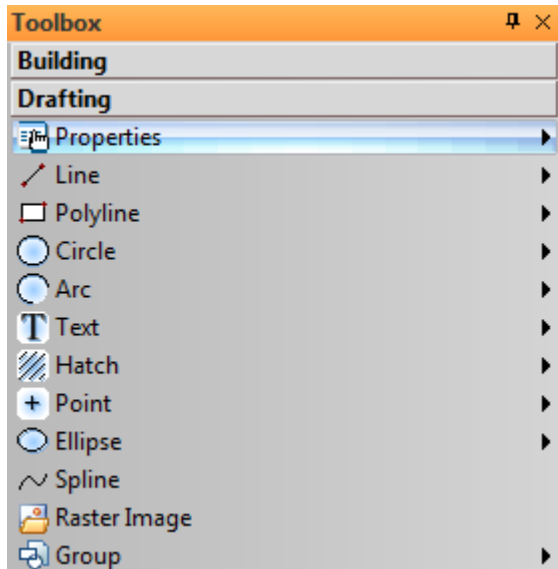


The tooltip includes the associativity information.



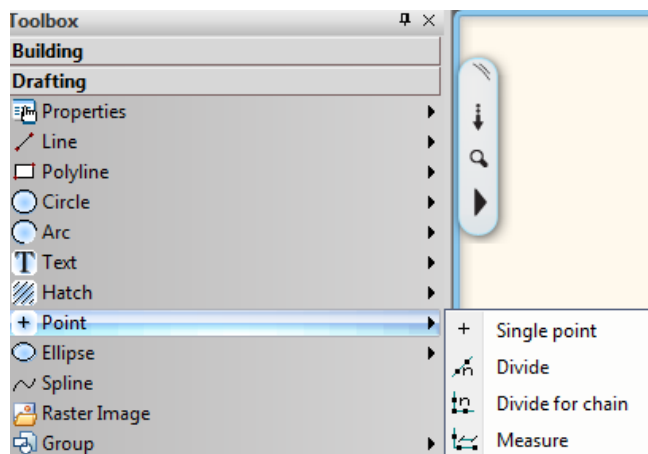
11. 2D objects

This chapter describes the 2D drawing objects properties and commands and how to use them. The tools are available from the *Drafting toolbox* or the *Drafting menu*:




11.1. Point

The commands of Point Tool define points:



11.1.1. Point properties

Before placing a point set the global properties. Right click on the Drafting toolbox -  **Point** tool, or select the command *Drafting menu - Properties – Point*. **Point properties** dialog appears where the general and special properties of the point can be set.

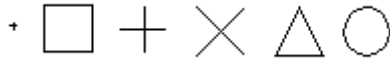
General properties

Define the general properties of the point: the colour, the line width, the layer, the line type and the priority.

11.1.2.1. Point

Left clicking on the *Point* icon the program places a point at the specified place.

- Define the coordinates of the point or define a place on the drawing.

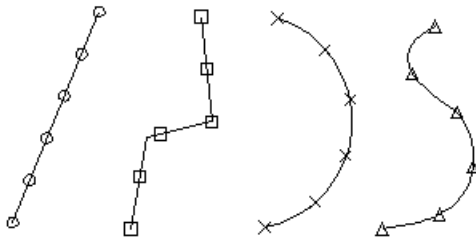


11.1.2.2. Divide

Divide the selected object into a given number of portions of equal length. The command creates a new point at the endpoints.

- Define the required number of portions.
- Select the object to divide.

Example: number of division: 5 (in the case of line, polyline, arc, spline)

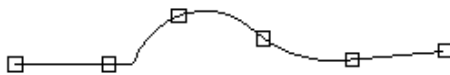


11.1.2.3. Divide for chain

This command divides not a single object but a chain of objects. Chain means objects connected to each other. (chain of sections, lines and arcs, etc.) Divide the selected chain along its length into a given number of portions of equal length. The command creates a new point at the endpoints.

- Define the required number of equal portions.
- Select the object to divide.

Example: number of division: 5 (in the case of chain of lines and arcs)



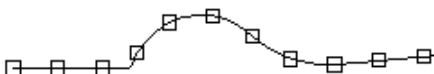
When you select the first or last object of the chain (near the endpoint), the command divides the entire chain. When you select a different part of the chain, the command divides the chain from this point to the endpoint of the chain passing through the middle point of the selected object.

11.1.2.4. Measure

The chain can be divided into parts by a given distance value.

- Define the distance to be used for the division, this is going to be the distance between the division points
- Select the chain to divide.

Example: the distance, the length of the portions: 1 m (in the case of chain of lines and arcs)



11.2. Line

The commands of line tool define:

- ❖ Lines
- ❖ Chain of lines

❖ Construction lines

Lines

Line is defined by coordinates of its endpoints.

Chain of lines

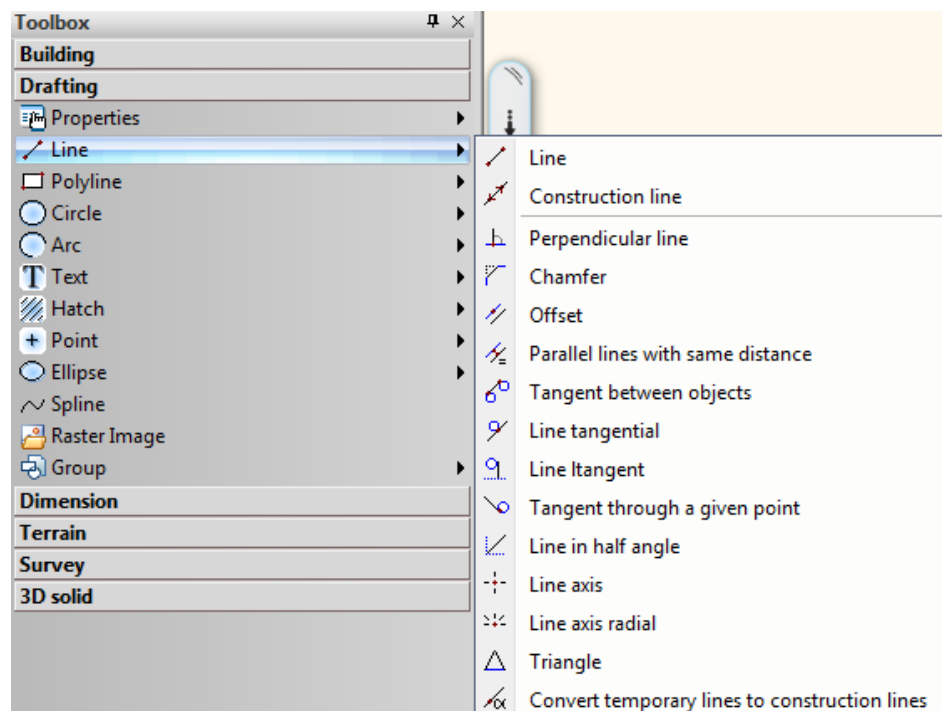
Chain of lines is a series of connected lines. The starting point of a line always coincides with the endpoint of the previous line.

Construction line

Construction line is a special kind of line, which will be extended at the definition time from one border of the current window to its other border.


! Do not confuse Chain of lines with polylines! A polyline is a single object, while a continuous line is a series of single objects.

The following line commands are available:



11.2.1. Line properties

Before drawing a line set the global properties.

Right click on the Drafting toolbox -  **Line tool**, or select the command **drafting menu - Properties– Line**.

The **Line properties** dialog appears where the general properties of the line can be set: the colour, line width, layer, line type and the priority.

Properties

Line

Default

| | |
|---|-----------------|
| General | |
| Layer | Line01 |
| Colour | |
| Line type | Simple Line |
| Line width | 0 mm |
| Draw Order | 8 - Bottom-most |
| Instance parameters | |
| Length | 4198.396 mm |
| Angle | 31.561812° |
| Symbol at line start point | |
| <input type="checkbox"/> Symbol enabled | |
| <input checked="" type="checkbox"/> Adjust symbol to line direction | |
| Symbol name | Arrowhead_01 |
| Scale | 1 |
| Symbol at line end point | |
| <input type="checkbox"/> Symbol enabled | |
| <input checked="" type="checkbox"/> Adjust symbol to line direction | |
| Symbol name | Arrowhead_01 |
| Scale | 1 |
| <input type="checkbox"/> Exchange endings | |
| Cost parameters | |
| Cost variable (0) | |

OK Cancel

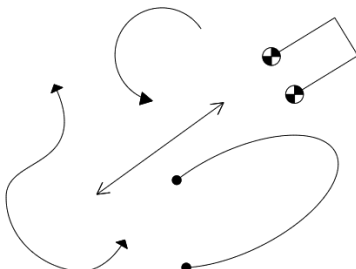


See:

- ❖ the detailed description of *General properties* in Chapter 3.2.1 *Specifying general properties*,
- ❖ the description of *Sets* in Chapter 3.2.3. *Using sets of properties*.
- ❖ the description of *Cost variables* in Chapter 3.2.4. *Assigning cost variables*.

11.2.1.1. Symbol at line end points

Introduction



With ARCHLine.XP it is possible to place symbols at end points of certain types of objects. Symbols can be placed at end points of the following object types:

- ❖ **Line**
- ❖ Polyline
- ❖ Arc
- ❖ Elliptic arc
- ❖ Spline

Symbols can be placed at end points of objects in the 2D window. Placing symbols at end points in the 3D window is available only for those objects that were created with switched off work plane status.

11.2.1.2. Settings of line endings

The properties of the above mentioned object types are extended with **Symbol at line start point** and **Symbol at line end point** groups.

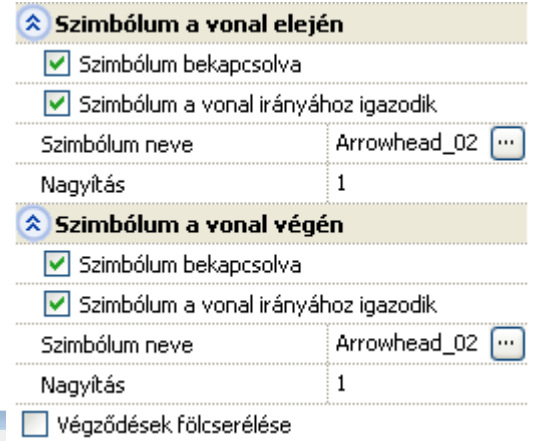
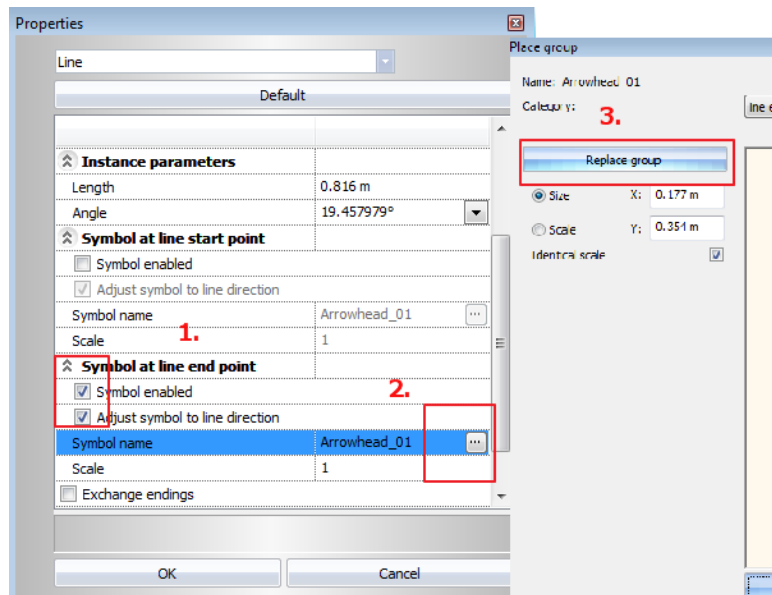
Symbol enabled

Here you can enable the representation of symbol at each line ending.

Symbol name

Here you can select the symbol to be represented.

By default, you can select a symbol from the *Groups – Line endings – Arrowheads* in the design centre. The reference points (hot spots) of the arrowheads found here are defined to the top and the base.



Adjust symbol to line direction

With this option it is possible to adjust the symbol to the line direction. This means that the direction of the line defined by the two reference points of the symbol is adjusted to the direction of the line. If you switch off this option, the symbol will be placed with its default direction. The end of the line is adjusted to the selected hot spot of the symbol in both cases.



Scale

The scale of the symbol can be specified here.

Exchange endings

With this option you can exchange the settings specified for **Symbol at line start point** with the settings specified for **Symbol at line end point**.

11.2.1.3. Customized arrowhead symbols

If you do not find the appropriate ending in the design centre, you can define your own arrowhead as follows:

- Draw the symbol with lines and hatches.



- Create a group (*Tools/Create group in library*). Define the top of the arrowhead symbol as the first reference point, and then define the middle point of the base of the arrowhead symbol as the second reference point.

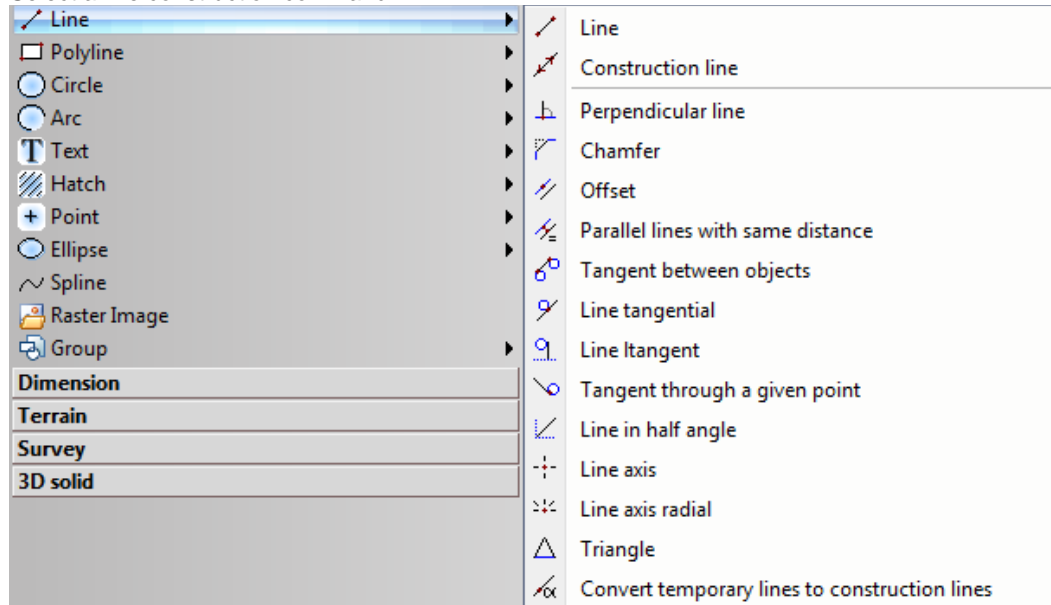


For these groups you have to define exactly two reference points.

- Select a line and enable the symbol in the **Symbol at line start point** settings through the property manager. Specify the symbol name: search and select the group you created previously.
- Modify the size of the symbol by the *Scale* property, if necessary.

11.2.2. Creating lines

Select a line construction command:



11.2.2.1. Line

This command defines series of connecting lines by their endpoints. The endpoint of a line coincides with the starting point of the next line.

The individual segments of a continuous line remain separate objects.

- Define the starting point of the first line.
- Define the endpoint of the first line.
- Define the endpoint of the next line.
- Define the other points of the chain and then
- **Enter** Terminates the chain.
- **Enter** Terminates the command



11.2.2.2. Construction line

Construction line is a special line that passes the whole screen and whose endpoints are on the frame of the actual graphical window. The construction line can be created by defining its endpoints.

- Define a point of the construction line.
- Define another point of the construction line
- Repeat the command to draw more construction lines, or
- **Enter** Terminates the command.



With command *Modify menu – Construction line -> Line* construction line can be transformed to line. Perpendicular line

This command defines a line that starts at the pick point and is perpendicular to the selected object.

- Select the object to draw a perpendicular line at the pick point

- Define the endpoint of the line, or move the mouse to the needed direction and type the precise length value.

Options:

| | |
|---------------|--|
| OBJECT | You can define the object that or whose extension will be touched by the perpendicular line. |
|---------------|--|

- Repeat the command or
- **Enter** Terminates the command.






You can define a perpendicular line for every object type, including arcs.

11.2.2.3. Chamfer

This command defines chamfer angle. The distance of the endpoint of the chamfer line from the intersection point of the two primitives is given, plus the direction of the bevel (which will be the last used angle, if not specified otherwise). This angle will be measured from the first object.

The program:

- ❖  Creates the chamfer line, trims or extends both primitives
- ❖  Creates the chamfer line, and then deletes/extends one of the objects to the intersection (**PART** option).
- ❖  Creates the chamfer line, and then extends both objects to their intersection (**TRIM** option).



The objects cannot be parallel!

Distance is measured from the intersection point towards the pick point.

If the distance between the pick point and intersection point is not bigger than the chamfer length, the program keeps the intersection; in the other case the intersection will be deleted.

- Define the value of chamfer angle.

Options:

| | |
|--------------------------|--|
| PICK UP | Angle equal to: Select the object with the needed angle. |
| Type the value... | Numerically defined angle |

- Define the distance of the chamfer in the appearing dialog.
- Select the first line.
- Select the second line, or

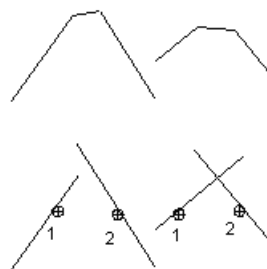
Options:

| | |
|-------------|--|
| PART | Adjust the selected line. |
| TRIM | Extends the trimmed lines to their intersection point. |

Enter Terminates the command.



You can define chamfer between all object types, including arcs. For example, you can define a chamfer between a line and a circular arc.

**11.2.2.4. Offset**

You can draw a parallel line with the same length with this command.

- Select the element what you would like to use to draw the parallel line.
- Enter the point at which the parallel line passes.
- Repeat the command if you need more parallel lines with the selected element, or
- **Enter** To complete drawing parallel lines with the selected item.
- You can select further elements and draw parallel lines with them, or
- **Enter** Terminates the command.

11.2.2.5. Parallel line with the same distance

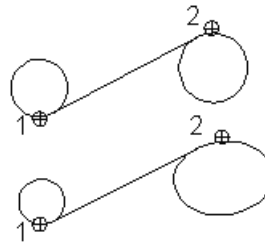
The program draws lines parallel to the selected object that has the same length and is at a defined distance from the selected line.

- Select the object to draw parallel line to. The positive direction is on that side of the object where the chosen point has fallen
- Define the distance from the object. (In the case of positive distance the parallel line will be on the positive side of the original object, in the opposite case it will be on the negative side.)
- Selecting other objects the program draws parallel lines to them at the same distance.
- **Enter** Terminates the command.

11.2.2.6. Tangent between two objects

This command defines a line that is tangential to both objects near the specified points. The endpoints of the line are on the selected objects. The objects can belong to these types: circle, circular arc, ellipse, elliptic arc and spline.

- Select the first object; take note that the program draws that tangent which is closer to the pick point.
- Select the second object.
- Repeat the command or
- **Enter** Terminates the command.



11.2.2.7. Line tangential

Defines a construction line that is tangential to the given object:

- ❖ close to the specified point., or
 - ❖ in a close point where the tangential passes at a defined angle.
- Define the point on the arch, where the tangential is going to pass.
- Repeat command, or
 - **Enter** Terminates the command.

Options:

| | |
|---------------------|--|
| FIXDIRECTION | Define the angle. The program draws tangential close to the pick point at a defined angle |
|---------------------|--|

11.2.2.8. Line Tangent

This command defines a line that is perpendicular to the first object and tangential to the second object close to the specified point.

- Define the point of the first object the line will be perpendicular to.
- Define the arc the line will be tangent to.
- Repeat the command, or
- **Enter** Terminates the command.

11.2.2.9. Tangent through a given point

This command draws a line from a defined point that is tangent to the selected arc.

- Define the starting point of the line.
- Click on the arc. The program draws a tangent from the defined point to the arc.
- Define the starting point of the new line, or
- **Enter** Terminates the command.

11.2.2.10. Line in half angle

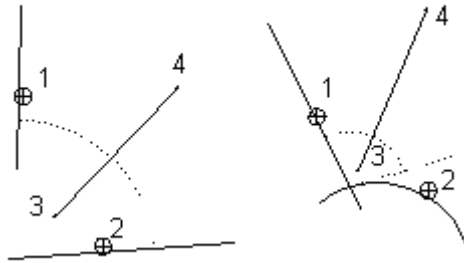
This command defines a line running in the half angle of the two selected objects from the intersection point.



You can define a half angle line for all object types including arcs.

The command is valid for parallel objects as well. In that case the starting point of the half angle line is the middle point between the two objects.

- Select the first object.
- Select the second object.
- Define the starting point of the line.
- Define the endpoint of the line.
- Repeat the command, or
- **Enter** Terminates the command.



11.2.2.11. Line axis

Defines lines that radiate from a centre

This command draws lines starting from the centre and can be horizontal, vertical or in arbitrary direction.
The command helps drawing axes.

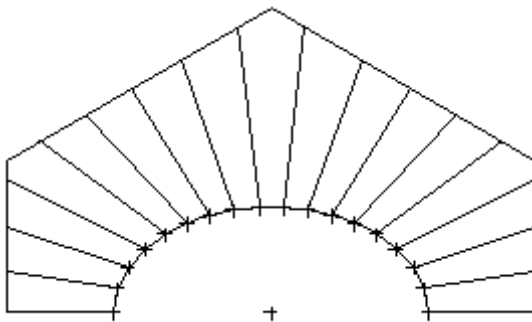


To draw axis lines in horizontal or vertical direction use **HV** option then follow the command according to the guide.

11.2.2.12. Line axis radial

This command generates lines radiating from the centre; they can be horizontal, vertical or in arbitrary direction and the starting and endpoint of lines can be defined.

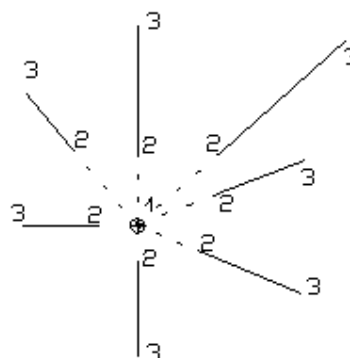
Planning stairs this command helps drawing the steps precisely.



To draw axis lines in horizontal or vertical direction use **HV** option then follow the command according to the guide.

Axis lines in arbitrary direction:

- Define the centre.
- Define the start point of the line.
- Define the endpoint of the line.
- Define more radial lines or
- Define another centre or
- **Enter** Terminates the command.



11.2.2.13. Triangle

The command creates a triangle of lines or points by different methods:

- ❖ Three sides

- ❖ Base line and the opposite node.
- ❖ Three nodes
- ❖ Vertex opposite the base line
- ❖ Base line and the right side.

Three sides:

- Select the base line of the triangle
- Define the length of one side
- Define the length of the other side.

Base line and the opposite node:

- Select the option **POINT**
- Select the base line of the triangle
- Define the length of one side
- Define the length of the other side

Three nodes:

- Select the option **P3**
- Define the first point of the base line
- Define the endpoint of the base line
- Define the length of one side
- Define the length of the other side

Vertex opposite the base line:

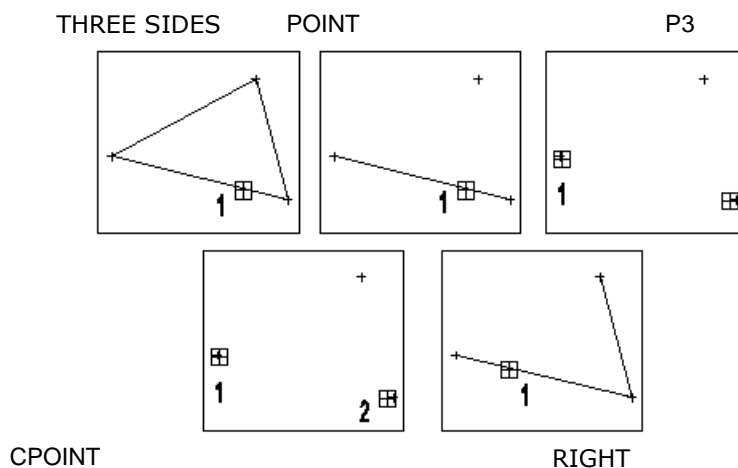
- Select the option **CPOINT**
- Define the first point of the base line
- Define the endpoint of the base line
- Define the length of one side
- Define the length of the other side
- Define the length of one side

Define the length of the other side:

- Select the option **RIGHT**
- Select the base line of the triangle
- Define the length of the other side
- Define the length of one side



The position of node opposite the base of triangle depends on the position of pick point of the selected line. The program draws the first side from that endpoint of the base which is closer to the pick point.



11.2.2.14. Convert temporary lines to construction lines

The command converts temporary lines to construction lines. Temporary lines are horizontal and vertical dotted auxiliary lines that go through the cursor point if it stays in one place for some time. For this you have to use the *Sensible reference-markers* option on the *File menu – Options – Cursor and marker* page. Here you can also set the maximum number of temporary lines.

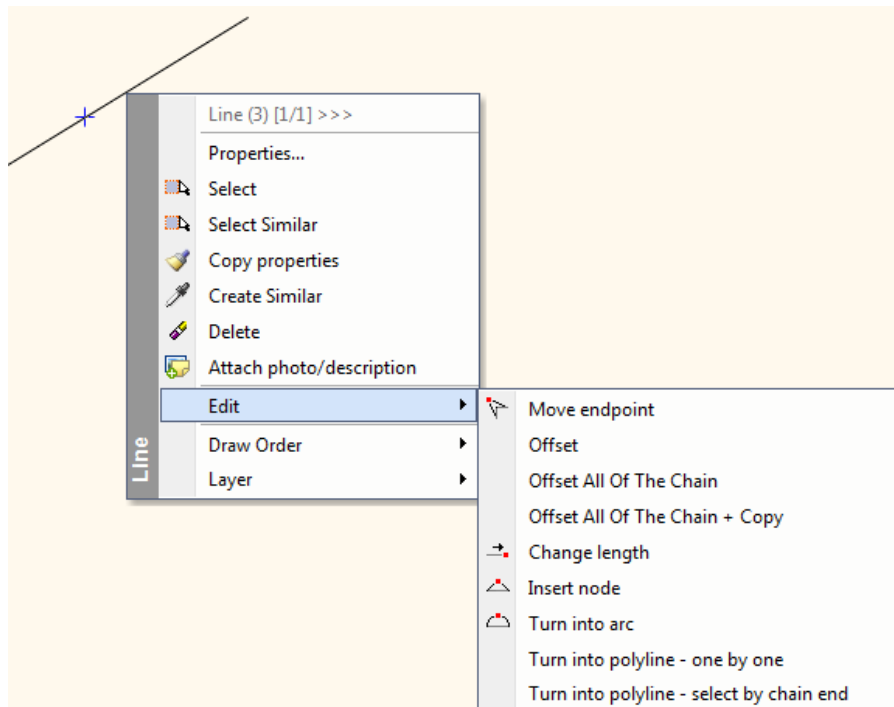
Please follow the steps below to convert temporary lines to construction lines:

- Start or continue to draw an element. Before clicking, horizontal and vertical temporary lines appear at cursor points where you stay with your mouse cursor for a while.
- As soon as you have the desired number of temporary lines, start the *Convert temporary lines to construction lines* command.
- All temporary lines will be converted to construction lines and stays until you delete those.

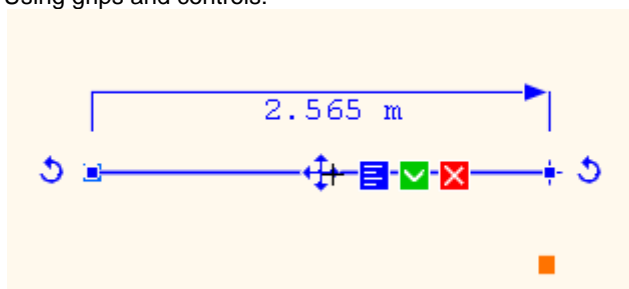
11.2.3. Modify line

Commands for modifying can be achieved in more ways.

- ❖ In the **Line popup menu**: appears when right click on an object.



- ❖ **Graphically:**
Using grips and controls:



See the 2.15. *Markers* chapter.

11.2.3.1. Add node (->Polyline)

Inserting new node into a line will convert the line into polyline.

- Define the place of the new node.

11.2.3.2. Line -> Polyline

The program creates polyline out of lines connected to each other.

- Select those lines that you want to transform to polyline.

Options:

| | |
|-----------|----------------------|
| OPENCHAIN | Select an open chain |
|-----------|----------------------|

11.2.4. 3D extension of line nature objects

There is a possibility to create line nature objects designed in the 3D window into 3D form.

You can create necessary simple models in the conception planning phase fast and easily, what's more this method can be used well for creating surface nature objects necessary to the detailed spectacle plans.



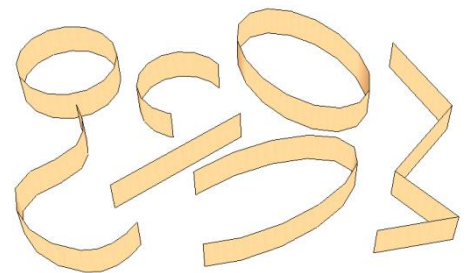
11.2.4.1. Function

You can create those line nature objects into 3D form that we placed in the 3d window with active global work plane. The 3D surface or body is created, that we draw out the line to the space perpendicularly to its own plane.


You can form the following types of objects into 3D:

- ❖ Line
- ❖ Polygon
- ❖ Circle
- ❖ Arc
- ❖ Ellipse
- ❖ Elliptic arc
- ❖ Spline

There is no own plans of straight lines, in this case the surface is created by drawing out the line parallel to the Z-axis.



The breaking of created arched surfaces is determined by that in the

moment of drawing out in the  **Build 3D model** which resolution is set. If you change later the resolution by upgrading the 3D window this change has no effect on these objects.

11.2.4.2. Custom setup of the line nature objects

In the 3D window you can reach the line transforming into 3D form by determine the following properties: (These properties can be found in the Property manager after selecting the object or they can be found in the shortcut menu under the *Properties* menu point after clicking with right mouse button on the object.)

Line width

These values determine the height of the 3D solid (the line nature object perpendicular dimension to its own plane, the value of lifting). The value is 0 by default then the objects behave as simple lines.

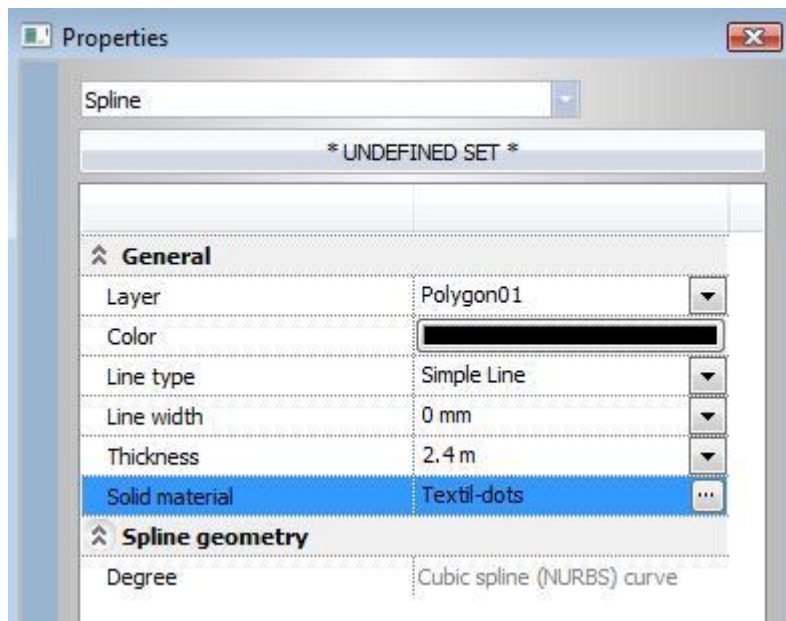
Solid

Closed formations (circle, ellipse, closed polygon) are formed in two ways to 3D solid: if the *Solid* button is switched off, the result will be a surface if it is switched on we create a solid 3D.



Solid material

After creating the 3D solid, the Solid material appears in the dialog window when you want to modify another property.



11.3. Polyline

Commands of Polyline tool draw polylines and polygons.

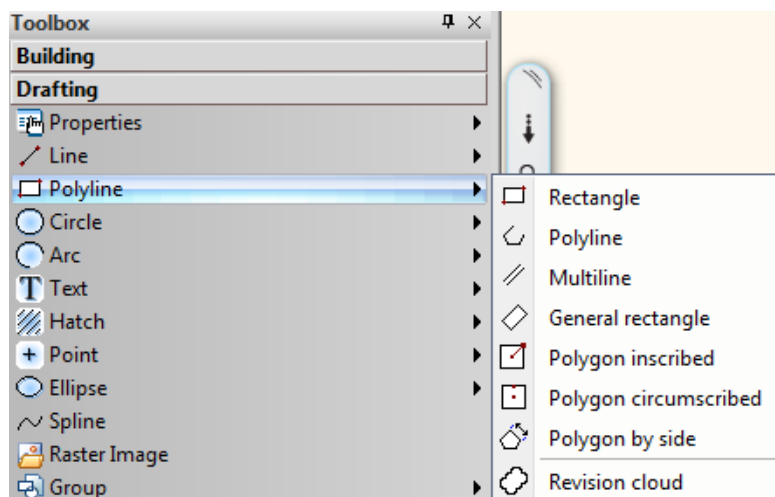
A **Polyline** is a series of lines that represent a single object. It can also contain arcs and splines.

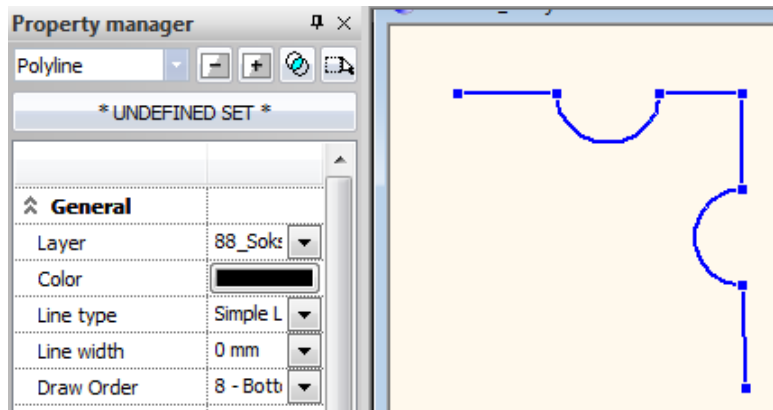
A **Polygon** is a closed polyline.

You cannot modify the lines of the polyline as individual objects.

The line segments of the polyline are connected by nodes. The nodes represent the endpoints of the line segments.

To construct them, you can use the PLINE tool both on 2D and 3D views.



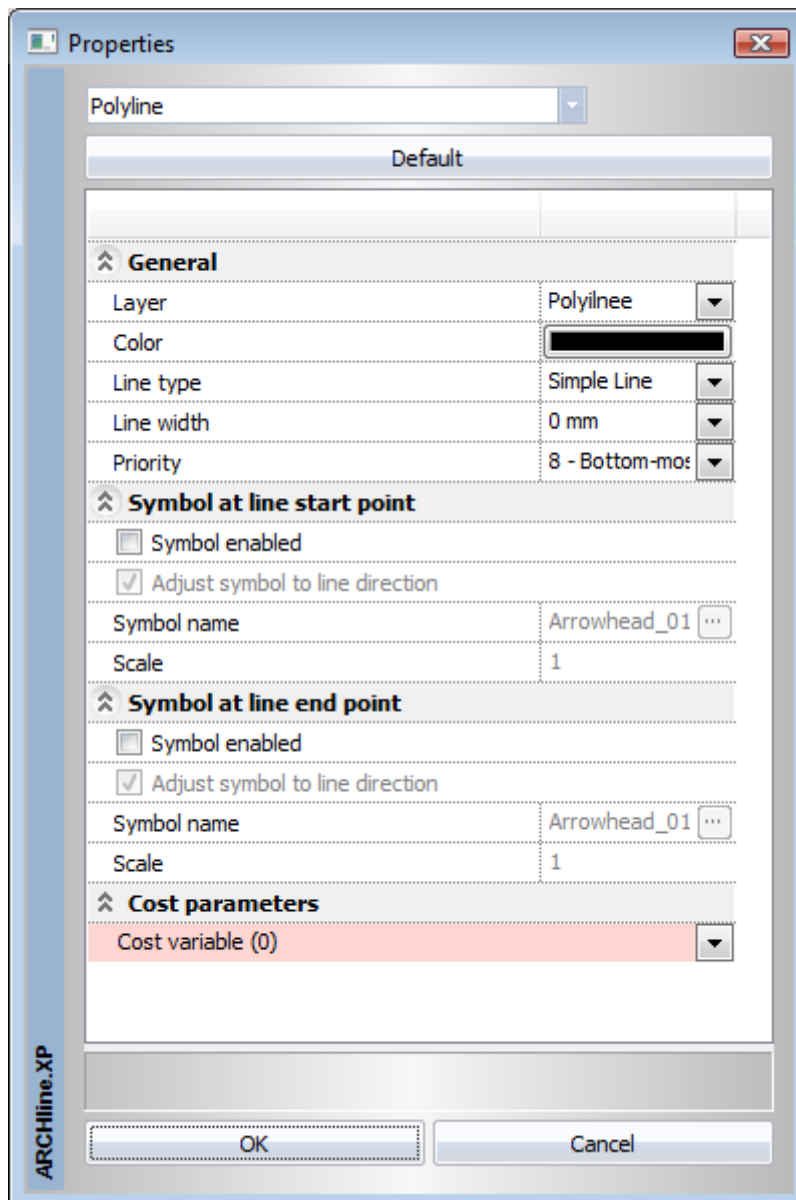


11.3.1. Polyline properties

Right click on the Drafting toolbox - **Polyline** tool or select the command **Drafting menu - Properties– Polyline**. The **Polyline properties** dialog appears where the general properties of the line can be set:

General properties

Set the general properties of polyline: colour, line width, layer, line type and priority.





See:

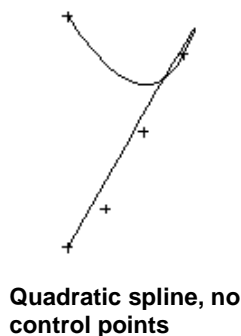
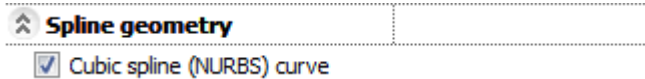
- ❖ Detailed description of *General properties* in chapter 3.2.1 *Setting general properties*.
- ❖ Description of *Sets* in chapter 3.2.3 *Attribute sets*.
- ❖ Description of *Cost parameters* in chapter 3.2.4 *Define cost parameters*.

Line segment

If the option *Explode to lines* is checked in, then the program draws individual lines instead of polyline. If it is checked off the result is polyline. The latest is the default setting.

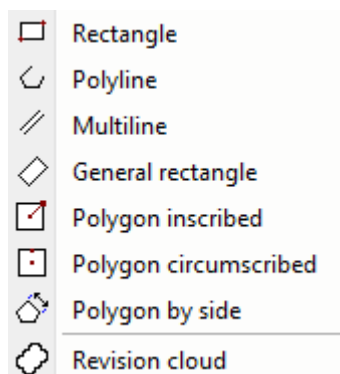
Spline geometry

The program makes Bezier curves by defining the nodes that makes computer aided design easier. In the program there are two possibilities to create splines: the quadratic curves and the smoother cubic curves.



11.3.2. Creating polylines

The following commands are available for drawing polylines and splines:



11.3.2.1. Rectangle

Defines a rectangle by its opposite corners, the sides of the rectangle are vertical and horizontal.

- Define the first corner.
- Define the opposite corner.
- Repeat the command or
- **Enter** Terminates the command.

11.3.2.2. Polyline

The polylines contain lines and arcs. Command draws:

- ❖ open polyline, or
- ❖ polygon:
Specify the polygon as a chain of lines and arcs.
Enter Closes the polygon.

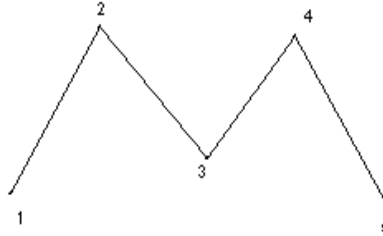


Options:

| | |
|-------------------------|---|
| Arc | The next object of the polyline is an arc. |
| Select an object | The next object of the polyline is an existing object. |
| Smooth | The next object of the polyline is tangential to the previous object. |

Open polyline:

- Define the starting point of the polyline.
- Define the next nodes.



To draw polygon choose option **CLOSED** and keep drawing on according to the description.

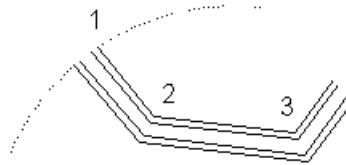
11.3.2.3. Multi line

The command creates more parallel

- ❖ open polylines, or
- ❖ Polygons that are in a defined distance from each other.

Draw open polylines:

- Type the values of multi-line distance
OK.
- Repeat sequentially if you define more polylines, or
Cancel Terminates definition of distances.
- Define the starting point of the polyline.
- Define the next node.
- Define the more node or
- **Enter** terminates definition of nodes, the program draws the multiline.



To draw polygon choose option **CLOSED** and keep drawing on according to the description.

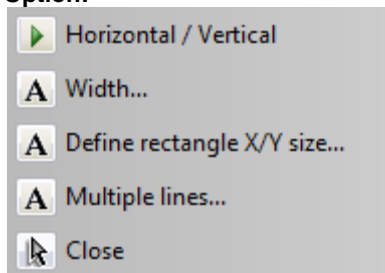
11.3.2.4. General rectangle

Defines a rectangle by giving the:

- ❖ Base by two points, the height graphically, numerically or by a point of an existing object.
- ❖ Width value and the height graphically

Draw rectangle I.

- Define the first corner of rectangle base line.
- Define the second point of the rectangle base line.
- Define the height of rectangle graphically, or numerically.

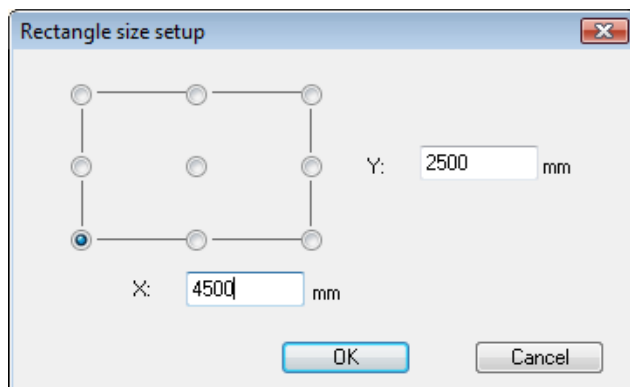
Option:

Draw rectangle II.

- Select the option **WIDTH**.
- Define the width of rectangle value. **Enter**.
- Define the left corner point of rectangle base.
- Define the height of rectangle graphically.

Draw rectangle III.

- Select the option Define rectangle X/Y size...
Dialog **Rectangle size setup** appears.



- Type into X and Y fields the adequate values.
- Select the reference point for the placement of the rectangle. **OK**.
- Place the rectangle on the drawing.
-

Other options:

| | |
|-----------------------|----------------------------------|
| Horizontal | Define rectangle HV |
| Vertical | |
| Multiple lines | Define rectangle with multiline. |

11.3.2.5. Polygon inscribed

The command draws a regular n-sided polygon into a circle of defined centre.

- Define the number of polygon edges (three or more).
- Define the centre point of the regular polygon.
- Define the position of a node.
- **Enter** Terminates the command.

11.3.2.6. Polygon circumscribed

The command draws a regular n-sided polygon around a circle of defined centre.

- Define the number of polygon edges.
- Define the centre point of polygon.
- Define the position of the middle point of one side.
- **Enter** Terminates the command.

11.3.2.7. Polygon by side

The command draws a regular polygon. The length of sides and the number of vertices must be defined.

- Define the length of sides of the regular polygon in the appearing dialog then close it with the **OK** button.
- Define the number of polygon edges in the appearing dialog then close it with the **OK** button.
- Place the polygon on the drawing area by its centre point.
-

Options:

| | |
|--------------|------------------------------------|
| ANGLE | Angle of rotation for positioning. |
|--------------|------------------------------------|

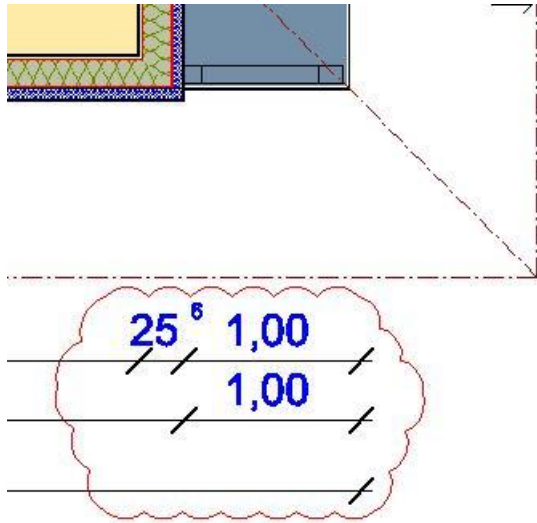
- Place more polygons or close the command with **Enter**.

11.3.2.8. Revision Cloud

Revision cloud is commonly used on drawings to illustrate a design change. The revision cloud is made up of polyline arcs.

Revision cloud works like polygon command:

- Define the start point and the next points of a polygon to create the cloudlike effect.
- Complete the command by pressing mouse right click or Enter.



Revision cloud is usable for text and dimension as well. It is a new text frame around attribute selectable from the list of the "No bounding", "Bounding box" "Rounded Bounding box" and "Cloud" frame attribute.

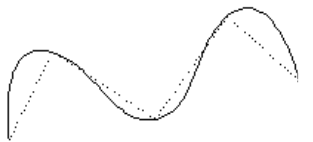
11.3.2.9. Spline

The program draws

- ❖ open or
 - ❖ Closed spline on the given nodes.
- The length of tangent vector at the start and endpoints is 0.

Open spline:

- Define the first node.
- Define the following nodes.
- Define the control points.
- **Enter** Finishes definition of nodes, the program draws the spline.

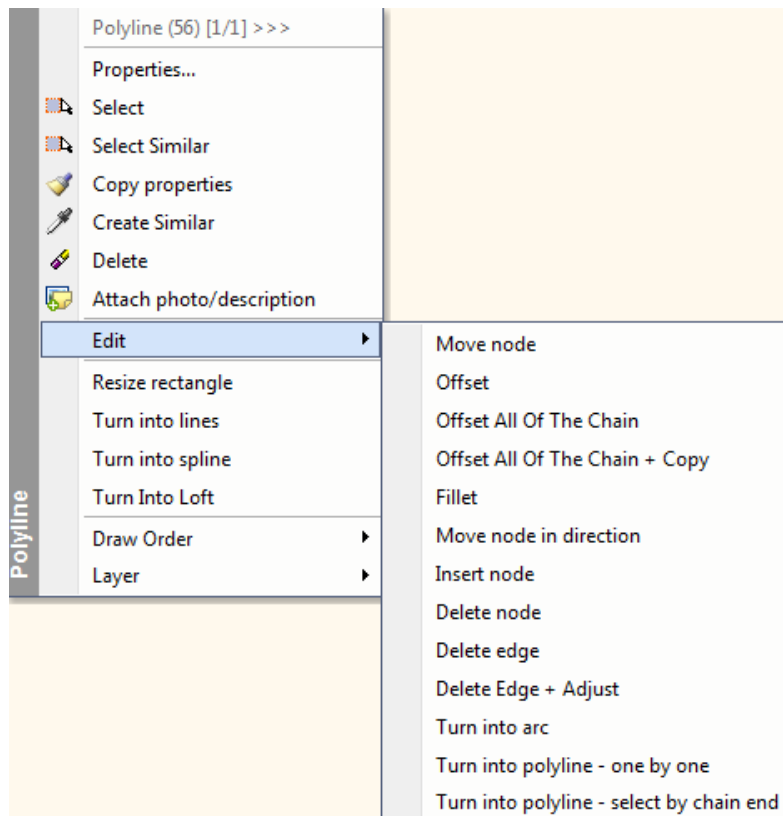


To draw closed spline, choose option **CLOSED** and keep drawing on according to the description.

11.3.3. Modify polyline

Commands for modifying can be achieved in more ways.

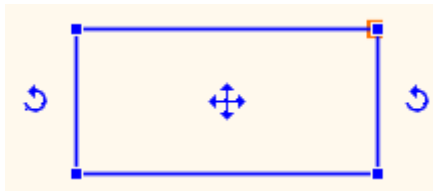
- ❖ In the **Polyline popup menu**: appears when right click on an object.



Description of modifying nodes is in chapter 8.9.9. *Editable profile*.

❖ Graphically:

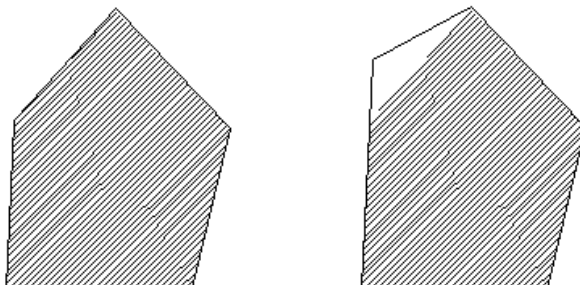
Using grips and controls:



11.3.3.1. Move node in direction

This command modifies the length of a polyline segment. The program adjusts the neighbouring side of the modified side.

- Define the new length of the object, the new node.



11.3.3.2. Delete segment

Delete the selected object of the polyline. The program deletes the object that was selected with the right button of the mouse.

11.3.3.3. Polyline -> Lines

Polyline will be transformed into chain of lines.

- Repeat the command for another polyline or
- **Enter** Terminates the command.

11.3.3.4. Polyline -> Spline

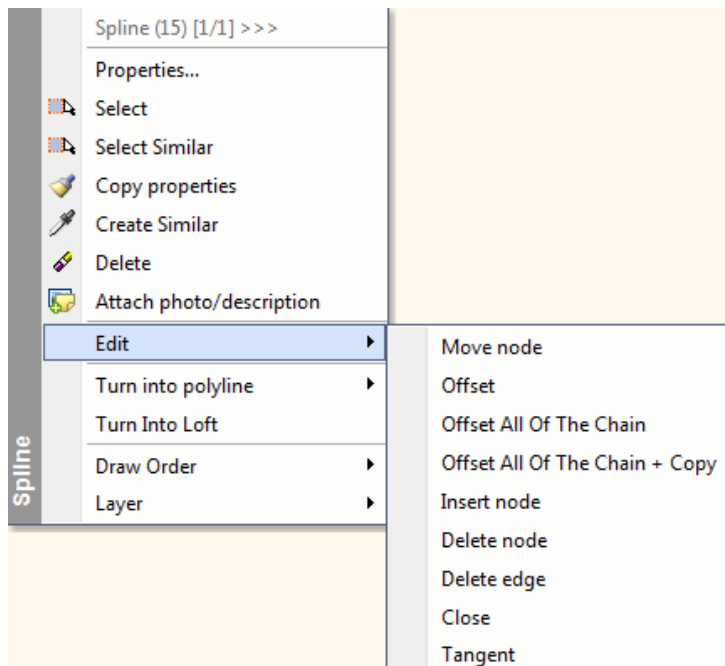
Polyline will be transformed into spline that passes the nodes of polyline.

- Repeat the command for another polyline or
- **Enter** Terminates the command.

11.3.4. Modify Spline

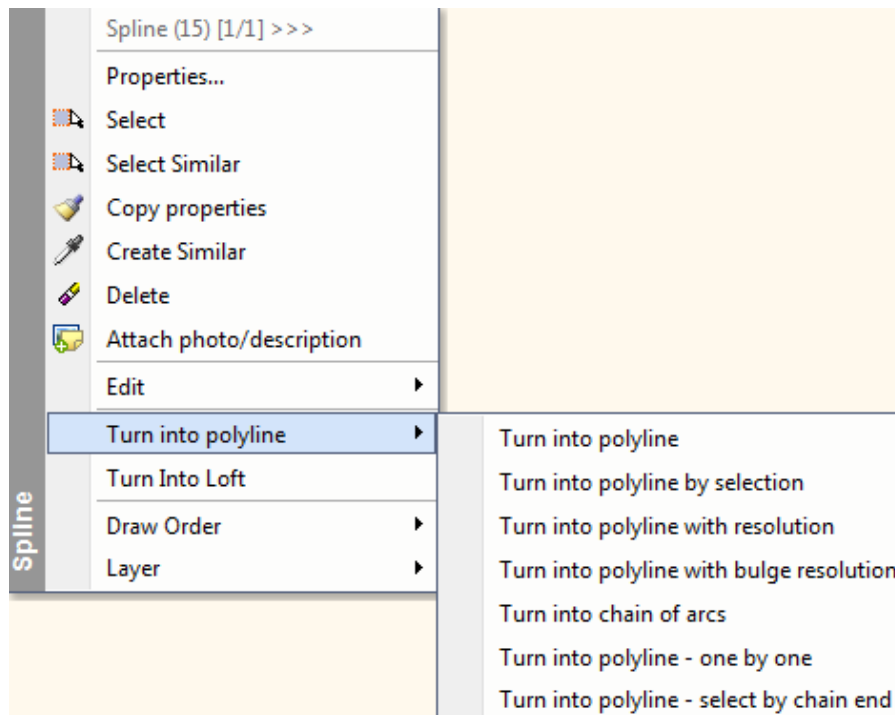
Commands for modifying can be achieved in more ways.

- ❖ In the **Spline popup menu**: appears when right click on an object.



Description of modifying nodes is in chapter 8.9.9 *Editable profile*.

- ❖ **Graphically:**
Using grips and controls:



11.3.4.1. Delete part

Delete a part of spline between two nodes. The program deletes that object of spline which was picked with the right button of the mouse.

11.3.4.2. Closed

Transform an open spline into a closed one.

11.3.4.3. Tangent

The line between the cursor and the selected spline node defines the direction of tangent at the selected node.

11.3.4.4. Spline -> Polyline

Transform the selected spline into polyline using its nodes.

- Select new spline to be transformed or
- **Enter** Terminates the command.

11.3.4.5. Spline -> Polyline by selection

The command transforms the selected splines into polyline. The spline whose popup menu was used to reach the command will not be transformed unless is selected again.

11.3.4.6. Spline -> Polyline with resolution

The command transforms the spline; the resolution of a single curve can be defined here.

- Define the resolution. The value must be bigger than 2.
- Select the objects.
- **Enter** Closes the command.

11.3.4.7. Spline -> Polyline with Bulge resolution

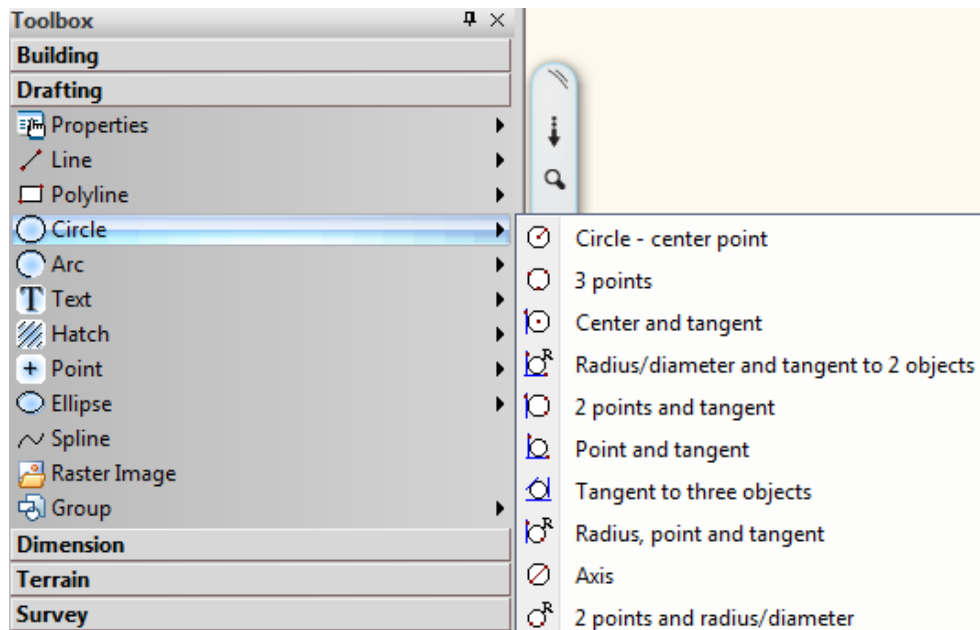
The command transforms the selected spline to polyline and limits the bulges of arc.

- Define the maximum bulge of arc
- Define the proper radius for maximum bulge of arc.
- Select the proper objects.
- **Enter** close the command.

11.4. Circle and arc

The program draws circles and arcs in anti-clockwise direction.

The icons of the *Circle tool*:



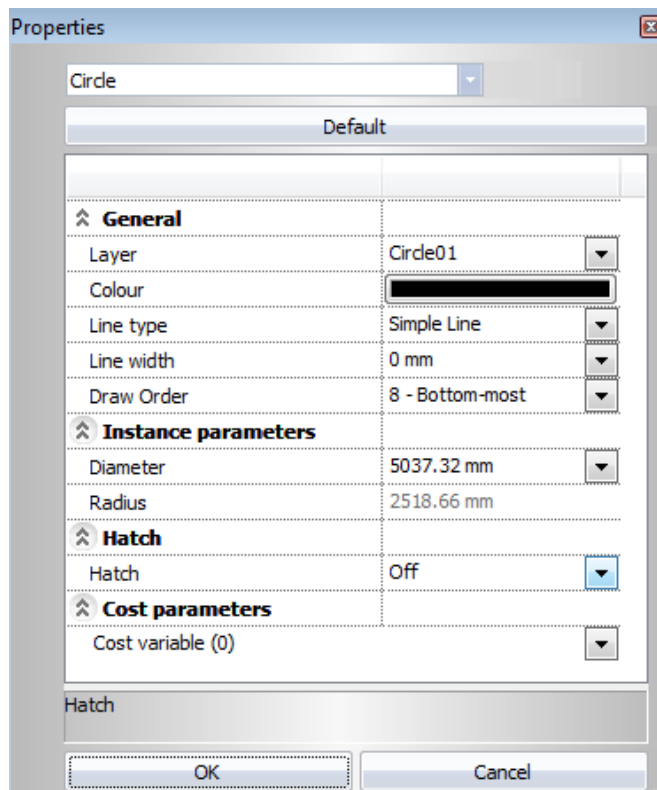
11.4.1. Circle and arc properties

Right click on the *Drafting toolbox*  *Circle tool* or the  *Arc tool* or select the command *Drafting menu - Format-Circle*.

The **Circle properties** dialog appears where the general properties of circle and arc can be set.

General properties

Set the general properties of polyline: colour, line width, layer, line type and priority.



See:

- ❖ the detailed description of *General properties* in Chapter 3.2.1 *Specifying general properties*,
- ❖ the description of *Sets* in Chapter 3.2.3. *Using sets of properties*.
- ❖ the description of *Cost variables* in Chapter 3.2.4. *Assigning cost variables*.

Special properties

Define the special properties of circle and arc.

Diameter: Define the value of diameter.

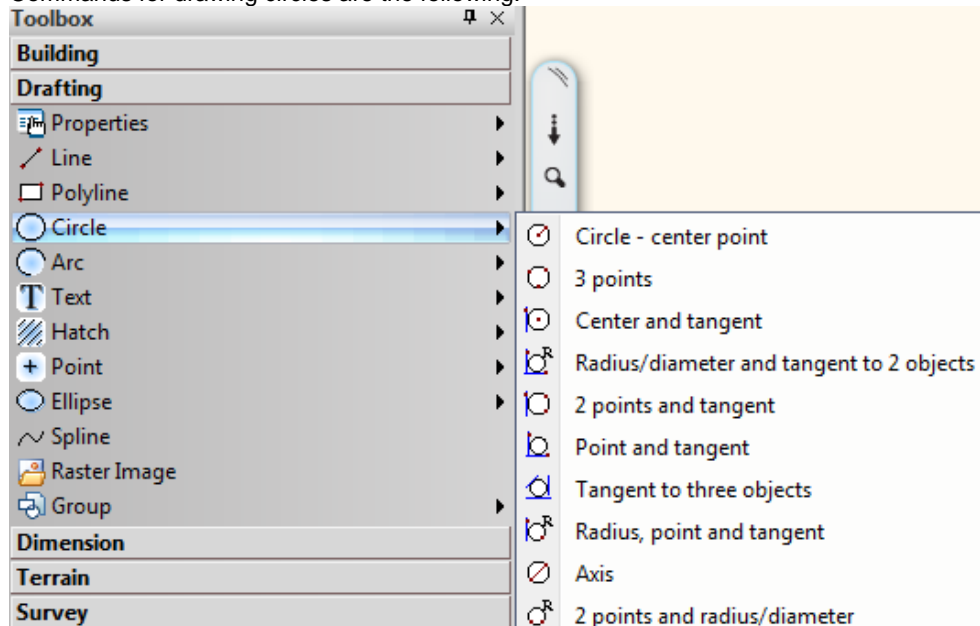
Radius: The program shows the radius value in an info field. It cannot be modified.

Start angle: Set the actual start angle of circle.

End angle: Set the actual end angle of circle.

11.4.2. Creating circles

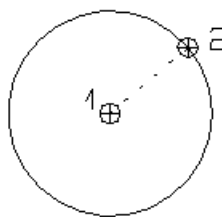
Commands for drawing circles are the following:



11.4.2.1. Circle by centre point

Defines a circle by its centre point and graphically defined radius.

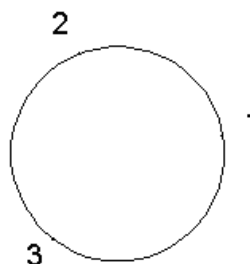
- Define the centre point.
- Define graphically the radius of circle with a point on the circumference.



11.4.2.2. Circle with three points

Draws circle by defining three points of its circumference.

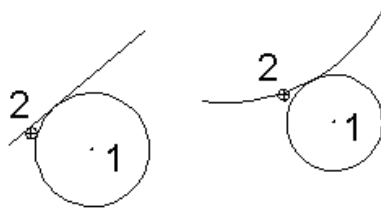
- Define the first point.
- Define the second point.
- Define the third point.



11.4.2.3. Circle with tangent

The command defines a circle that has a defined centre and is tangent to an object close to the pick point.

- Define the centre point.
- Define the object tangent to the circle.



11.4.2.4. Circle with diameter and two tangents

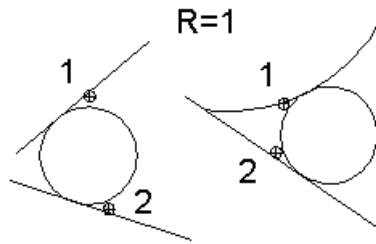
Defines a circle that is tangential to both given objects near the specified points and whose diameter is the actual diameter.

- Select the first object the circle will be tangential to, or

Options:

| | |
|-----------------|-----------------|
| DIAMETER | Modify diameter |
| RADIUS | Modify radius |

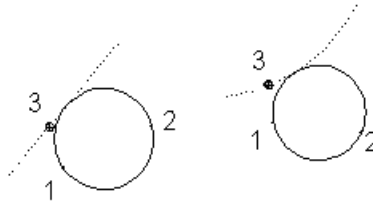
- Select the second object the circle will be tangential to.



11.4.2.5. Circle with two points and tangent

This command defines circle that passes through the two given points and is tangential to the given object near the pick point.

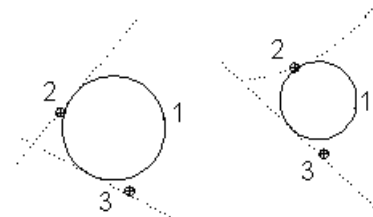
- Define the first point on the circle.
- Define the second point on the circle.
- Define the object the circle will be tangential to.



11.4.2.6. Circle with point and two tangents

This command defines circle that passes through the given point and is tangential to both given objects near the specified points.

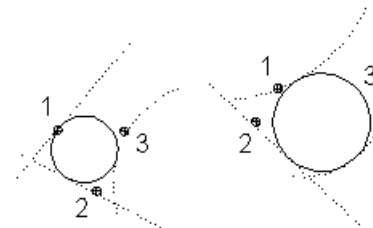
- Define the point.
- Define the first object.
- Define the second object.



11.4.2.7. Circle with three tangents

This command defines circle that is tangential to all three given objects near the specified points.

- Define the first object.
- Define the second object.
- Define the third object.



11.4.2.8. Circle with diameter, point and tangent

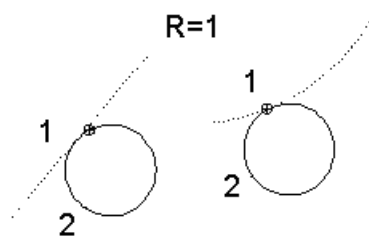
This command defines a circle that passes through the given point, is tangential to the given object near the specified point, and whose diameter is the actual diameter.

- Select the object the circle will be tangential to

Options:

| | |
|-----------------|-----------------|
| DIAMETER | Modify diameter |
| RADIUS | Modify radius |

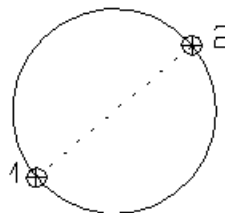
- Define the point.



11.4.2.9. Circle by axes

This command defines a circle that passes through two given points, which are the endpoints of the circle's diameter axis.

- Define the first point of diameter.
- Define the second point of diameter.



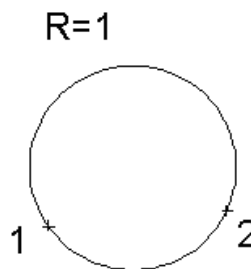
11.4.2.10. Circle with two points and radius or diameter

This command defines a circle that passes through two given points and has a given radius or diameter.

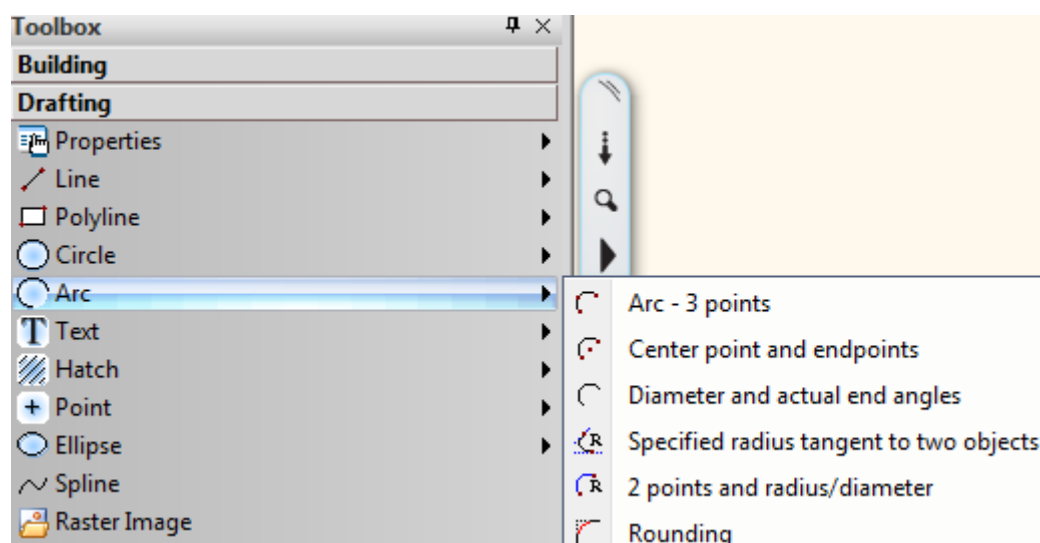
- Define the first point of the circle.
- Define the second point of the circle.
- Define the placement, or

Options:

| | |
|-----------------|-----------------|
| DIAMETER | Modify diameter |
| RADIUS | Modify radius |



11.4.3. Creating arcs



11.4.3.1. Circular arc with three points

The command draws arc with defined:

- ❖ Start and endpoints and a middle point or

- ❖ By a defined tangent.

Arc with start, end and middle points

- Define the first /start point.
- Define the endpoint.
- Define an internal point of the arc or

Options:

| | |
|------------------|--------------------------|
| DIAMETER | Value of the diameter. |
| RADIUS | Value of the radius. |
| PERIMETER | The value of arc length. |
| ARC | Height of segmental arc. |

Arch with defined start and endpoints and a tangent

- Define the first /start point of the arc.
- Select the option **TANGENT**.
- Define the tangent with a point.
- Define the endpoint, or

- Options:

| | |
|-----------------|---|
| • RADIUS | • Define the radius of arc |
| • DANGLE | • Define the endpoint of arc of given radius by the value of end angle. |

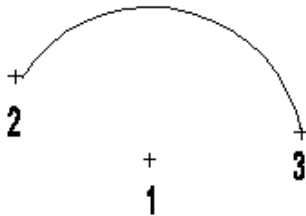
11.4.3.2. Circular arc with centre point and endpoints

Define a circular arc by its centre point and the two endpoints.

- Define the centre point of arc.
- Define the starting point of the circular arc.
- Define the endpoint of the arc graphically in anti-clockwise direction or

Option:

| | |
|-----------------|--|
| BACKWARD | Define the arc in clock-wise direction |
|-----------------|--|



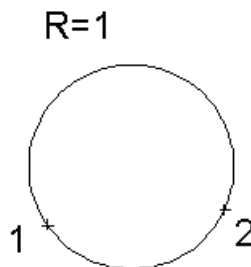
11.4.3.3. Circular arc with diameter and actual end angles

Define a circular arc by its centre point, the actual radius, and the actual start and end angles. Angles are measured in anti-clockwise direction.

- Place the arc with its centre point on the drawing area or

Options:

| | |
|-----------------|-----------------|
| DIAMETER | Modify diameter |
| RADIUS | Modify radius |



11.4.3.4. Circular arc by a specified radius tangent to two objects

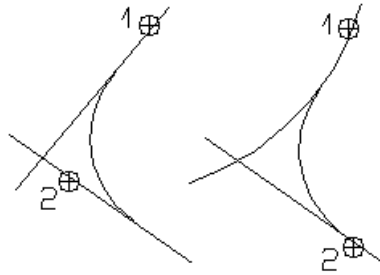
The command draws arc with given radius tangent to two objects. The arc ends at the tangent point of the selected objects

- Define the first tangent object.

Options:

| | |
|-----------------|-----------------|
| DIAMETER | Modify diameter |
| RADIUS | Modify radius |

- Select the second tangent object.

**11.4.3.5. Circular arc by two points, and radius or diameter**

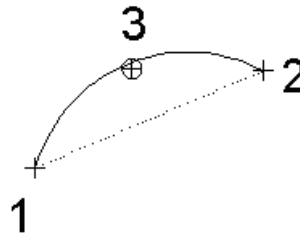
This command defines circular arc between the two endpoints using the actual radius or diameter.

- Define the first endpoint of the arc, or

Options:

| | |
|-----------------|-----------------|
| DIAMETER | Modify diameter |
| RADIUS | Modify radius |

- Define the other endpoint of the arc.
- Give the position of arc.

**11.4.3.6. Rounding**

Define a rounded corner using the actual radius between two objects.

The program deletes the parts outside the rounded objects and adds parts if it is needed.

Two modes exist to select the objects to rounding:

I) select both lines to adjust.

II) If you click on the option **INTERSECTION**, the program deletes the line together with the closest line intersecting it.

- Define the radius of the rounding or select the option **PICK UP**, if you refer to the length of an existing object.
- Select the first and the second object for rounding or

Option:

| | |
|---------------------|---|
| ANGLESECTION | Select an object to round it with the closest object intersecting it. |
|---------------------|---|

The endpoints of objects closer to the pick point remain untouched.

Enter Exits the command.

Further options:

| | |
|-----------------|--|
| DIAMETER | Define the value of rounding diameter. |
| RADIUS | Define the value of rounding angle. |
| TRIM | Enlarges the lines until their intersection point. |



Radius = 1m



It is important where you locate the selection point. The program calculates the rounding according the tangents of the pick point.

11.4.4. Modify Circle and Arc

Commands for modification can be achieved in more ways.

❖ In the **Arc Tool**:

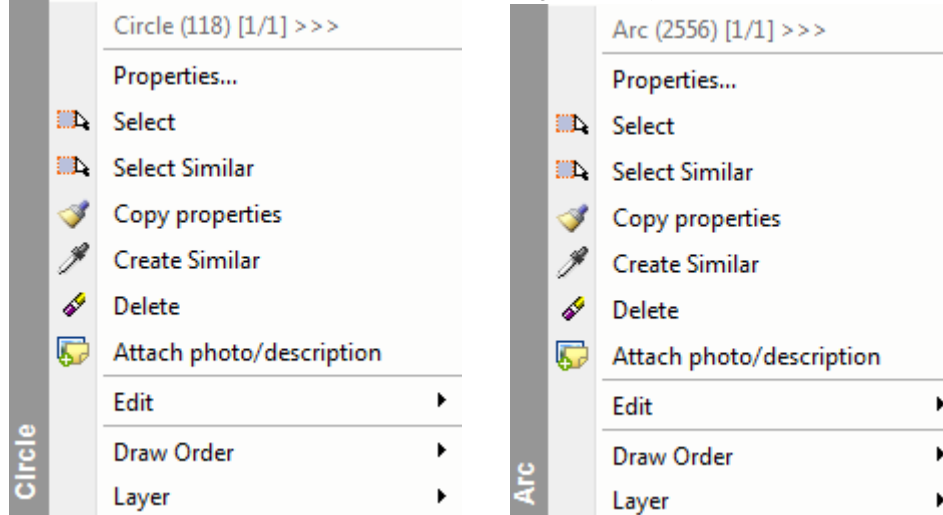


Complement arc

Line into arc

Arc into circle

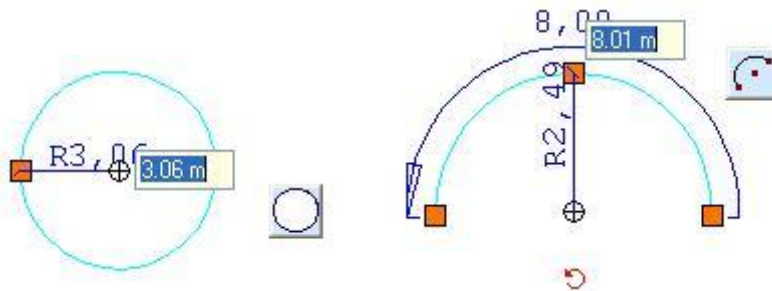
❖ In the **Shortcut menu**: appears when right clicking on an object



❖

❖ **Graphically:**

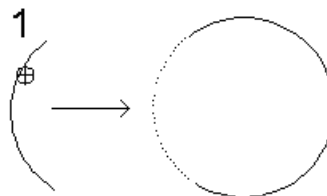
Using grips and controls:



11.4.4.1. Complement arc

Defines the complement of the selected circular arc and deletes the selected arc.

- Select the arc.



This command can be used from the **Arc shortcut menu - Complement** as well.

11.4.4.2. Line into arc

Transforms a line into an arc, or modifies the radius of the existing arc while keeping its endpoints.

- Select the line or the arc to modify
- Define a point of arc on the perimeter or

Options:

| | |
|------------------|------------------------------------|
| DIAMETER | Value of diameter |
| RADIUS | Value of radius |
| PERIMETER | Value of perimeter (length of arc) |

| | |
|-----|----------------------------|
| ARC | Value of height of the arc |
|-----|----------------------------|

11.4.4.3. Arc into circle

Transform the arc into circle keeping the radius/ diameter of the arc.

- Click on the arc you want to transform into circle.



This command can be used from the *Arc shortcut menu – Close (->Circle)* as well.

11.4.4.4. Modify Diameter

Modify the diameter of the selected circle/arc.

- Define the value of the new diameter.

11.4.4.5. Modify Radius

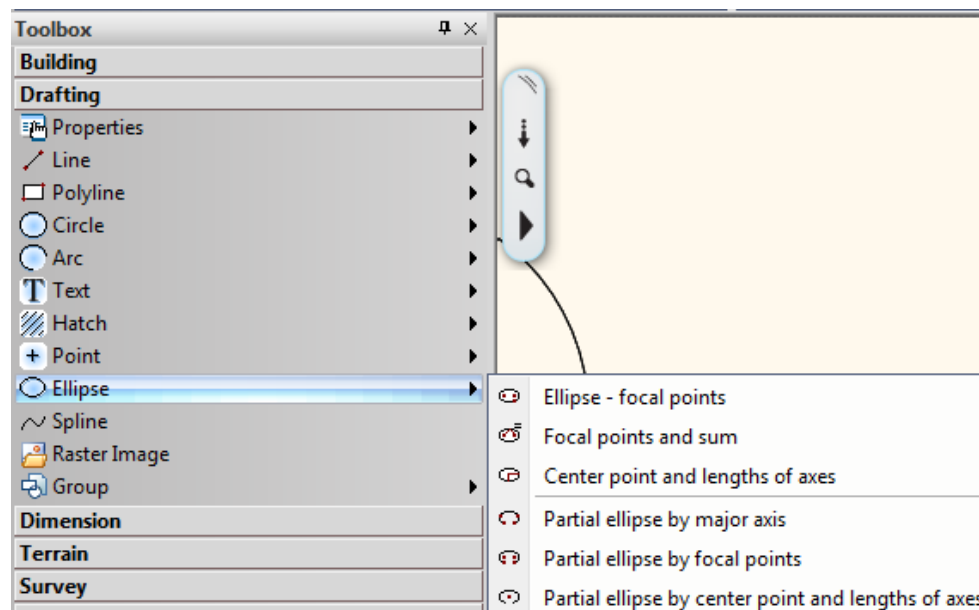
Modify the diameter of the selected circle/arc.

- Define the value of the new diameter.

11.5. Ellipse and Elliptic arc

The ellipse is defined geometrically by the focal points, length and direction of the major and minor half axes, elliptic arc is defined by the same properties and by the start and end angles of the arc.

The icons of Ellipse tool:



11.5.1. Ellipse and elliptic arc properties

Right click on the *Drafting toolbox - Ellipse tool*, or select the command *Drafting menu - Properties – Ellipse*.

The **ellipse properties** dialog appears where the general properties of the ellipse can be set.

General properties

Set the general properties of ellipse: colour, line width, layer, line type and priority.

| | |
|----------------|-----------------|
| General | |
| Layer | Ellipse01 |
| Color | |
| Line type | Simple Line |
| Line width | 0 mm |
| Draw Order | 8 - Bottom-most |



See:

- ❖ the detailed description of *General properties* in Chapter 3.2.1 *Specifying general properties*,
- ❖ the description of *Sets* in Chapter 3.2.3. *Using sets of properties*.
- ❖ the description of *Cost variables* in Chapter 3.2.4. *Assigning cost variables*.

Special properties

Define the special properties of ellipse.




| | |
|-----------------|-------|
| Minor axis | 0.5 m |
| Major axis | 1 m |
| Major direction | 0° |

Minor axis: Set the value of half of the minor axis length.

Major axis: Set the value of half of the major axis length







Major direction: Set the direction of the ellipse or elliptic arc.



These settings have importance when using commands:  *Ellipse tool* -  *Ellipse by centre point and lengths of axes* and the  *Elliptic arc by centre point and lengths of axes*.

11.5.2. Creating ellipse

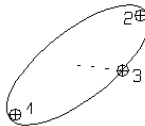
Select the type of ellipse or elliptic arc:

-  Ellipse - focal points
-  Focal points and sum
-  Center point and lengths of axes
-  Partial ellipse by major axis
-  Partial ellipse by focal points
-  Partial ellipse by center point and lengths of axes

11.5.2.1. Ellipse by focal points

Define an ellipse by its focal points and one point on the perimeter.

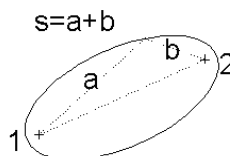
- Define the first focal point.
- Define the second focal point.
- Define a point of the circumference.



11.5.2.2. Ellipse with focal points and sum

Defines an ellipse by its focal points and the sum of its circumferential point distances measured from the focal points.

- Define the first focal point.
- Define the second focal point.
- Define the sum of the circumferential point distances measured from the foci.



11.5.2.3. Ellipse by centre point and lengths of axes

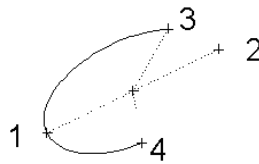
Define an ellipse by its centre point, the actual lengths of the half axes, and the actual direction (the direction of the major axis).

- Define the centre point.

11.5.2.4. Elliptic arc by endpoints of the major axis and arc

Define an ellipse by the endpoints of major axis and the endpoints of the arc.

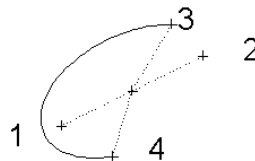
- Define the first endpoint of the major axis.
- Define the second endpoint of the axis.
- Define the starting point of the elliptic arc.
- Define the endpoint of the elliptic arc.



11.5.2.5. Elliptic arc by focal points and endpoints

Define an elliptic arc by its focal points and the two endpoints.

- Define the first focal point.
- Define the second focal point.
- Define the starting point of the elliptic arc.
- Define the endpoint of the elliptic arc.



11.5.2.6. Elliptic arc by centre point and lengths of axes

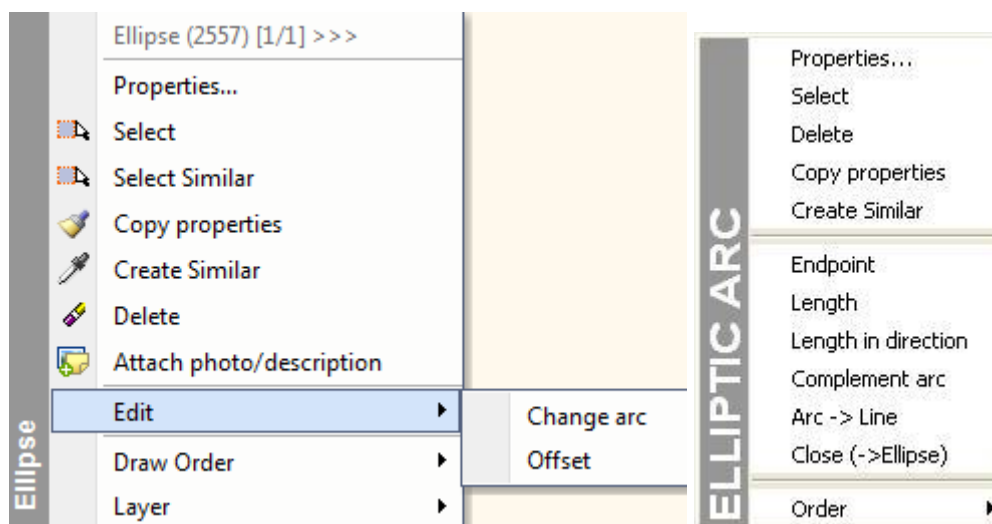
Define an elliptic arc by its centre point, the actual lengths of the half axes, the actual direction (the direction of the major axis) and the actual end angles. Angles are measured in anti-clockwise direction.

- Define the centre point of the elliptic arc.

11.5.3. Editing Ellipse and elliptic arc

Commands for modifying can be achieved in more ways.

- ❖ In the **Ellipse shortcut menu**: appears when right click on an object.



- ❖ **Graphically:**
Using grips and controls:



11.5.3.1. Complement arc

The command **Elliptic arc shortcut menu – Complement arc** defines the complement of the selected elliptic arc and deletes the selected arc.

- Select the elliptic arc.

11.5.3.2. Close (->ellipse)

The command **Elliptic arc shortcut menu – Close (-> Ellipse)** transforms the arc into ellipse by keeping the focal points or diameter.

- Select the elliptic arc.

11.5.3.3. Modify axes by cursor

Modify graphically the radius of the selected ellipse.

- Define the new radius of the ellipse.

11.5.3.4. Arc -> line

Transform the selected elliptic arc into lines crossing its nodes.

11.6. Text

With the commands of the Text set, you can create texts at specified places applying the current text properties. The text can be multiline text – you may type it in or insert it into the Windows clipboard.



In the case of large drawings, inserting several texts in the drawing may slow down the redrawing process. To eliminate this, you can replace the texts by their bounding boxes.

11.6.1. Text properties

Before inserting texts, set the text general properties.

| Properties | |
|--|-----------------|
| Text | |
| Arial 200 | |
| General | |
| Layer | Text01 |
| Colour | |
| Line width | 0 mm |
| Draw Order | 8 - Bottom-most |
| Other parameters | |
| Font | Arial |
| Font size | 200 mm |
| <input type="checkbox"/> Fixed plot size | 5 mm |
| Alignment | Left |
| <input type="checkbox"/> Mirrored | |
| <input type="checkbox"/> Bold | |
| <input type="checkbox"/> Italic | |
| <input type="checkbox"/> Underline | |
| <input type="checkbox"/> Strikeout | |
| Character width [% of size] | 0% |
| Character spacing [% of size] | 0% |
| Line spacing [% of size] | 48% |
| Text direction | 0° |
| Inclination | 90° |
| OK Cancel | |

To do so, right-click the Drafting Toolbox –
The **Text properties** dialog box appears.



Text tool or select the **Drafting menu - Properties – Text** command.

General properties

Define the general properties of the text: colour, line width, layer and priority.



See:

- ❖ the detailed description of *General properties* in Chapter 3.2.1 *Specifying general properties*,
- ❖ the description of *Sets* in Chapter 3.2.3. *Using sets of properties*.
- ❖ the description of *Cost variables* in Chapter 3.2.4. *Assigning cost variables*.

Font

You can select the Windows True Type fonts, specify the style (Regular, Italic, Bold, Bold Italic), and the character height. This parameter defines the height of the character cell in the text.

Alignment

By this command you can specify the current justification in the case of a multiline text.

- Select an option from the list:

| | |
|---------------|------------------|
| Left | Left alignment |
| Centre | Centre alignment |
| Right | Right alignment |

Mirrored

This command allows you to mirror texts.

- Select an option from the list:

A B C D E F F E D C B A

OFF
Inserts a legible text

ON
Inserts a mirrored text

Style

By activating the *Strikeout* option, the text will be stroked out, whereas you can underline the text if you turn on the *Underline* option. You can also specify whether you want a bounding box to enclose the text, and whether it should be rectangular, circular or cloud.

Bounding

The distance between bounding box and the text can be specified as a per cent value relative to the character height.

0 %

ARCHLine.XP

ARCHLine.XP

100 %

ARCHLine.XP

ARCHLine.XP

Character width

This setting defines character width relative to character height (percentage). By setting extreme values for this property, you can create very wide or very narrow characters.

Character gap

In this field, you can specify the spacing between characters. The setting defines spacing value relative to character height (percentage).

| | |
|------------------|-----|
| ARCHLine.XP 2005 | 0% |
| ARCHLine.XP 2005 | 31% |
| ARCHLine.XP 2005 | 60% |

Text direction

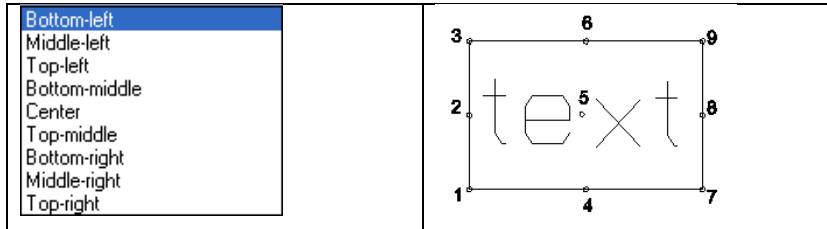
Here you can set the current text direction. If you set 0, the text will be horizontal, while a value of 90 results in a vertical text.

Gap between lines

Here you can set the distance between the lines. The value of line spacing is interpreted relative to character height (percentage).

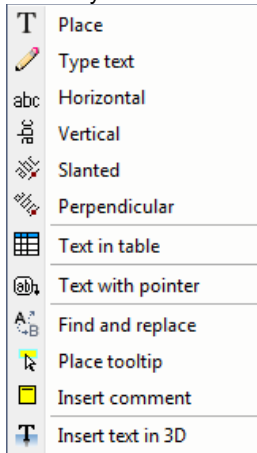
Origin

This command defines the origin of the text. If, for example, you choose the *bottom-left* option, the text will be inserted at the selected point by its bottom-left corner.



11.6.2. Creating texts

You may insert texts using the following commands:



11.6.2.1. Place

Using this icon you can insert a text.

- Define the place of the text in the drawing.

11.6.2.2. Type text

Using this command allows you to type a text directly in the drawing area. You can start a new line by pressing the **Enter** key.

- Specify the place of the text.
- Type the text.
- **Esc** Ends the command.

11.6.2.3. Horizontal text

The command inserts the current text horizontally at the defined point.

- Specify the place of the text.

11.6.2.4. Vertical text

The command inserts the current text vertically at the defined point.

- Specify the place of the text.

11.6.2.5. Slanted text

Inserts the current text slanted by a specified angle.

- Define the angle of the slanted text.

Options:

| | |
|--------------------------|---|
| PICK UP | Applies an angle similar to that of the drawing object. |
| Type the value... | Numerically defined angle |

- Define the place of the text.

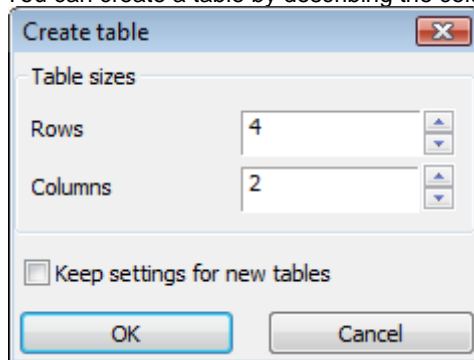
11.6.2.6. Perpendicular text

The command inserts the current text perpendicular to the selected object.

- Select the perpendicular object.
- Specify the place of the text.
-

11.6.2.7. Text in table

You can create a table by describing the columns and rows the table is going to have.

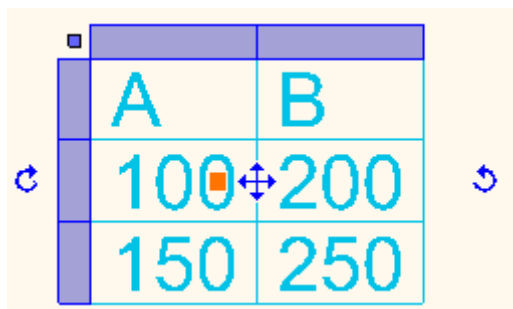


When the *Keep settings for new tables* are on, the current column and row number will be the new default value.

Now you can place the new text table with empty text fields.

Table text editing commands

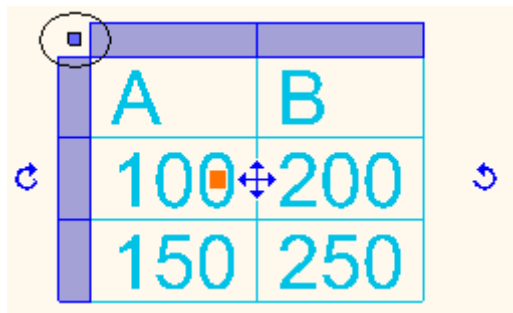
Select the table on the drawing with a left click to change its content or properties.



The text table management tools are linked to markers.

Table text properties

If you click on the top left square marker you can modify the table text properties with the following dialog box.



Border line



Border line width

0 mm

Border line colour



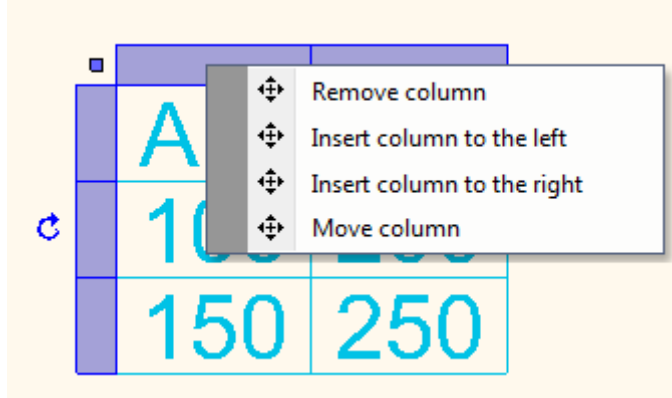
Show invisible lines

☒ Show invisible table lines

Table text - Edit column

To edit a column in a table text, follow these steps:

1. Select the table
2. Click the blue field above the column
3. On the submenu, select a command how you would like to modify the column.



Remove column

Select the column to be deleted.

Insert column to the left

Insert a new column to the left of the column that is selected

Insert column to the right

Insert a new column to the right of the column that is selected.

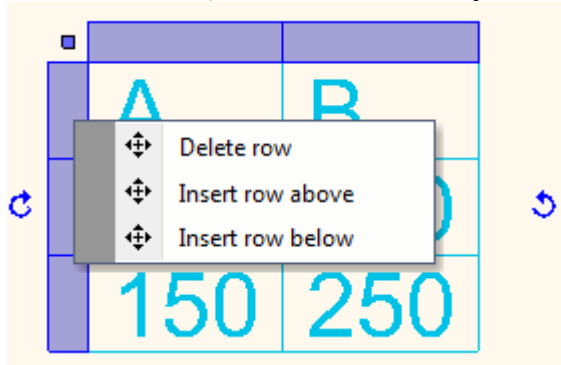
Resize column

You can resize the width of a column with dragging the right line at a new position, and the column to the left of the line that is dragged, is resized. The part of the table to the right of the column that is resized will be repositioned (and not resized).

Table text - Edit row

To edit a row in a table text, follow these steps:

- 1. Select the table
- 2. Click the blue field left to the row
- 3. On the submenu, select a command how you would like to modify the column.



Delete row

Select the row to be deleted.

Insert row above

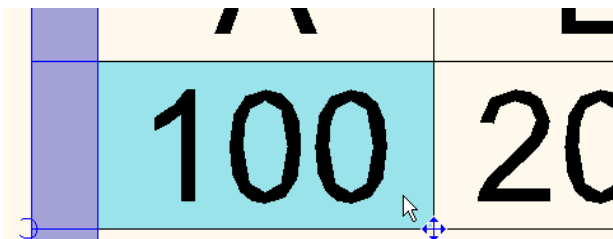
Insert a new row to the top of the row that is selected.

Insert row below

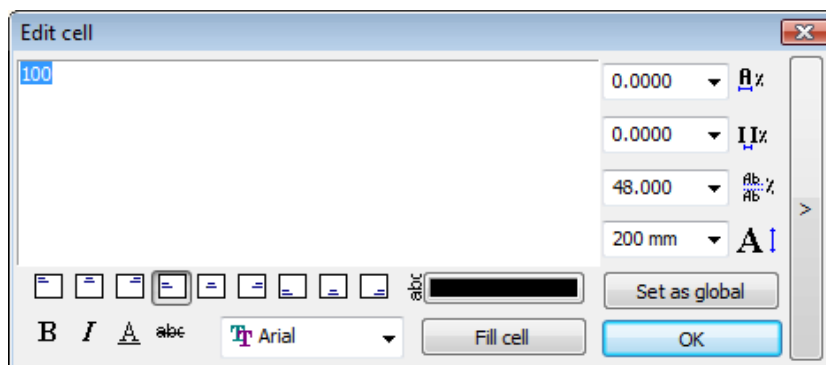
Insert a new row to the bottom of the row that is selected.

Edit fields

You can edit a cell by selecting an existing table and click inside the cell.



This dialog box can be used to control the following settings:



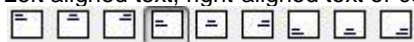
Input field

When you press the Fill cell button, the text input is updated into the selected cell. Each field can be a multiline string. Alignment of columns and rows are handled dynamically.

Cell Alignment

It determines the vertical and horizontal position of the text within the cell:

Left aligned text, right-aligned text or centred text



Effects

The effects property is used to specify text as bold, italic, underline or strikeout.

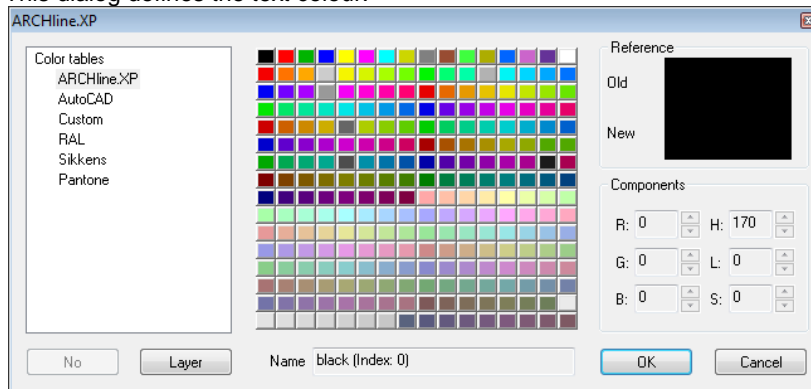


Font names

Choose from the list of font family names installed on your operating system.

Colour

This dialog defines the text colour.



Font width

You can change the font width. The value of font width is interpreted relative to font size (percentage). Type the value in % of font size or choose it from the list.



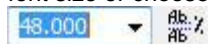
Character spacing

You can change the spacing between characters. The value of character spacing is interpreted relative to font size (percentage). Type the value in % of font size or choose it from the list.



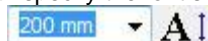
Line spacing

You can change the spacing between lines in case of multiline texts. You can stretch or compress an entire multiline text to make it fit and look the way that you want it to. The value of line spacing is interpreted relative to font size (percentage). Type the value in % of font size or choose it from the list



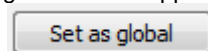
Font size

You can specify the font size in mm. Negative values are not allowed.



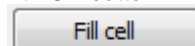
Set as global

Set as global button applies all text formatting properties of the selected cell to the whole text table.



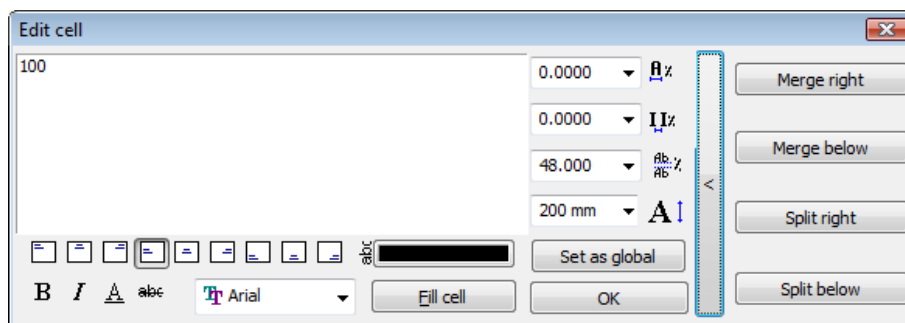
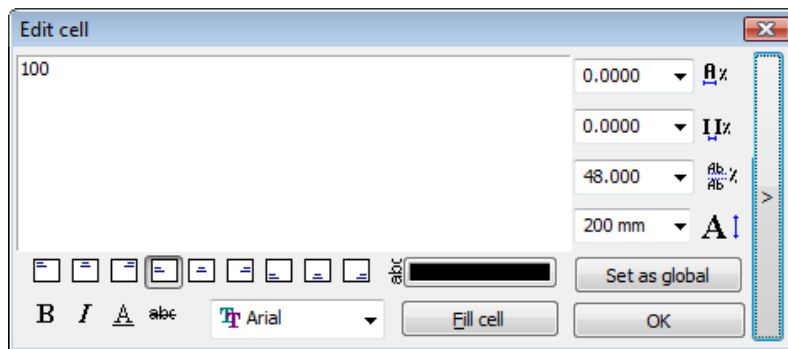
Fill cell

Fill cell button applies text changes of the selected cell. The changes are applied immediately and there is no need to close the dialog with OK button.



Merge cells into one cell in a table

You can combine two or more cells in the same row or column into a single cell. Press the „>“ long vertical button to make the options visible.



Merge right

Select the cell you want to merge to the right. The contents of the cell to the right will be deleted.

| | |
|-----|-----|
| A | B |
| 100 | 200 |
| 150 | 250 |

Before merge

| | |
|-----|-----|
| A | |
| 100 | 200 |
| 150 | 250 |

Merge

Merge down

Select the cell you want to merge to the cell below. The contents of the cell below will be deleted.

| | |
|-----|-----|
| A | B |
| 100 | 200 |
| 150 | 250 |

Before merge

| | |
|-----|-----|
| A | B |
| 100 | 200 |
| | 250 |

Merge

Split right

Select the cell you want to split to the right. The new cell will be empty.

| | |
|-----|-----|
| A | |
| 100 | 200 |
| 150 | 250 |

Before split

| | |
|-----|-----|
| A | |
| 100 | 200 |
| 150 | 250 |

Split

Split below

Select the cell you want to split to the below. The new cell will be empty.

| A | B |
|-----|-----|
| 100 | 200 |
| | 250 |

Before split

| A | B |
|-----|-----|
| 100 | 200 |
| | 250 |

Split

11.6.2.8. Text with pointer

You can insert the text with an arrow pointing in a specific direction.

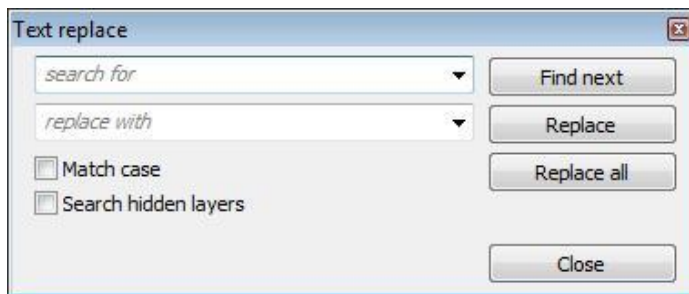
The pointer consists of a chain of segments (not more than two segments), which ends in an arrowhead.

You can select the object at which you want the text to point.



11.6.2.9. Find and replace

Using this new tool you can find and replace texts. Special characters can also be used to extend search. Click on Drafting menu – Text – Find and Replace command.



Search

Type the text into the search field.

Replace

Type the text you would like to use as replacement of the search result when Replace or Replace all is pressed.

Match case

The search can be set as case sensitive with this option. Otherwise the software won't make difference between uppercase or lowercase characters.

Search hidden layers

Enable this option if you want to extend the search for hidden layers also.

Find next

Push this button if you want to begin or continue the search for the next possible match.


Replace

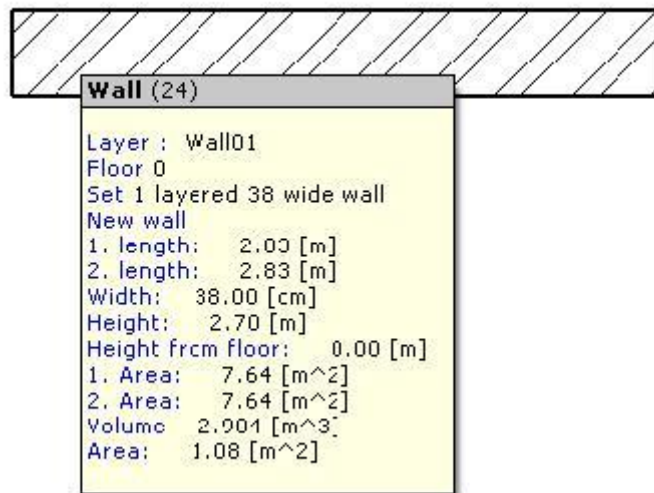
Click on Replace to replace the result of search by the text given in the replace field.


Replace all

Click on Replace all to replace all the results of search by the text given in the replace field.

11.6.2.10. Place tooltip text

The  icon in the Text tool menu allows you to place tool tips in the drawing. We mean those tool tip information tables, which will appear when you drag the mouse pointer over a given architectural object. In the case of wall, for example, the followings will be displayed in the tool tip:




- After clicking the  icon, select the object about which you want to place a tool tip information table in the drawing.
- Insert the table with the mouse:

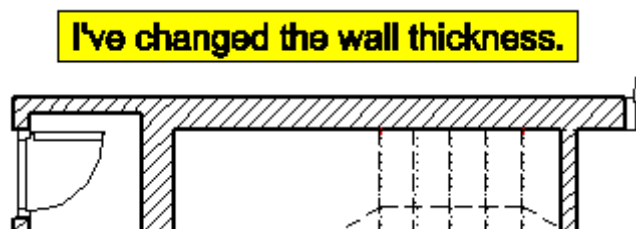
! The inserted tooltip table is still linked to the selected object, i.e. it follows the modifications of the object.

| | |
|--------------------|-------------------------|
| Wall | (8) |
| Layer : | Wall01 |
| Floor | 0 |
| Set | 1 layered 38 wide wall |
| New wall | |
| 1. length: | 5.81 [m] |
| 2. length: | 5.81 [m] |
| Width: | 38.00 [cm] |
| Height: | 2.70 [m] |
| Height from floor: | 0.00 [m] |
| 1. Area: | 15.69 [m ²] |
| 2. Area: | 15.69 [m ²] |
| Volume | 5.961 [m ³] |

11.6.2.11. Insert comment

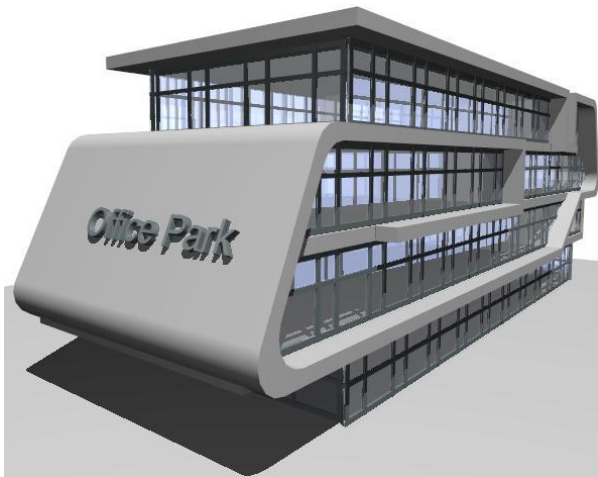
Comments, that are not visible on the printed document, can be placed on the drawings in a yellow label. The label should be a rectangle.


- Click Text -  Insert comment icon.
- In the appearing text input dialog enter the comment you want to place. Ok.
- Click the object to which you want to connect your comment. In that case the comment will be connected to the object. Moving or deleting the object will move or delete the connected comments as well. If you just want to place a comment without connecting it to an object, click the right mouse button (or press Enter).
- Place the text on the drawing.




11.6.2.12. Insert text in 3D

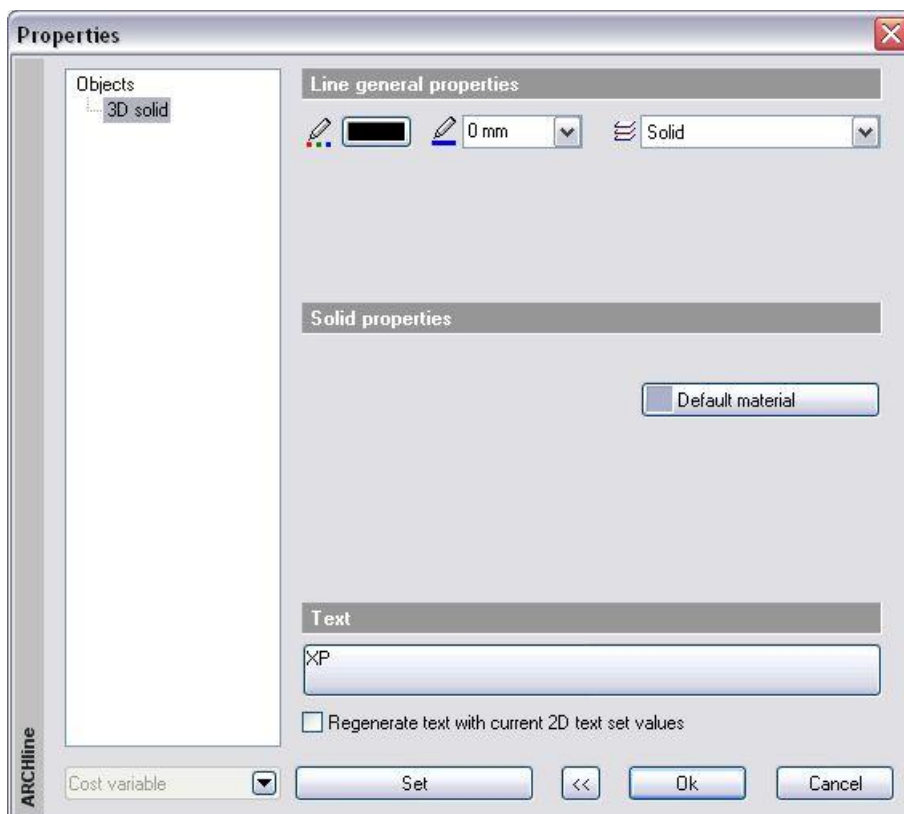
3D text is a new feature to place text in 3D window directly. You can place it on any plane, for example a wall face. You can specify the 3D depth, the text properties, and apply material to 3D text. 3D text is editable so can change the text or the text properties any time.



You can easily place and modify 3D letters on 3D plane with the  *Insert text in 3D* command.

- Select a 3D window you want to work in.
- In the text properties dialog set the desired font type, height, and other properties, if necessary.
- Select the Text tool-  *Insert text in 3D* command
- Type the appropriate text in the Input Text dialog.
- Select a planar surface of a solid to place the text.
- Specify the place of text on the selected surface (the bottom left corner of the text).
- Specify the direction of text, or press the Enter, if the local 3D x axis is horizontal.
- Enter the width of the text.

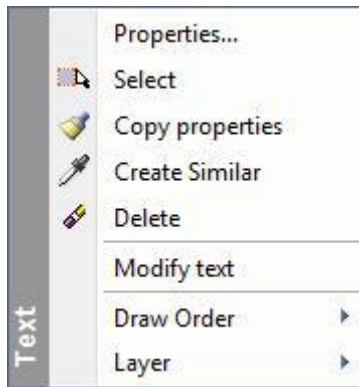
The 3D text behaves as a 3D solid. You can modify its properties by double clicking on it:



- If you want to change the font style and letter height with the actual text properties, use the *Regenerate text with current 2D text set values* option.

11.6.3. Modify texts

When you right-click the text, the **Text shortcut menu** pops up which contains the following modifying commands:



11.6.3.1. Modify text

You can modify the selected text without changing its properties.

- The *Text actual* dialog box appears where you can modify the selected text.



You may also modify a text by double-clicking it and pressing the 'text' button at the bottom of the appearing *Properties* dialog box. Again, the *Text actual* dialog box will pop up.

Text Table allows you to create and edit group of texts in a formatted way. In this release the text table management tools are linked to markers.

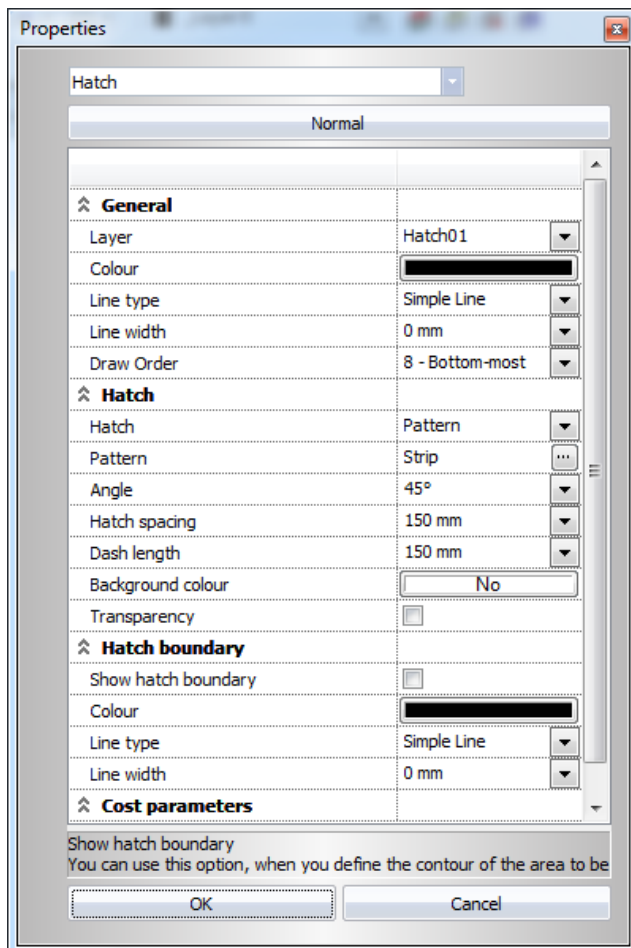
11.7. Hatch

With hatch commands you can apply different hatch patterns to enclosed areas.

11.7.1. Hatch properties

Before applying hatch to the desired area, set the global properties of hatching.

Right-click on the Drafting toolbox - **Hatch** tool or select **Drafting menu - Properties– Hatch** command to display Hatch properties dialog.



11.7.1.1. Hatch general properties

Set the general properties of the hatch: colour, line width, layer and priority.



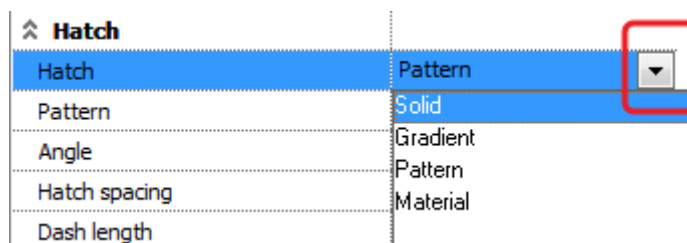
See:

- ❖ the detailed description of *General properties* in Chapter 3.2.1. *Specifying general properties*,
- ❖ the description of *Sets* in Chapter 3.2.3. *Using sets of properties*.
- ❖ the description of *Cost variables* in Chapter 3.2.4. *Assigning cost variables*.

Special properties

The program offers three types of hatches:

- ❖ **Normal hatch** and
- ❖ Gradient hatch
- ❖ Image filled hatch



You can also set the

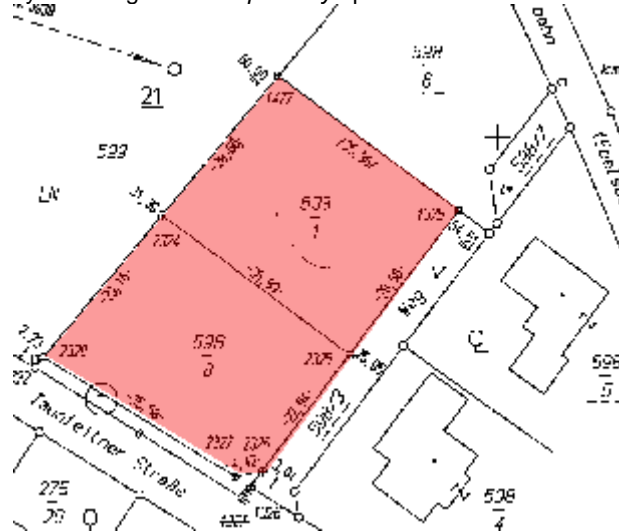
❖ Transparent hatch

This means that both the hatch background colour and the solid hatch are transparent. Transparent hatches always have pale colour.

Example:

On site plans there can be a need of merging sites, for example. It can be represented by hatch. At the same time the original state should be represented underneath the hatch, too.

By selecting the *Transparency* option we can resolve the above mentioned task.

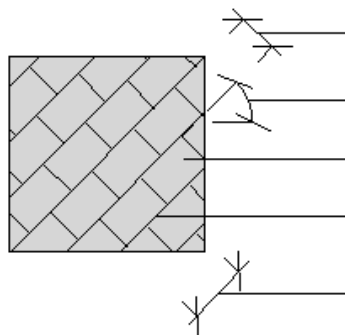


❖ Hatch boundary

You can use this option, when you define the contour of the area to be hatched as an imaginary polygon boundary.

Normal hatch

- Enable the Hatch option.



Hatch spacing: 150 mm

Angle: 45°

Background colour: grey

Colour: black

Dash length: 250 mm

Solid hatch

The hatch can be defined as a solid hatch, too. For this enough to select the *Solid* option.

Hatch spacing (Y value)

Define the line spacing of the hatch (in drawing units). The distance between the hatch lines is to be understood perpendicular to the hatch direction (y direction).

Dash length (X value)

Define the line spacing of the hatch (in drawing units). The distance between hatch lines is to be understood parallel to the hatch direction (x direction).

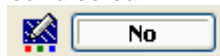
Angle

Define the direction of the hatch lines in angles (relative to the horizontal direction).

Name

Show you the name of the hatch pattern.

Background colour

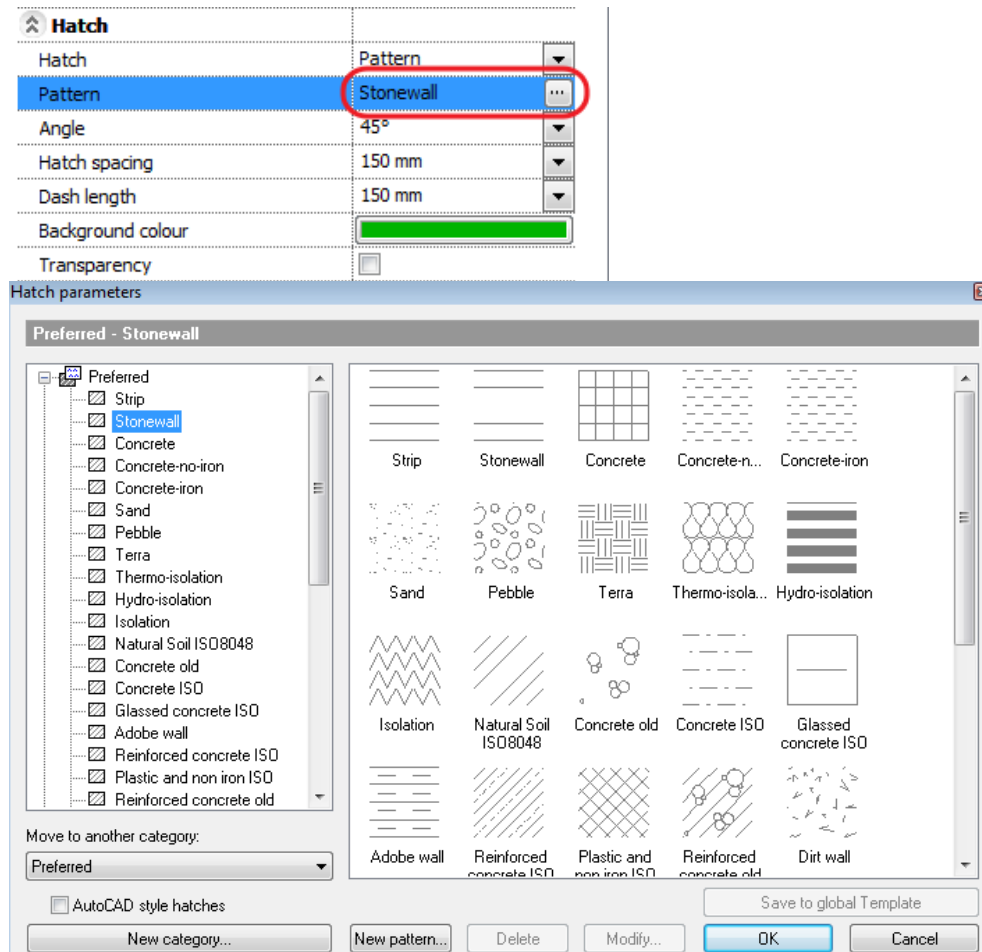


You can set the background colour for the hatch. By default, there is no background colour.



11.7.1.2. Pattern

This command defines the pattern of the hatch. Click on the icon to display **Hatch parameters** dialog. If you click on the name or the image of the hatch, a choice of predefined patterns to choose from appears (architectural markings: brick wall, stone wall, pebbles, etc., patterns: ceramics, wall patterns, etc). The specified hatch spacing and dash length values determine the dimensions of a single unit of the pattern along the two main directions.



New category

Enter the name of the new category in the appearing field. The category you created is displayed in the list of hatch categories; you can rearrange the existing hatch patterns between the categories.

Move to another category

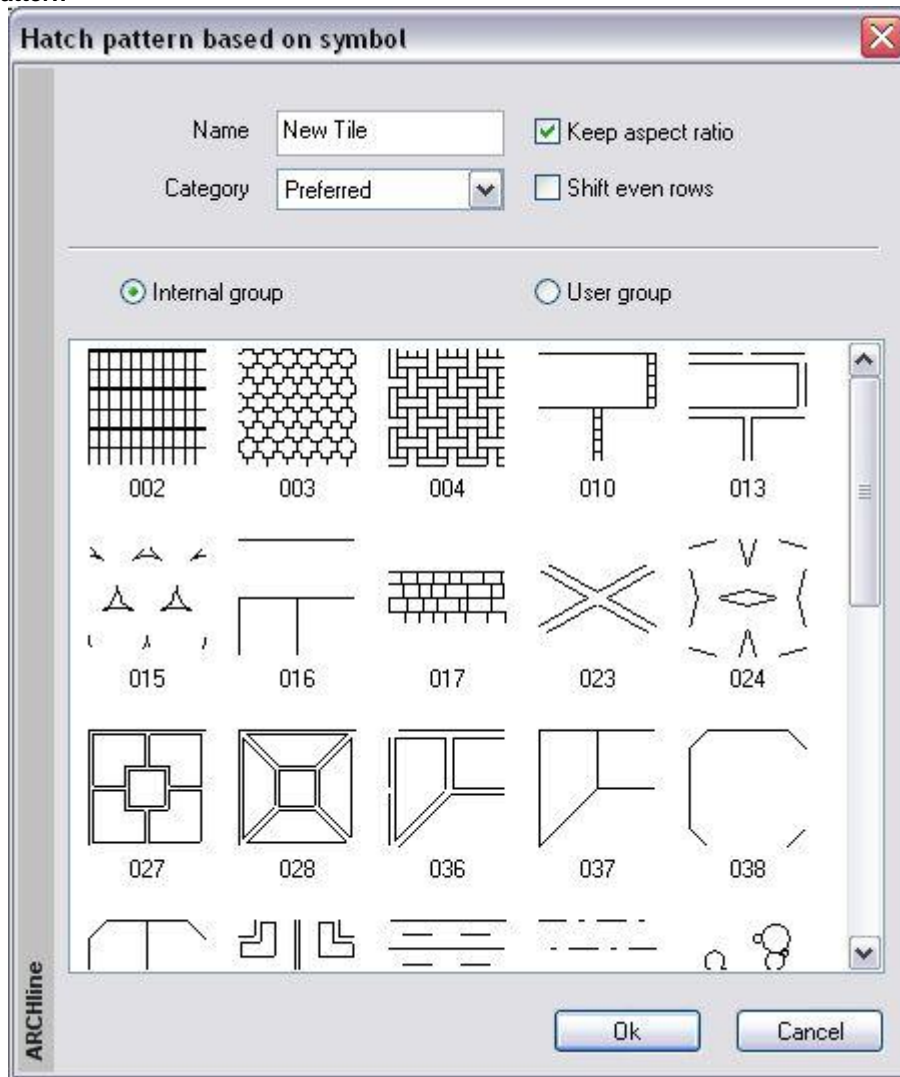
Move a pattern to a selected category. Choose the pattern type you want to move to another category, and then select the desired category from the pull-down list. (The program asks you if you are sure about moving the pattern.)

Delete

Delete patterns and categories. The program asks you if you are sure about deleting the selected pattern. Only user defined patterns can be deleted.

! Only delete newly created patterns, because this modification will affect all patterns of the same name in the plan, and the patterns in completed plans that have been open also get deleted.

New pattern



To create new patterns you can use the program's default 2D pattern groups, but there is a possibility to apply user defined patterns (2D groups).

Select the option **Internal group** to display hatch patterns. Choose a pattern and specify its name. Select the category where you wish to place it.

With the command *Keep aspect* command you can display the pattern in its original proportions; the option *Shift even rows* shifts every other row relative to the previous row.

The pattern you defined is displayed in the list of hatches. Consequently, after setting its properties (hatch spacing, dash length, and pattern direction) you can apply it as one of the hatch patterns.

By selecting **User group** those hatch patterns are displayed that you defined with the command *Tools menu – 2D group – Create new hatch pattern*:

Name

☒ Keep aspect ratio

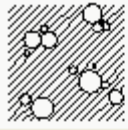
Category

Preferred

☐ Shift even rows

☐ Internal group

☒ User group



Old_reinforc...

The hatch patterns selected with the abovementioned methods can be used to apply hatch to floor plans (e.g. 2D display of walls), to create precise drawings of front views, for 3D material display and to demonstrate cross-sectional cutting planes.

Modify

This command modifies the properties of user defined patterns: name, category, keeping proportions, pattern type etc.

AutoCAD® style hatches

In case of importing AutoCAD® drawing, default AutoCAD® style hatches are recognized automatically and handled differently from ARCHLine.XP style hatches. This means that scaling and rotating are the only possibilities for AutoCAD® style hatches, similarly as users can do it in AutoCAD®.

For selecting these hatches switch on the *AutoCAD® style hatches* option.



See the 4.5.2.5. *AutoCAD® style hatch selection*, 4.5.2.6. *Merge to built-in patterns* and 4.5.2.7. *Limitation* chapters.

11.7.1.3. Hatch boundary

You can set whether to show the hatch boundary or not.

This option can be very useful when adding hatch to an area enclosed by a polygon boundary. The hatch boundary has its own properties.

To set hatch boundary properties you should enable the option Show hatch boundary. Then select the option

☒ Hatch

☐ Hatch border

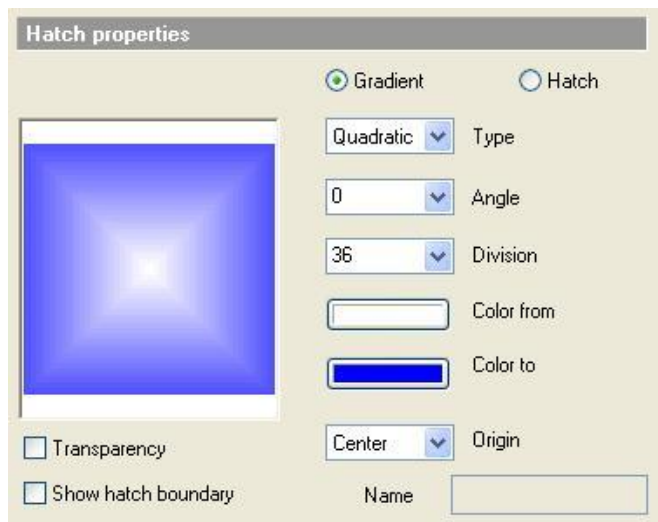
on the left side of the dialog. In the dialog box appearing you can set the colour, the line type and line width of the hatch boundary.

| | |
|---------------------|--------------------------|
| Hatch boundary | |
| Show hatch boundary | <input type="checkbox"/> |
| Color | <div></div> |
| Line type | Simple Line |
| Line width | 0 mm |

11.7.1.4. Gradient hatch

Enable **Gradient** option in the Hatch properties dialog to specify the properties of shaded hatch:

| | |
|--------------|--------------------------|
| Hatch | |
| Hatch | Gradient |
| Transparency | <input type="checkbox"/> |
| Gradient | <div></div> |



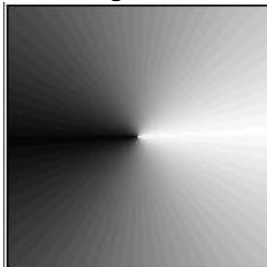
Type of shading: linear, centric, conic, quadratic.

Angle: defines the direction of the hatch lines.

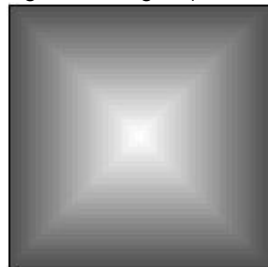
Division: defines hatch density.

Colour from – colour to: defines the lightest and the darkest shades.

Origin: defines the origin of the light. (This is the focus of the shaded hatching.)



Type: Conic



Quadratic



Centric

Origin: Centre

Centre

Centre



We suggest that you use shaded hatch when you wish to apply hatch to a 2D front view. In this case you can add quadratic shade to the hatch of the glossy window panes. Try it!

11.7.2. Hatch types

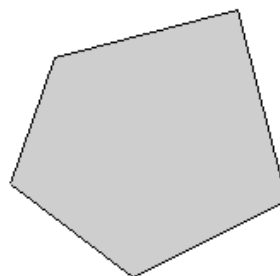
Hatching means filling enclosed areas. With ARCHLine.XP you can fill such areas in the following ways:

- ❖ with homogeneous colour,
- ❖ with lines,
- ❖ with a predefined pattern,
- ❖ With image.

11.7.2.1. Filling with homogeneous colour

Fill the selected area with homogeneous colour.

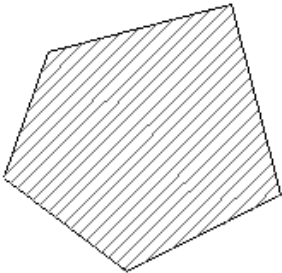
The hatch can be defined as a solid hatch, too. For this enough to select the *Solid* option in the *Hatch properties* dialog.



11.7.2.2. Filling with lines

This is the standard hatch type.

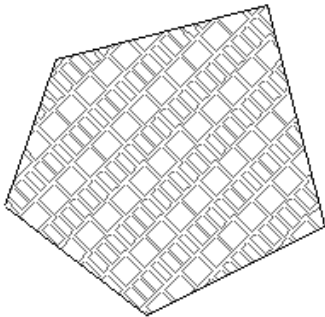
You should set the parameters of the hatch lines (pattern direction) in the dialog box *Hatch properties*.



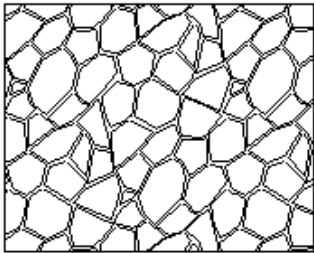
11.7.2.3. Filling with predefined patterns

This option fills a selected area with a predefined pattern. The patterns are basic graphical objects. The program offers 65 patterns to choose from in the dialog box *Hatch properties* – *Pattern* – *Hatch parameters*.

You can modify the dimensions of the pattern.
X direction: dash length
Y direction: hatch lines



Based on the program's internal pattern groups or on user-defined groups you can also create a predefined pattern.



See point 11.7.1.1 *Normal hatch* and 11.9.10 *Creating hatch patterns*.

11.7.2.4. Image filled hatches

In ARCHLine.XP you can use images as filling for hatch areas. This option can be found in the Hatch Properties dialog.

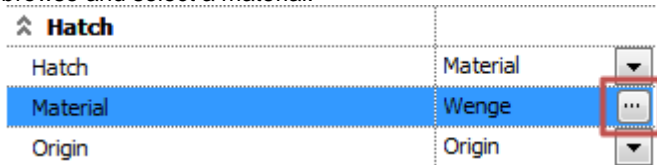
Properties:

Hatch / Material option

This setting allows you to set textures as hatch filling.

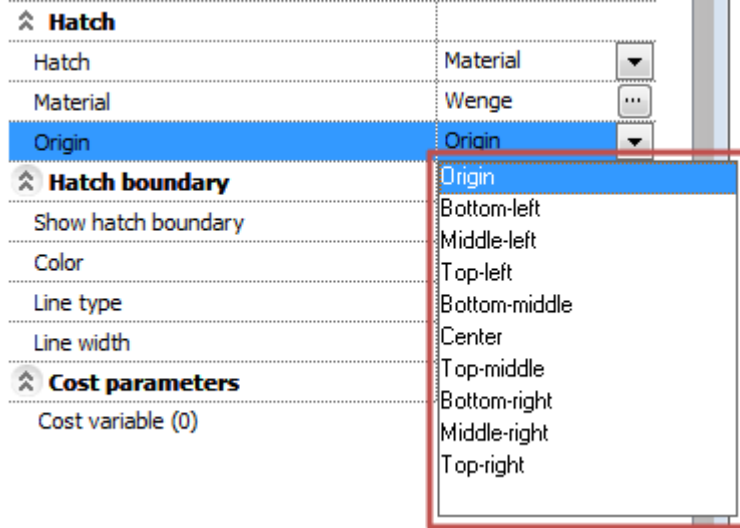
Material setting

This setting allows you to choose a material from the material library to use it as hatch filling. Click on the browse button to browse and select a material.



Origin

This setting allows you to set different texture alignment options for the material of the filling.



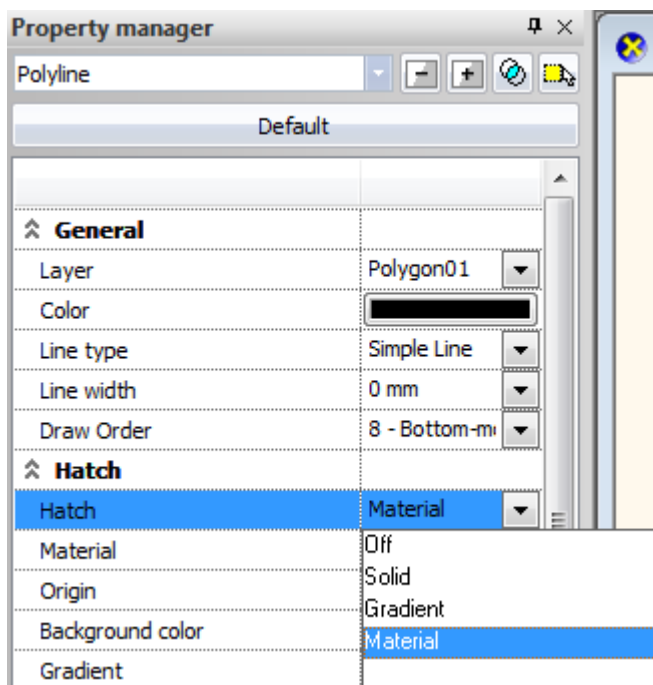
How to use image filled hatches?

To use image filled hatches select the Material option in the Hatch settings section in the hatch properties dialog window and click on the Modify button at the Material property to select a material.

When a material is selected you can set its distribution origin as well, by using the Origin options.

Filling a closed polyline or arc

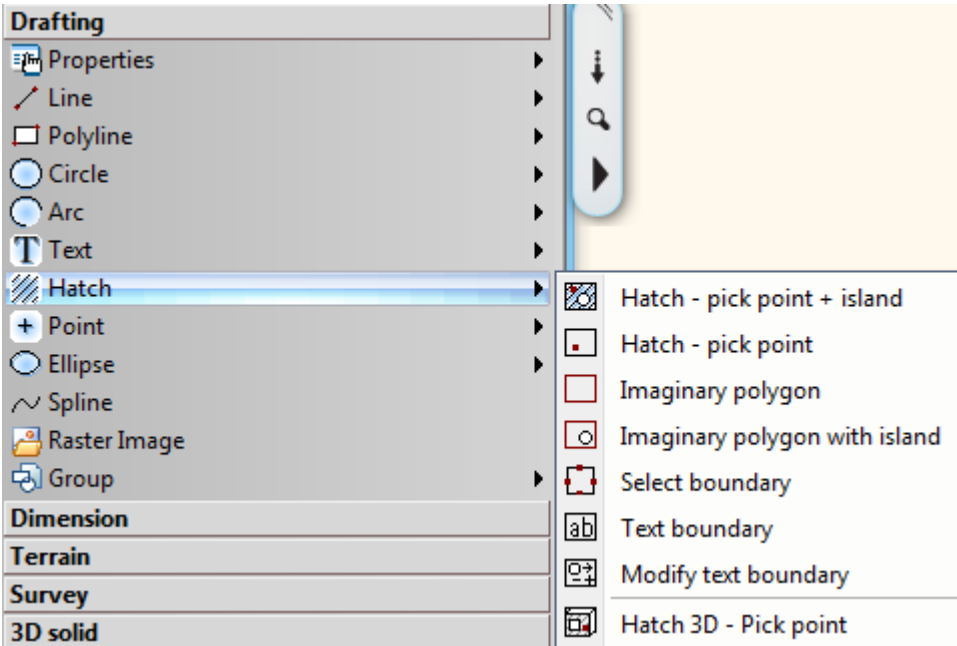
You can fill open or closed polyline, arc or ellipse in your drawing with solid colour, a one- or two-colour gradient fill, hatch pattern and texture. Filling with hatch pattern, you can select any predefined hatch pattern, or your own hatch pattern. Filling with texture you can choose any texture from the material library.



11.7.3. Creating hatch

The hatch is an individual drawing object. There is no strong relation between the hatch boundary and the hatch itself. You can delete or modify the object or the chain of objects enclosing the hatch without deleting or modifying the hatch. Of course, this does not apply to the hatch boundary when you add hatch to an area enclosed by an imaginary polygon. The hatching may consist of several, unconnected parts. Hatches created at the same time (e.g. if you select more than one closed contour lines) are considered as one object, so these can be modified together. Therefore, if you wish to modify a hatch, the command will apply to all hatches created at the same time.

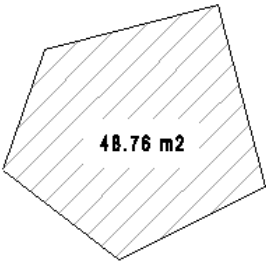
Hatching can be created with the following commands:



11.7.3.1. Hatch by Pick point

You can add hatch to a selected, enclosed area. To select the area you only have to click somewhere inside it.

- Select a point inside the area to be hatched.



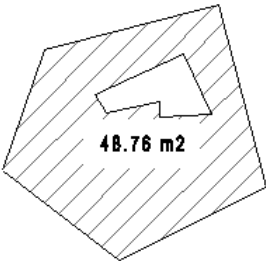
! If you select more than one area, and the area you selected second is an inner chain of the first one, this area will not be hatched.

Make sure you select that side of the enclosed area where wish to add hatch.

11.7.3.2. Hatch by Pick point and island detection

This command hatches a selected, enclosed area. To select the area it is enough to click inside it. Every closed chain of lines (island) inside the area will not be hatched. Island detection only goes one level inside, so the program does not search for islands inside the islands.

- Select the area to be hatched.



11.7.3.3. Hatch imaginary polygon

Hatches an area enclosed by an imaginary polygon. You can define this polygon with its apexes.

Options:

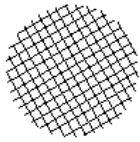
| | |
|--------|---|
| CIRCLE | To define the area to be hatched, you can apply methods used to draw a circle. |
| SHIFT | You can shift the hatched area to a certain distance relative to the defined polygon. |

| | |
|--------------|---|
| WIDTH | You can specify the path by a chain of lines and arcs. The value you specified in the dialog box defines the width of the path you wish to hatch. |
|--------------|---|

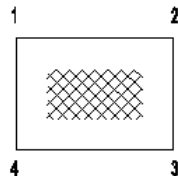
- Specify the apexes of the polygon. The polygon may contain arcs.
- Enter** Completes specifying the polygon and connects the first and the last apex.

! If you select more than one area, and the area you selected second is an internal chain inside the first area, this area will not be hatched.

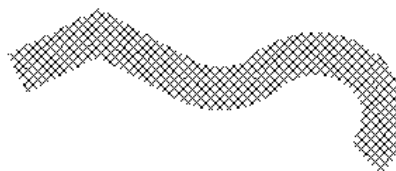
Example:
CIRCLE



SHIFT



WIDTH



11.7.3.4. Hatch imaginary polygon with island detection

This command hatches the inside of an imaginary polygon, leaving out the closed chain of lines inside it. To define the imaginary polygon, specify its apexes.

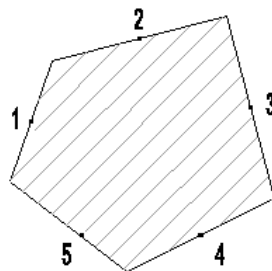


For detailed description see point 11.3.3.3 *Hatch imaginary polygon*.

11.7.3.5. Hatch by selecting boundary objects

Hatches an enclosed area whose objects you selected one by one.

- Select the sides of the object to be hatched one by one



! Make sure you select an enclosed area. The intersecting parts of the areas to be filled behave like islands and remain without hatch. You can select the objects clockwise or anti-clockwise, but you must follow a sequential order.

11.7.3.6. Hatch 3D surface by Pick point

With this command:

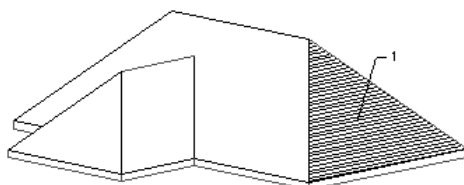
- ❖ You can add hatch to a selected 3D plane. To do so, you have to specify the origin and the direction of the hatch.
- ❖ You can delete a 3D hatch.

Hatching 3D planes:

- Select the plane of an object, which you wish to hatch.
- Define the origin of the hatch on the selected plane.
- Specify hatch direction.

Option:

| | |
|--------------|---------------------------------------|
| ENTER | The direction is the local 3D x-axis. |
|--------------|---------------------------------------|



Deleting 3D hatches:

- Select **DELETE**.
- Select the plane from which you wish to delete the hatch.

11.7.3.7. Hatch 3D surface by Pick point and island detection

With this command:

- ❖ You can add hatch to a selected 3D plane, while the islands remain without hatch. To do so, you have to specify the origin and the direction of the hatch.
- ❖ You can delete a 3D hatch.



For detailed description see point 11.3.3.6. *Hatch 3D surface by Pick point.*

11.7.4. Editing hatch

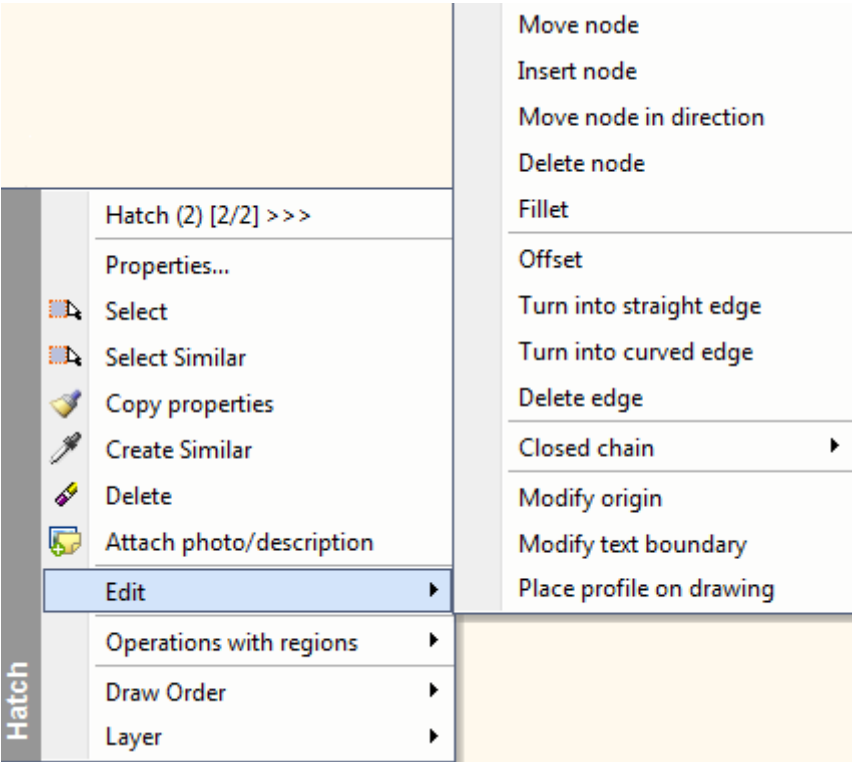
Hatch editing commands can be enabled from the following locations:

❖ **Hatch tool:**



Text boundary
Modify text boundary

❖ **Shortcut menu:**



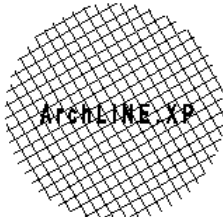
11.7.4.1. Text boundary

The icon works as a button, which you can turn on or off. If you enable the option Text boundary, the program creates a boundary in the hatch pattern for the measurements, arrows and texts so that these are easier to read.


Text boundary ON



Text boundary OFF





If you wish to create a boundary for texts, measurements or objects that are already hatched, apply the icon 
Modify text boundary.

11.7.4.2. Modify text boundary

Modifies the text boundary created in a hatch pattern for texts, measurements or objects:

- ❖ Deletes the boundaries in the hatch pattern created for the selected objects.
- ❖ Creates new boundaries in the hatch pattern for the selected objects.
- ❖ Deletes all boundaries created in the hatch pattern and creates new ones when necessary (e.g.: if the measurements of the object is modified), so it refreshes the hatch.

Deleting the text boundary from the hatch pattern:

- Select **DELETE**.
- Select the appropriate text boundaries in the hatch that you wish delete.
- **Enter** Deletes the selected text boundaries.

Option:

| | |
|------------|--|
| ALL | Deletes all text boundaries. Select the hatch from which you wish to delete all text boundaries. |
|------------|--|

Creating new text boundaries:


This command creates new text boundaries for the selected objects. Cuts out a rectangular area from the hatch pattern around the selected object.

- Select **INSERT**.
- Select the hatches on which you wish to create new text boundaries.
- **Enter** Completes the selection.
- Select the texts, measurements or objects around which you wish to create a rectangular boundary in the hatch pattern.
- **Enter** Creates the new text boundaries and completes the selection.

Refreshing the hatch:

- Select **REGENERATION**.
- Select the hatches on which you wish to create the necessary text boundaries.
- **Enter** Completes the selection.
- **Enter** Completes the command.



See 11.3.4.1.  *Text boundary* for more details.

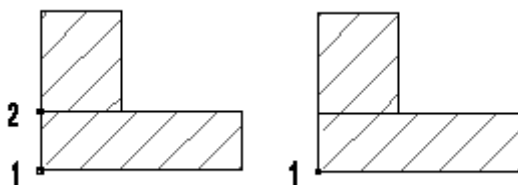
After the hatch is created you can modify it using the *Shortcut menu - Modify hatch origin* command

11.7.4.3. Modify hatch origin

With *Shortcut menu – Modify origin* command you can modify the origin of the selected hatch and shift the hatch pattern on the selected area.

By default the hatch global origin is the 0 0 point on the drawing.

- Specify the new origin of the hatch.

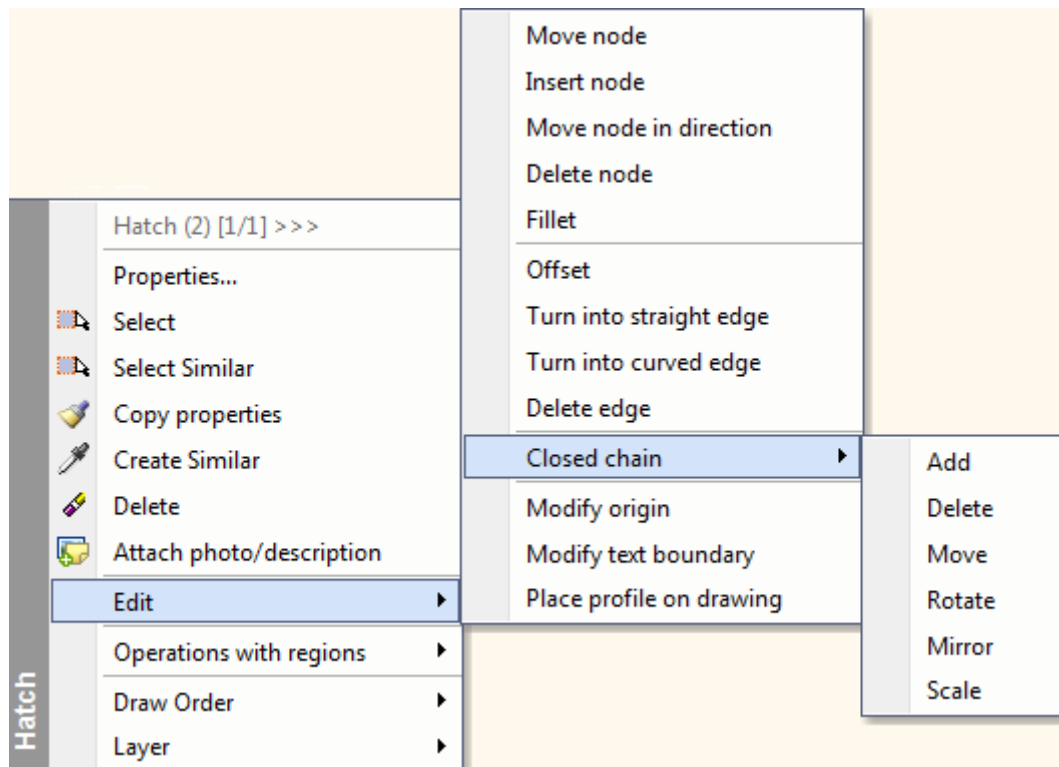


Different origins

Same origin

11.7.4.4. Editing hatch contour

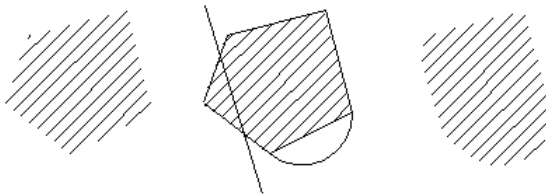
With the commands *Shortcut menu – Edit* and *Closed chain* you can edit the hatch contour:



With the commands in Closed chain it is possible, for example, to create „holes” in a hatch pattern.

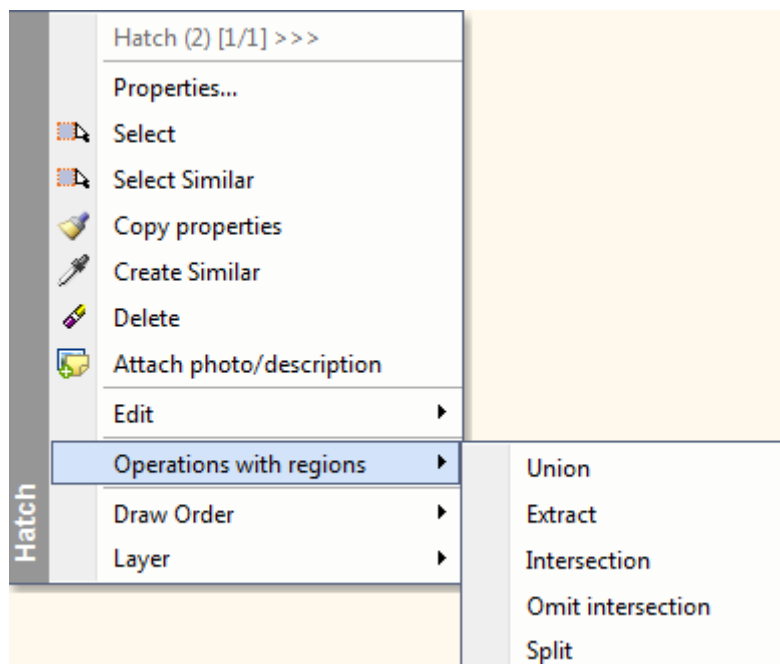


For a detailed description see Chapter 8.9.9 *Editable profile*



11.7.4.5. Operations with regions

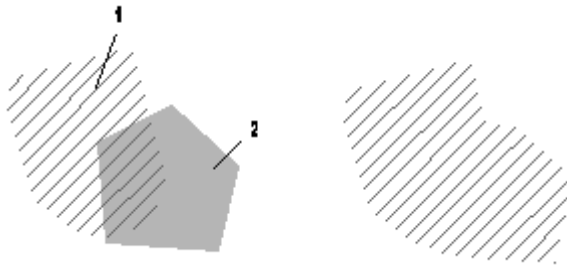
With the commands of the *Shortcut menu – Operations with regions* you can unite or extract hatches, add hatch to the common part and omit this part from the hatch:



Union

Unit the selected hatches. The hatches selected afterwards will have the properties of the hatch selected first.

- Select the hatches to be united, or the closed objects whose contours you wish to unite for hatching.
- **Enter** Completes the selection and unites the hatches.



Extract

Extract one from the other of the selected hatches. Select a hatch and the program extracts from this the hatches selected afterwards.

- Select the hatches to be extracted.
- **Enter** Completes the selection.



Intersection

Create a common part (intersection) of the selected hatches. The hatches selected afterwards will have the properties of the hatch selected first.

- Select the hatches or closed objects whose intersection you wish to create.
- **Enter** Completes the selection.



Omit intersection

The program creates the „symmetric difference“ of the selected hatches. This means that it produces a common part, and then omits it from the union of the hatches. The hatches selected afterwards will have the properties of the hatch selected first.

- Select the hatches or closed objects whose symmetric difference you wish to create.
- **Enter** Completes the selection.



11.8. Raster images

Introduction

ARCHLine.XP is essentially a drawing application. However, there are occasions when it is useful to display raster images as part of the drawing. Raster images are included to ARCHLine.XP drawings or project.

You can load and use the raster images. Raster images behave like any other drawing objects, so you can rotate, move, copy, scale, delete them as well. You can apply the undo/redo commands for raster images, too. The image file formats supported by ARCHLine.XP include the most common formats like BMP, JPG, and TIF. Images can be 1-bit black and white, 4-bit, 16 bit, or 24-bit colour ones. ARCHLine.XP supports the transparent pixels. Transparency is scalable between 0-255.

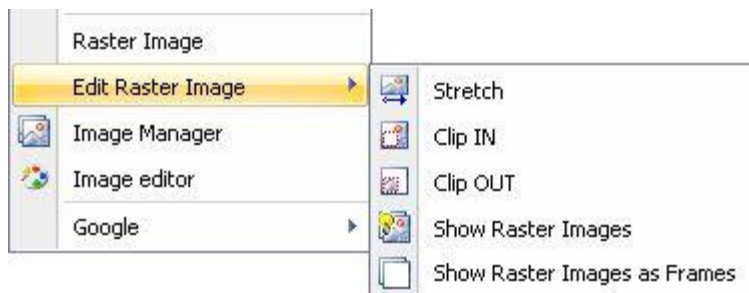
The raster image becomes part of the drawing, and you save it with the plan. You can apply a number of edit commands to the loaded raster images. These commands only concern the *active raster image*; the operation does not affect the image file itself.

Use the *Image editor* if you wish to carry out operations on the image file.

How to use it?

You can find the raster image commands in the *Drafting menu* or in the Shortcut menu by clicking with right mouse button on a raster image:

Drafting menu:



The raster images can be managed easily in the *Image manager* dialog: you can attach, detach, reload, hide an image or show only its frame on the current drawing.

11.8.1. Insert raster image

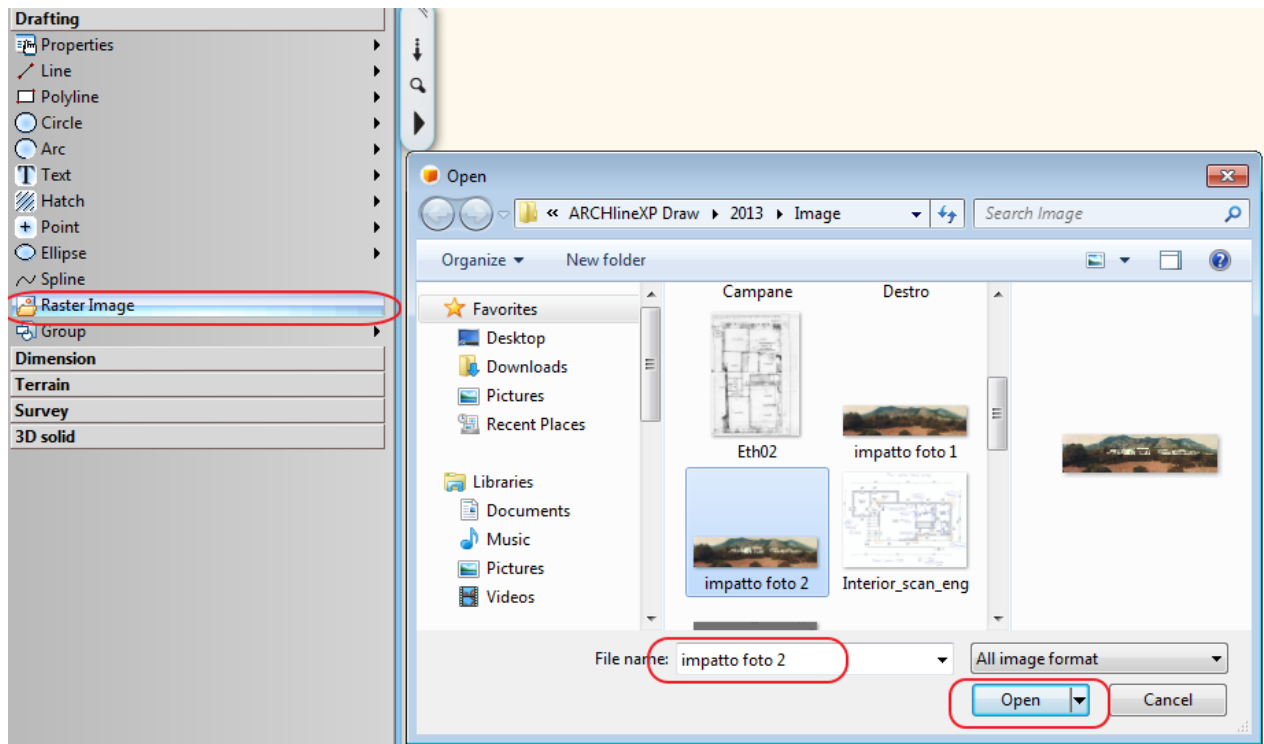
To insert and place a raster image, you can use the *Drafting menu – Raster image* command.

The *Open image* dialog will pop up.



The maximum size of a raster image is limited to 30 mega pixels. Although you can insert larger image into a project, the program will automatically reduce its size to the limit.

- Select or type the name of any image file you want to load into the drawing. If you cannot find the image selected in the default directory, browse for the relevant folder and open the image.
- Click **Open** to close the *Open image* dialog.
-



File

- In the *Image* dialog, under Name, you can browse to select another file.

Insertion point

You can type the global X, Y coordinate of the insertion point into the fields or you can specify it on the screen with your pointer device.

Size

You can define the size of the image by typing the value in the fields or you can specify it on the screen with your pointer device.

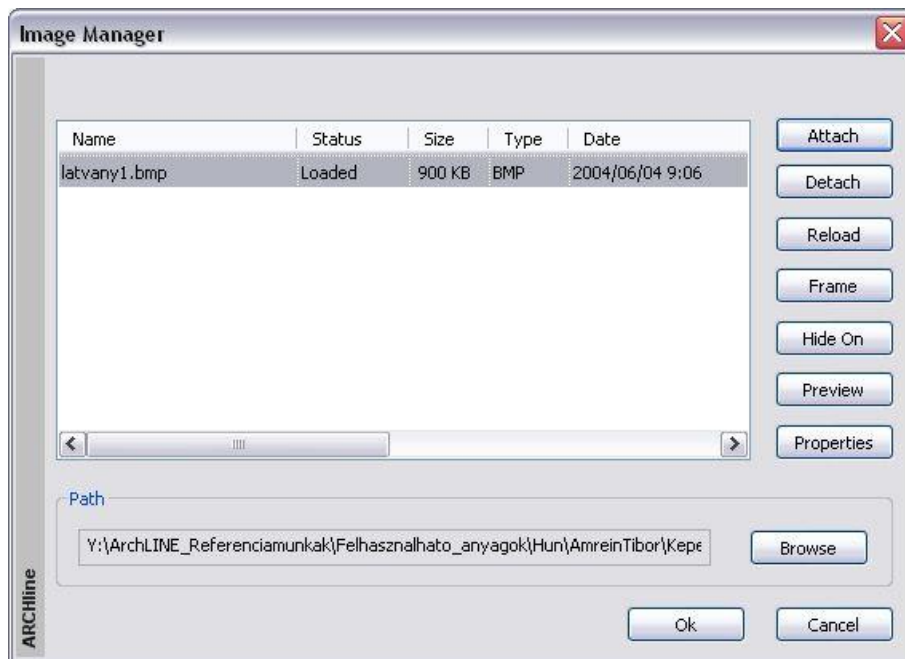
11.8.2. Image manager

Raster images can be managed easily in the *Image manager* dialog: you can attach, detach, reload, hide an image or show only its frame on the current drawing.

Click the *Drafting menu – Image Manager Command*. The *Image manager* dialog appears with a table.



You can activate the *Image Manager* dialog from the shortcut menu of a selected raster image on the floor plan, too.

**Name**

Show the file names of the loaded images. When a row is selected in the list, the full path name of the selected image file is shown on the bottom of the dialog. (See below: *To change an Image path*).

Status

Right after opening the image manager this column shows the status of each loaded image: *Loaded*, *frame* or *hidden*. Later you can specify what to do with the images; for example you can unload reload, hide or show only the frame of a loaded image. Accordingly, you may see the *Unloaded* or *To Reload* status as well.

Size

Show the file size of the image.

Type

Show the file type of the image.

Date

Show the last date when the image was modified.

Path

Show the full path name of the image.

In the *Image Manager dialog* you can manage the images as follows:

Attach

Attach an image in the appearing *Open image* dialog. This command is identical with the *Drafting menu –Raster image* command.

Detach

Detaches (unloads) the selected image from your drawing.

- Select the image name you want to detach (unload).
- Click *Detach*. Click Ok.

Reload

This option loads again and displays the latest version of the image.

- Select the image name that you want to reload.
- Click *Reload*. Click Ok.

Frame / Hide off

You can show the image only with its frame if you do not need to show it the current drawing. Images with frame only are not displayed on the screen and only the frames will be printed. You can see only the rectangle frame of the image.

To represent an image only with its frame:

- Select the name of the image you want to represent only with its frame.
- Click *Frame* to display only the frame of the image. Click Ok.

To turn back to the original representation of the image:

- Select the name of the image represented currently with its frame only.
- Click *Hide off* to display the image. Click Ok.

Hide On / Show

You can hide images you do not need to show in the current drawing. Hidden images are not displayed on the screen and not printed at all. (Even the frame is not printed)

To hide an image:

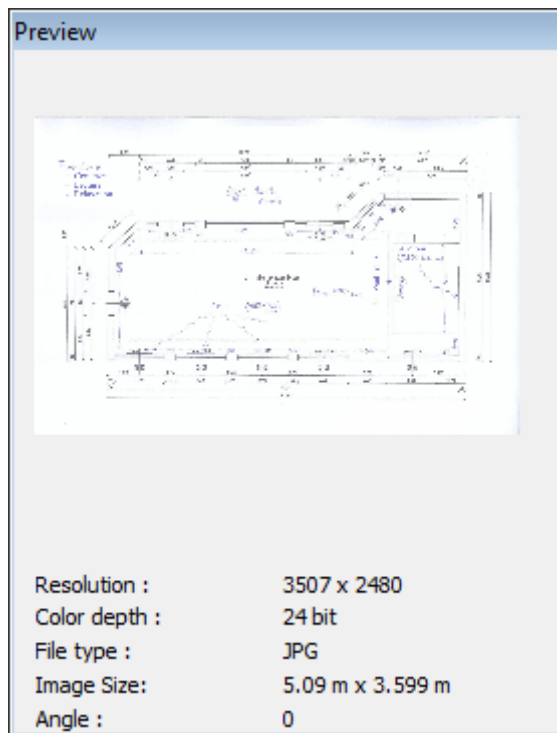
- Select the name of the image you want to hide on the drawing.
- Click *Hide On*. Click Ok.

•

- To turn back to the original representation of the image:
- Select the name of the hidden image.
- Click *Show* to display the image. Click Ok.

Preview

Clicking on the *Preview* the selected image appears with its properties.



Properties

Clicking on the *Properties* the *Image* dialog appears. You can modify the properties of the image.



See the description of the *Image* dialog in the chapter *Insert raster image*.

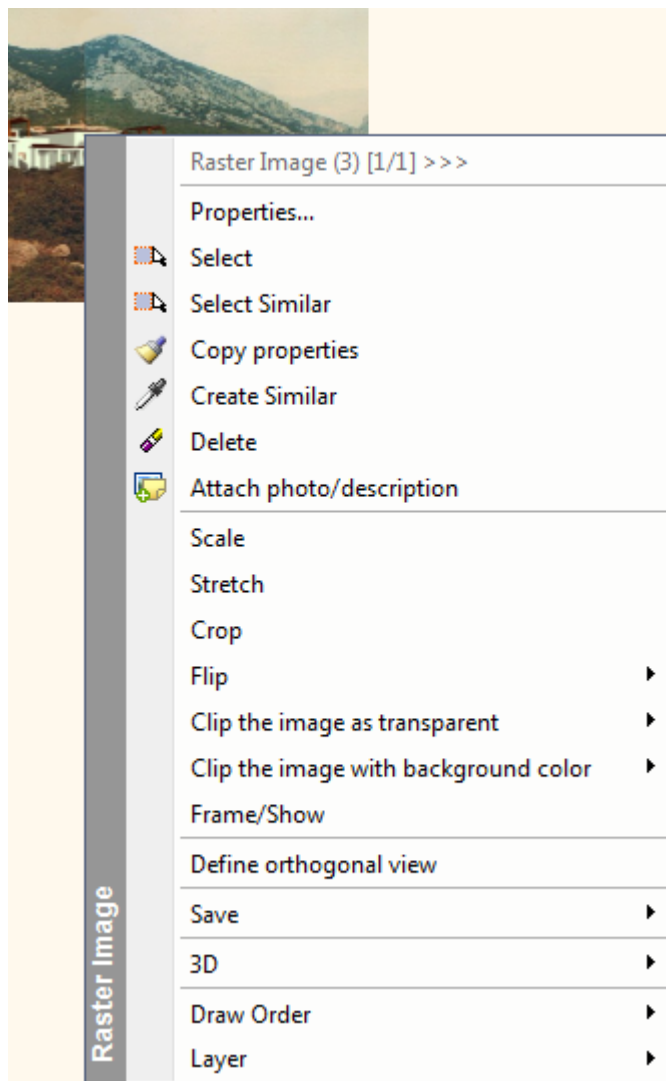
11.8.3. Save as raster image

Using the *Shortcut menu - Save as...* Command you can make a copy of the image. You can save the image under a new name or to another location.

11.8.4. Editing raster images

You can edit raster using the command from the

- ❖ **Shortcut menu:**



Modify properties

Choosing the *Properties* command from the shortcut menu, you can modify its properties. Beside the general properties, you can specify the background image location, the image size, rotation and transparency.

By default, the raster image is saved into the project file. However, if you want to reduce the file size of your project, use the *Insert only as reference* option. With this option only the path of the raster image will be saved.



If you use the *Insert only as reference* option, don't forget to keep your raster image with its original path name, otherwise you will lose your raster image.

Stretch

Graphically stretches the raster image. When you click on the *STRETCH* option, the proportions of the image change during the transformation.

- Specify the corner point of the image to stretch it.
- Specify the endpoint of the stretching.

11.8.4.1. Grips

The raster images behave like any other drawing objects, so you can resize it using the *Move palette – Scale* command or using the *Resize control grip* of the selected raster image.

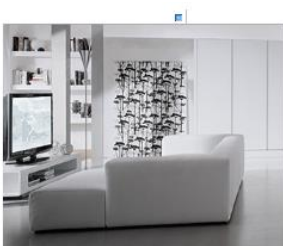


11.8.4.2. Crop image tool

The command of cropping an image involves selecting the part of an image that you want to display and deleting the rest. The cropped image takes less space in the memory as the original image.

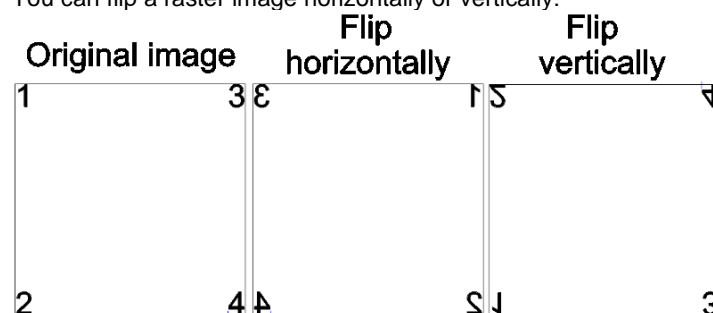
How to use it?

Click on a Raster Image, and select the Crop command from the context sensitive menu. Move the sensitive rectangle boundary lines to the part of the image you want to show. Click on ENTER to close the command.



11.8.4.3. Flip image

You can flip a raster image horizontally or vertically:



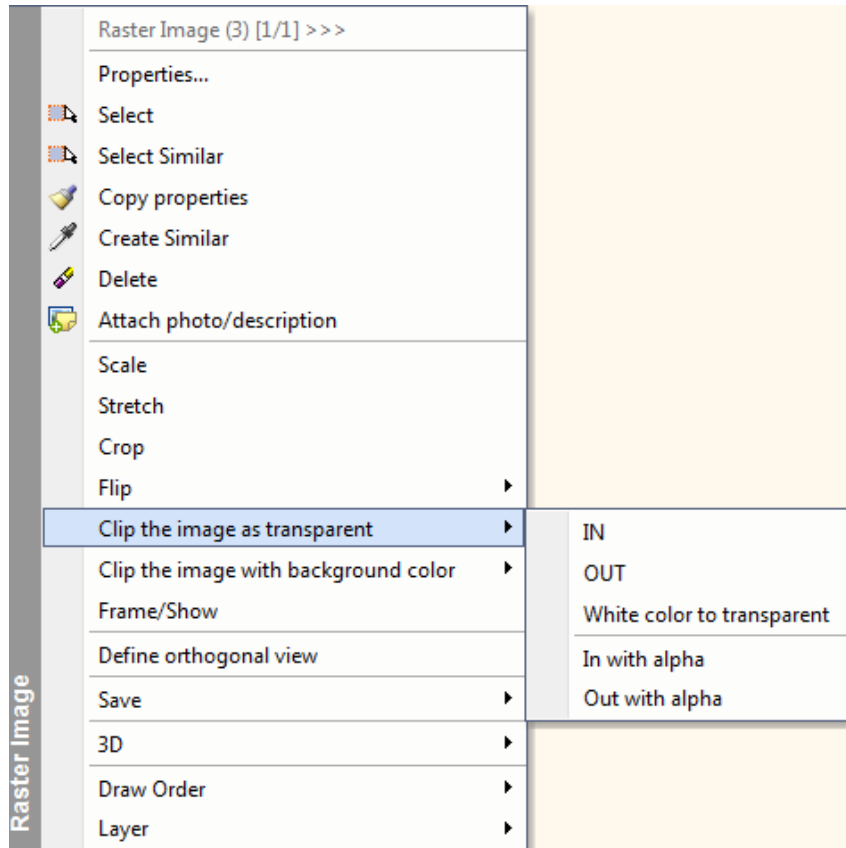
11.8.4.4. Clip the image with a rectangle or polygon

You can clip a raster image in two ways:

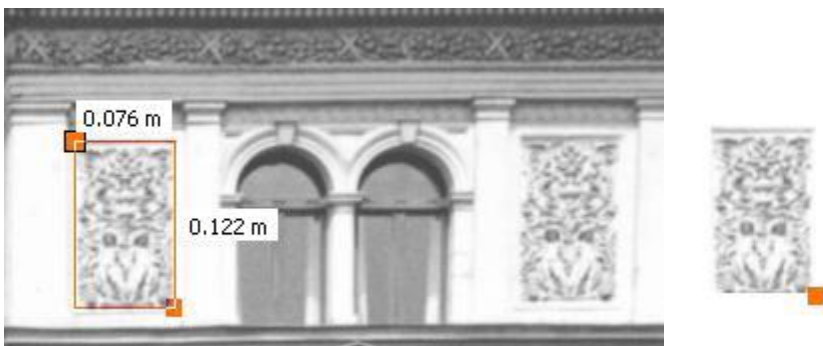
- ❖ with transparency or
- ❖ with background colour.

The clip is valid for the area of the polygonal boundary. You can choose the part of the image to be displayed:

- ❖ inside or
- ❖ outside of the polygonal boundary



- Select the appropriate command from the shortcut menu. You can clip a part of the raster image.
- Specify a closed profile to mark the part to be clipped.



11.8.4.5. Frame / Show command

You can hide images that you do not need in the drawing currently. Hidden images are not displayed on the screen and not printed. You can select the command from the Shortcut menu:

- Click on the raster image on the floor plan with your right mouse button.
- Select *Frame / Show* command to make invisible the raster image.



This command is analogous with the *View menu – Show 2D – Hide objects* command.

You can see just the rectangle frame of the picture.

- Click on the rectangle frame of hidden picture with right mouse button.
- Choose the Frame/Show command to make the picture visible again

11.8.4.6. Show raster images

You can select with this command the raster images appearing just with frame to represent.

- Select the raster images to represent. *Enter*.

11.8.4.7. Show raster images as frames

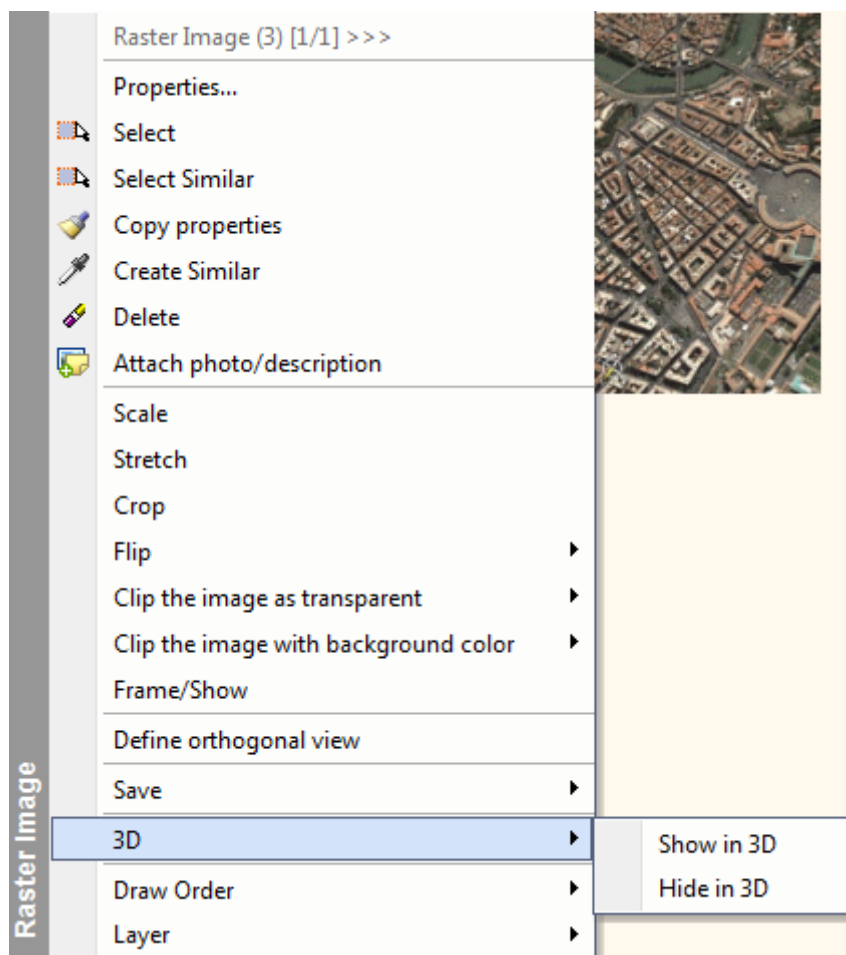
You can select with this command that raster images, which you would like to appear with frame.

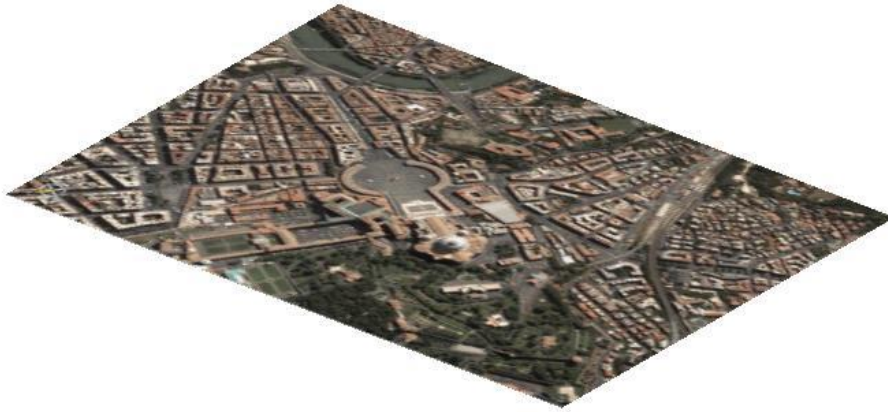
- Select the raster images. *Enter*.

11.8.4.8. Show/Hide Raster image in 3D

You can display the raster image in 3D window placed on the current floor elevation. Later, you can switch off the 3D view of the raster by the *Hide in 3D* command.

- Click on the raster image on the floor plan with your right mouse button.
- Select *Show in 3D* command to show the raster image in 3D:





When you delete the raster image from the floor plan, the 3D image will be deleted too.

11.8.5. Image editor

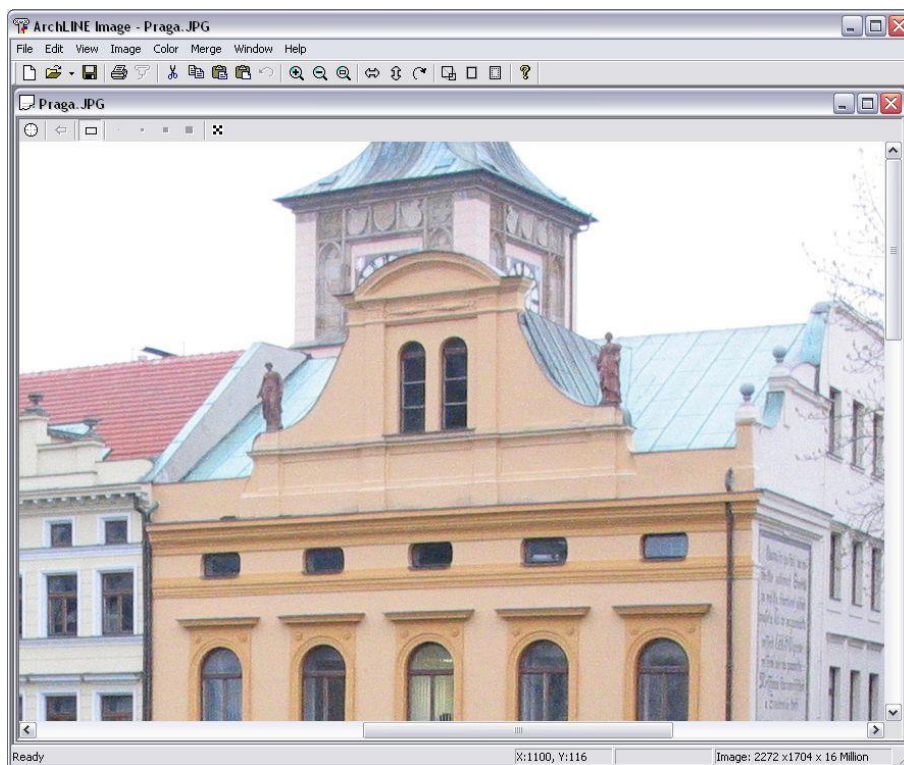
Image editor is a general purpose utility for managing raster images.

You can use this tool for:

- ❖ the general editing of photos,
 - ❖ the representation of the photorealistic image of a newly designed building in its real life surroundings,
 - ❖ The documentation of any new construction on a vacant lot.
- ❖ Use the **Drafting menu – Image editor** command to start the image editor.

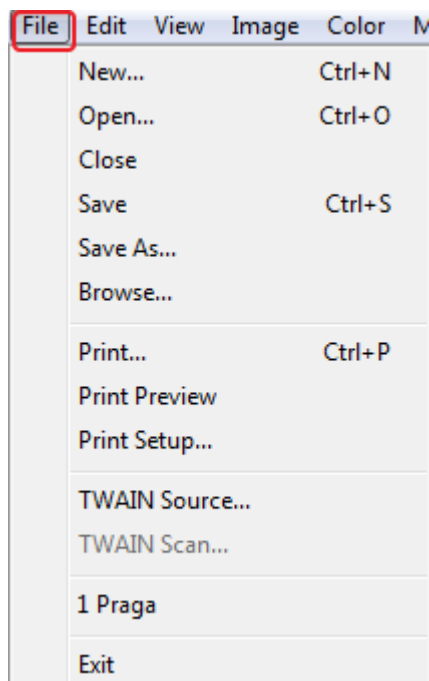


You can use the Image editor for image files of any format.



11.8.5.1. File

You can find the following commands in the File menu of the **Image editor**:



The application of the commands is similar to that of the same commands in ARCHLine.XP, so in the following you can only find the description of the newly added commands.

Browse

Select the library in which you want to browse.

The *Select* option displays the images of the selected library. Click on the image you want to activate.

You can also use this program to import images with the help of a scanner. To use this function the scanner has to have the *TWAIN source* program. The application is the following.

TWAIN source

Select the previously installed scanner by activating the relevant command in the File menu.

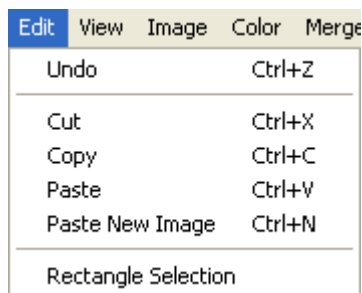
TWAIN scanning

Use this command to start scanning. A new window will pop up with the imported image in it.

11.8.5.2. Edit

Use the commands of the **Edit menu** to copy or cut the selected image or its part as well as to paste the cut image from the clipboard into the current image or as a new image.

The commands are the following:



Undo

Only the command used last can be undone.

Cut

You can cut the active image or its selected part and send it to the clipboard, this way overwriting the previous content of the clipboard.

Copy

The active image or its selected part can be copied to the clipboard, this way overwriting the previous content of the clipboard.

Paste

Use this command to paste the image on the clipboard. You can paste images of different colour depth together, which may change the colour depth of the result. See the detailed description below.

! You can only paste the content of the selection over the image, if you click outside the selection window in the dialog box.

Different colour depths:

In case of different colour depths, the rules of pasting are the following:

| Source | Target | Same source and target? | Result |
|-------------------|----------|-------------------------|----------|
| 2,16,256,16 mill. | 16 mill. | not relevant | 16 mill. |
| 2,16,256,16 mill. | 2,16,256 | not same | 16 mill. |
| 2 | 2 | same | 2 |
| 16 | 16 | same | 16 |
| 256 | 256 | same | 256 |

Paste New Image

The program creates a new image from the image on the clipboard.



By continuously pressing the left mouse button, use the “rubber line square” thus appearing to create a new image from a part of an imported image of any size.



Rectangle selection

You can select the desired part of a picture with the help of a rectangle.

- Press the left button to specify the first corner point of the selection rectangle.
- Release the mouse button to specify the endpoint of the selection rectangle.

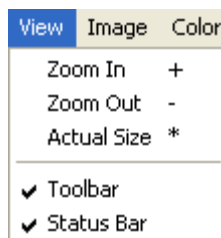
Selection is indicated by a hatched rectangle with black squares at each corner and midpoint of the sides. Use these squares to move or zoom the selected part. The selection indicates the image to paste.



By pressing the **ESC** button or by a right-click, you can abandon the current selection and select another area.

11.8.5.3. View

You can find the following commands in the *View* menu of the *Image editor*:



Zoom in

This command gradually increases the size of the image. You can also use the **+** button of the numeric keyboard for the same purpose.

Zoom out

This command gradually decreases the size of the image. You can also use the **-** button of the numeric keyboard for the same purpose.

Actual size

Use this option to restore the original size of the image.

Toolbar

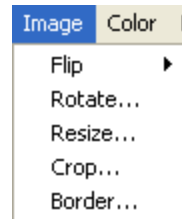
The user interface of the Image editor in ARCHLine.XP can either show or hide the toolbar. Use this option to activate or deactivate the toolbar.

Status line

The user interface of the Image editor in ARCHLine.XP can either show or hide the status line. Use this option to activate or deactivate the status line.

11.8.5.4. Image

You can find the following commands in the *Image* menu of the *Image editor*:

**Flip**

This command mirrors the active image – i.e. rotates it by 180 degrees –horizontally or vertically.

Rotate

When using this command, the **Rotate image** dialog box appears. Specify the angle of rotation.

When selecting the *Free* option, enter the desired angle of rotation and choose between the methods of **Expand** or **Clip**.

Expansion

Use this option to modify the size of the image according to your needs. This option rotates the image with the specified angle; however the full image is displayed in the original frame. Consequently, the size of the image must be decreased.

Clip

When using this option the size of the image does not change. If you rotate the image, the program displays only the part of the image which is within the original frame. Consequently, in most of the cases only a certain part of the image can be seen.

Resize

The **Resize** dialog box displays the current size of the image and you can enter the new size here. Although no part of the image will be lost, its resolution decreases.

- Set the width and the height of the image by entering the corresponding values.
- **OK** Closes the dialog box.

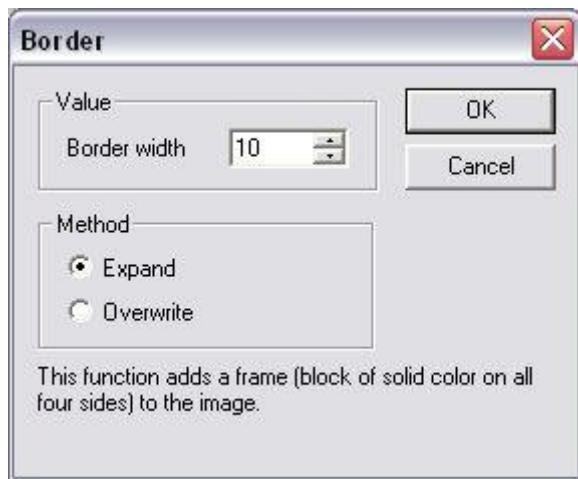
Crop

Use this command to decrease the size of the image by cutting its certain parts off. The current image size is displayed in the upper part of the dialog box.

- Enter the values with which you want to decrease the corresponding sides of the image.
- **OK** Completes the command.

Border

This command creates a frame for the image. When selecting this command, the **Border** dialog box appears.



- Enter the width of the border.
- Select between the options **Expand** and **Overwrite**.

Expand

Without changing the image, this option will decrease the size of the image with the width value entered.

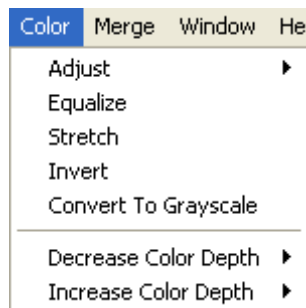
Overwrite

The overall size of the image does not change, however you can insert a frame. This way you change the original image size, because the frame trims the edges of the image.

- **OK** Completes the command.

11.8.5.5. Colour

You can find the following commands in the *Colour* menu of the *Image editor* tool:



Adjust

Brightness / Contrast

You can set the brightness and contrast of the colours here. These are linear parameters.

Gamma correction

This is a non-linear method to set the contrast of an image. The scale of modifying pixel intensity depends on the original intensity. You can use this method to brighten the darker parts of the image without over saturating the bright parts.

On the image / On the palette

You can use two methods to set the contrast of an 8-bit grey shade image according to either the current pixel value or to the palette. In case of 4-bit and 8-bit images you can only apply the contrast on the palette. In case of 24-bit images you can only apply the contrast on the very pixels and cannot use the palette.

Equalize

This function automatically adjusts the contrast of the image, so the number of pixels is relatively the same in each domain of intensity. You can expand the intensity to the full (i.e. 0-255) value. This method is not linear and is often used in case of x-ray images and other images of originally very little possible contrasts.

Stretch

This function automatically adjusts the image so that at least one pixel is all black and one is all white in it, so the full domain of pixel intensity is filled in. The original pixel intensities are lineally adjusted to the two extreme points. (In case the image has already filled in the whole domain originally, it will not be changed.) Images using the whole domain are generally more detailed and the colours seem to be much brighter.

Invert

Use this option to invert the colours of the active image.

In other words, this command inverts the intensity or colour of each pixel, which results in the negative image of the original one.

Converting to grey scale

Use this command to convert the colours of the image into the different shades of grey. The result is a black-and-white image similar to pictures from an old time movie.

Decrease colour depth

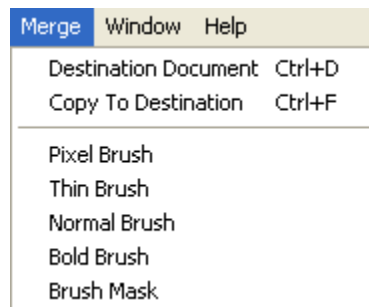
Use this command to decrease the colour depth of the current image to the specified value. The smaller the number of different colours in the picture is, the poorer its quality and the smaller its file size will be. The different options of decreasing colour depth indicate the different methods of modification.

Increase colour depth

Use this command to increase the colour depth of the current image to the specified value. The larger the number of different colours in the picture is, the better its quality and the larger its file size will be. The different options of increasing colour depth indicate the different methods of modification.

11.8.5.6. Merge

Use the **Merge** menu to use several images together and to easily merge their properties without having to apply other external tools. You can find the following commands in the menu:




Destination document

Use this command to specify an image as destination document where you can copy a full image or its part by applying the **Copy to destination** command.



Copy to destination

Use this command to copy the selected image or its part into the destination document.

Copying the colour black depends on the status of the  Brush mask option.

Pixel brushes:

Use this command to copy pixels from the current image to the destination document. By moving the cursor on the current image, you can mark the pixels to be copied, while in the destination documents you can see the size of the copied pixels indicated by an area equal to the size of the pixel brush.

Copying the colour black depends on the status of the  Brush mask option.



Pixel brush

The size of the brush is 1 pixel here.



Thin brush

The size of the brush is 3x3 pixels.



Normal brush

The size of the brush is 7x7 pixels.




Bold brush

The size of the brush is 11x11 pixels.



Brush mask

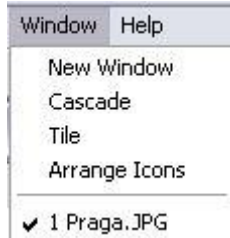
If the Brush mask option is activated:

- ❖ The colour black is not copied when applying the  *Copy to destination document*, and the different brushes do not copy black pixels into the destination document either.
- ❖ If you activate the *Paste* and the *Brush mask* commands, the selection does not display the black colour; the image is transparent where it was black before.

If the Brush mask function is switched off, black is copied as well.

11.8.5.7. Window

Use **Window menu** to arrange the windows as generally used in Windows programs.



The using of commands arranging windows corresponds with the appropriate commands of ARCHLine.XP. See chapter 2.18.5. *Arrange windows* if necessary.

11.8.6. Google Earth Plugin

The ARCHLine.XP Google Earth Plug-in enables the living connection between your architectural 3D model and the real-world environment.

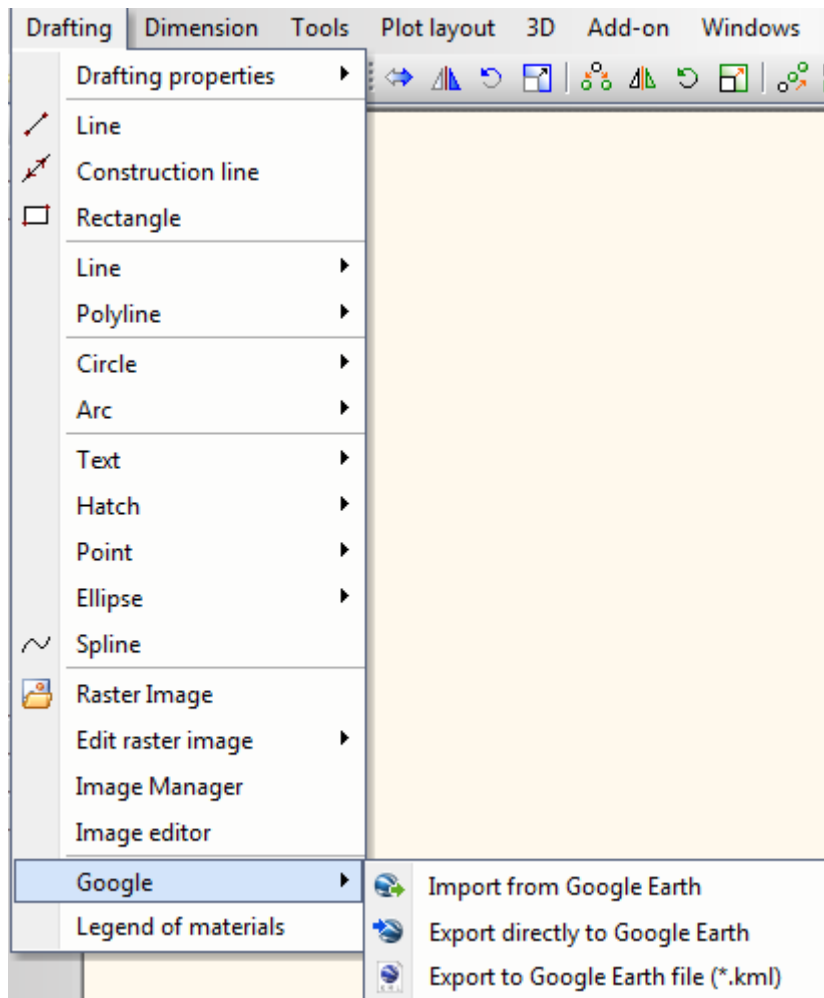
You can design your building where it will be located in the real world. You can easily visualize the building shadow in the morning or in the afternoon.

Download the satellite image using the free version of Google Earth and import with one click into ARCHLine.XP. Place your architectural model or environmental impact into this real size, calibrated image in 2D or 3D window and display the new realistic environment of your design.

Furthermore you can export the model into Google Earth with one click again! Make your new presentation or simply view your building in colourful real-world environment.

How to use it?

- Open Google Earth and navigate to your location e.g. Rome.
- Fly to the appropriate height to see well the required environment.
- Go to ARCHLine.XP open the *Google menu* and click on *Import from Google Earth* command.
-



- Create or import your model in 2D plan over this Google™ image
- Generate 3D model together with the imported Google™ image
- Navigate in 3D to view and study the real world contact
- Open the Google menu and click on Google Earth-export command to save your model as KML file (the supported file format by Google™ Earth)
- Open the Google Earth again and import your KML file you saved before. Your model is displayed on Google™ Earth. Enjoy the view!



11.9. 2D group

The 2D group command's aim is to integrate the objects found on the drawing, and preparing them for collective commands to execute. When any of the group's objects has been selected, all objects become selected belonging to the group. Graphical properties can be modified together. When creating the group, it can be saved in an OLI file, so it can be used in any plan later. The Explode command restores the original objects. The group can be edited uniquely: right-click on the group and choose the Enter into group command. After finishing the editing the group has to be closed: click on any object of the group and choose Close group command.

Modifying of the placed group is only available for the given object.

Creating and using 2D groups on the plan makes easier to handle the objects of the group together:

- ❖ *Using* - Saved in an *.OLI file the group can be used in any plan later.
- ❖ *Moving, rotating* - The objects of the group can be transformed one by one.
- ❖ *Editing* - The objects of the group can be edited by entering into the group.

Explode command restores the original objects.

Local group

Usage of local group is recommended if more objects are handled together on the actual plan. This group will not be saved in the group library; it cannot be loaded into other project. A local group can contain groups.

Global group

Usage of global group is recommended if the group is going to be used in other projects as well. Groups can be loaded from the *Group library*. A global group does not contain groups.

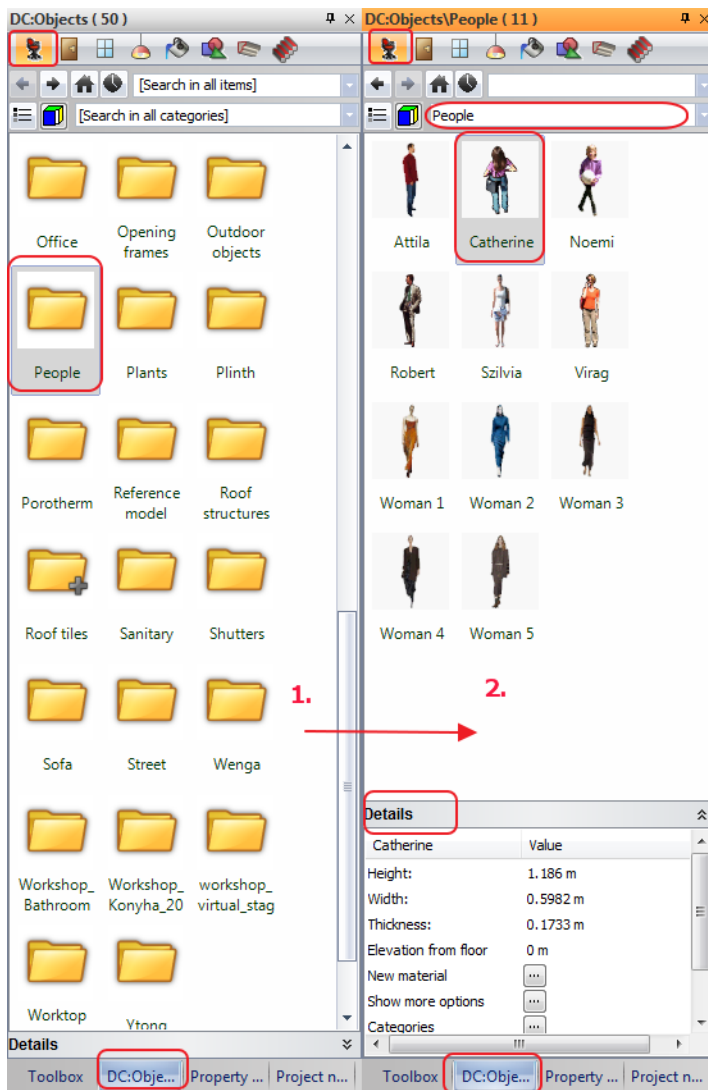
Groups are described by the following components:

- objects of the group ,
- Reference points or hotspots added to the group in arbitrary number. A group can be placed by the active hotspot.
- Individual name.

Place groups by command *Tools menu – Insert group*, or from the *Design centre*.

Default groups of the program are in the *Groups library*.

Groups created by users will be saved in the selected category. User defined groups cannot be saved in the default categories (these are marked with grey).



Group name with special characters

When groups are created, the following special characters can be used in the group name:

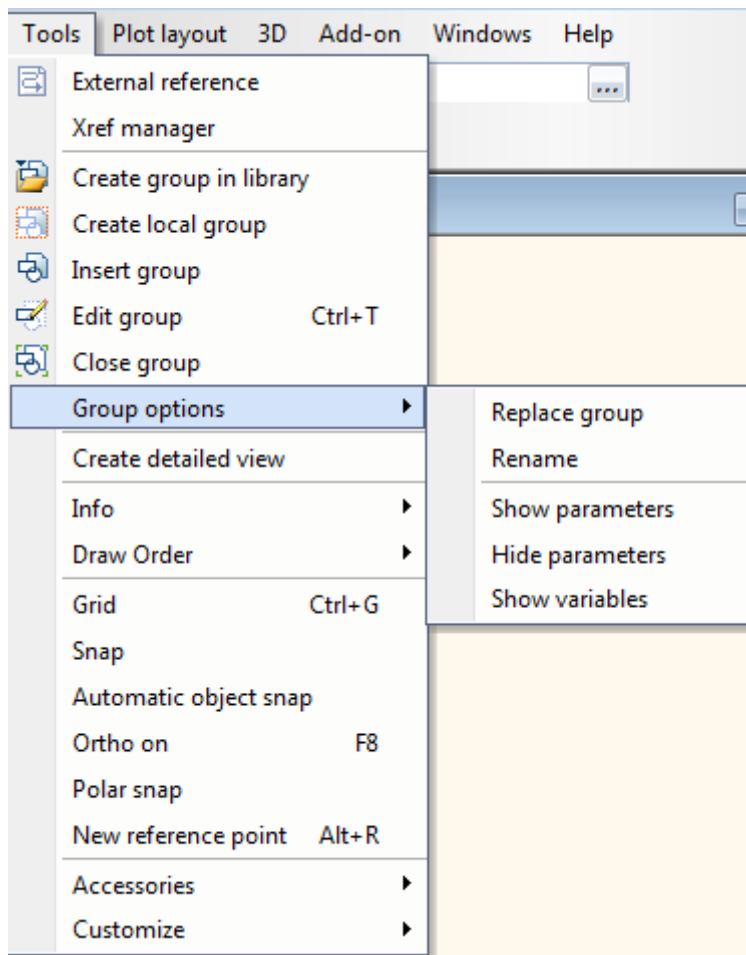
Space,

& ! @ \$ % + = () [] { } ' ; , ~

The following characters cannot be used:

\ ? | > < : / * "

Operations with 2D groups are available in *Tools menu*:



11.9.1. Group properties

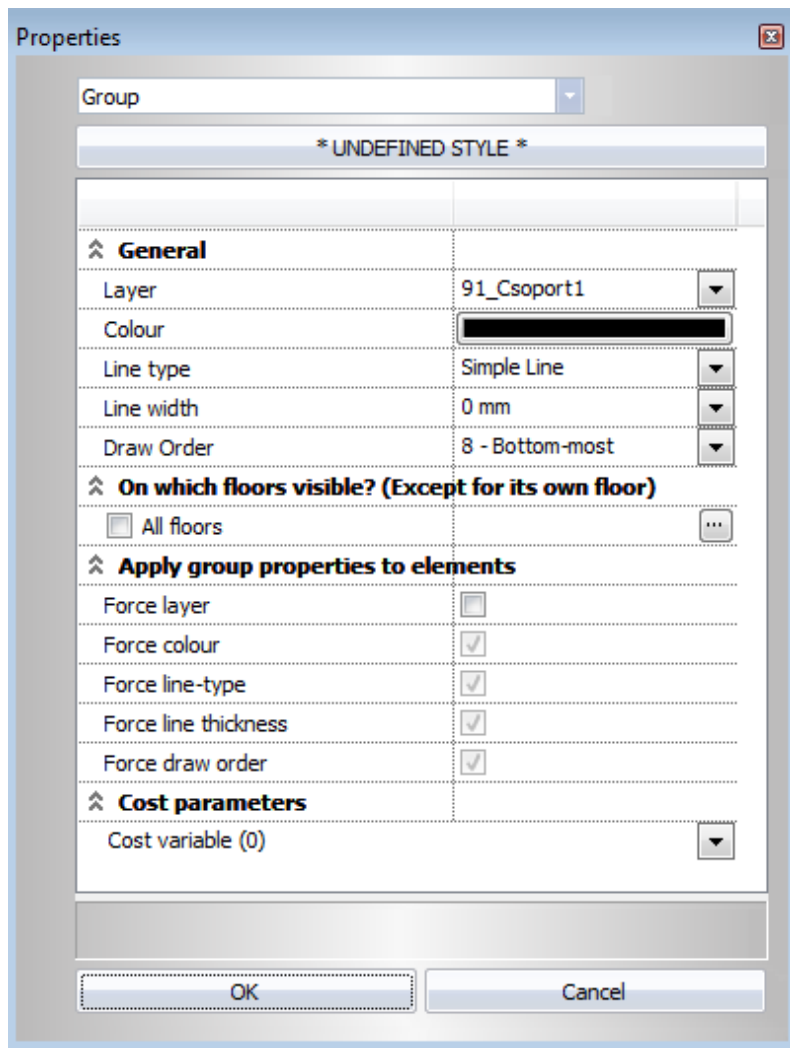
All groups have general properties.

These properties cannot be changed directly. Click on the *Property* command in the shortcut menu of group. In the appearing dialog modify the colour, line thickness, layer and priority of the group.



See:

- ❖ detailed description of *General properties* in chapter 3.2.1. *Setting general properties*
- ❖ description of *Sets* in chapter 3.2.3. *Attribute sets*.
- ❖ description of *Cost parameters* in chapter 3.2.4. *Define cost parameters*.



When setting the general properties of group objects (colour, line thickness, and line type) there is possibility to set the **Group** properties as well. This may have importance if the properties of the group (colour, line thickness, line type) are controlled by the settings of **group** general properties.

If properties of all objects of the group are controlled by the group properties settings, it is not necessary to set it in the case of each object, *apply group properties to objects*.

Select from the options which properties will be forced to all the objects of the group. Layer, colour, line thickness, line type.

Now all objects of the group take up the forced properties even if the properties of the objects were not selected earlier to be **Group** type. It is important to mention, that after applying the force option and then switching it off the original state will not be reset. It can be done only by entering the group and defining the properties of each object one by one.

Let's see an example to make this function clear.

Example:

Create a group with three objects.



See chapter 11.9.2. *Creating group*.

Draw two lines and a circle each line thickness 2.11 mm.

- Enter the group by right clicking and selecting the command *Enter into group*.
- In the case of circle set:

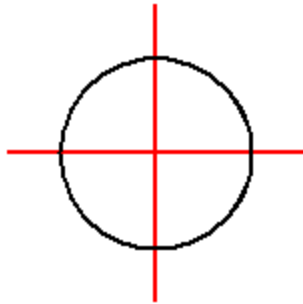
Colour: **Group**

Line thickness: 2.11

Line type: Line

- In the case of **lines** set:
Colour: red
Line thickness: 2.11
Line type: Group

- Close the group by right clicking on any of the group objects, click in Close group command.



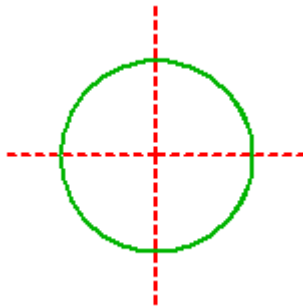
Colour of the group is black, line type is Line.
Therefore the colour of the circle becomes black, the colour of the lines remain red.

In this group the colour of the circle and the line type of line will be controlled by the group general properties.

- Right click on the group and select from the popup menu Modify command. Now set the group general properties.

Colour: green
Line thickness: 0 mm
Line type: dotted

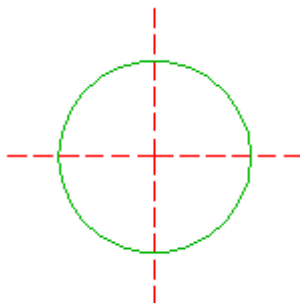
Do not sign any of the *Apply group properties to objects* options in the bottom of the dialog, it will be explained later.



The result:
circle:
colour: green
line thickness: 2.11 mm
line type: Line
line:
colour: red
line thickness: 2.11 mm
line type: dotted

- Colour of the circle becomes green, because its colour was set **Group**. The line becomes dotted for the same reason. Line thickness will not be changing for any of them (remains 2.11 mm), because their line thickness is not **Group** type, but defined by value (in the example 2.11 mm). *Group settings* have influence on those properties of group members that were set to **Group**.
- If the layer and line thickness properties of the group are to be applied to all the objects of the group, check in the *Force layer* and *Force line thickness* options.

The result:



Line thickness of both the lines and the circle becomes 0 mm. The circle and the lines will be placed onto the *_Layer 0 layer*.

This state will not be changed in the following if you enter again into **Properties** dialog and check off the Force options.

11.9.2. Creating group

Steps of creating new 2D group and saving it into the Group library are the following:

- Select the existing objects of the drawing area that you wish to handle as a new group.
Enter Closes the selection.
- Define the hotspots. Any of the selected hotspots can be used later for placement the group, Or
- Enter to use the corner points of the enclosing box of the group as reference points

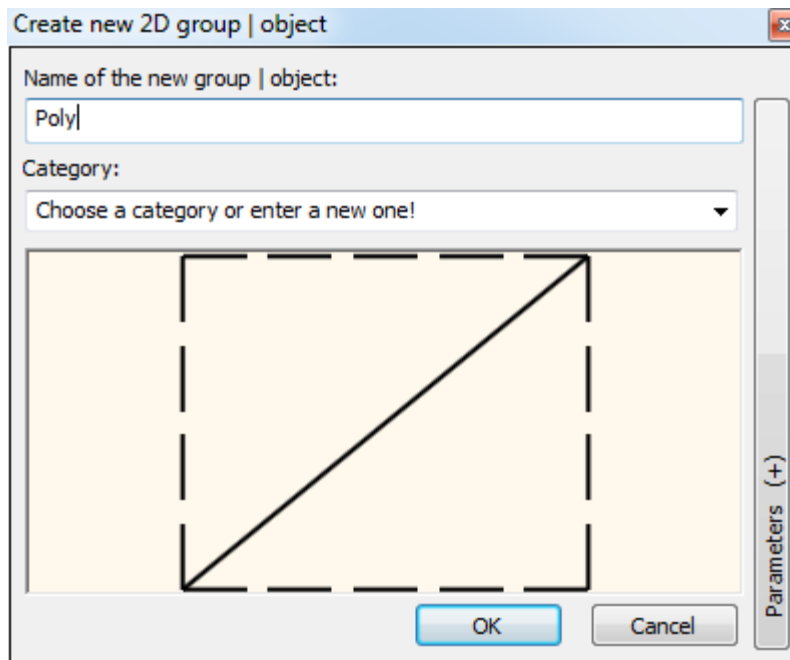
The program uses point pairs for adjusting the group on a line

Enter Closes the definition of hotspots.



You can assign to the group so reference points, which are out of the enclosing box of group objects.

- Give the name of the new group. Use alphanumeric characters; there must not be space in the name.
OK Closes the dialog.



- Select the group category where you would like to save the new group. If no such category exists, create it.



When selecting objects for a new group you can choose groups that already exist on the plan. These will not be subgroups in the new group. This is available only for local groups.

Parametric groups

Text can be part of a group. If a text starts with \$ character, the program handles it as a variable. Values can be assigned to variables. These are parametric groups. Presentation of variables can be set in *Group - Parameters* command.

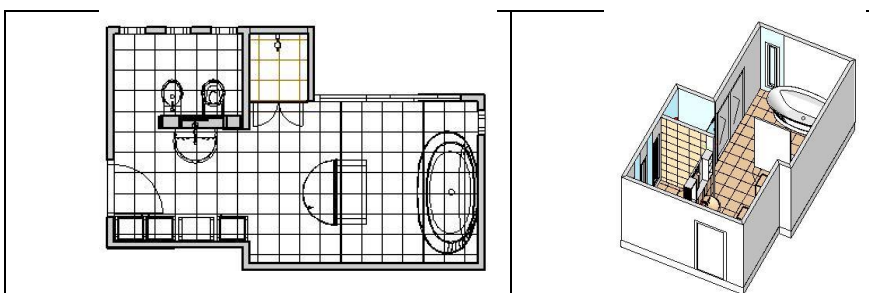
11.9.3. Creating group from architectural objects

Design offices often use pre-defined modules (drawing parts) for their work. For example they use pre-defined bathroom modules in different flats.

Currently designed floor-plan on the active floor can be saved as a new group into a program library.

The group keeps the architectural object properties and the 3D model if possible to regenerate. Later you can place the group as a unit from the library onto the floor-plan. By entering into the group you can modify its objects - the architecture objects as well.

How to use it?



- ❖ Open the desired project where you want to insert the needed unit.
- ❖ Drag and drop the group from the Design Centre to the floor-plan.
- ❖ If necessary, enter into the group with mouse right click and modify its objects.
- ❖ Close the group.

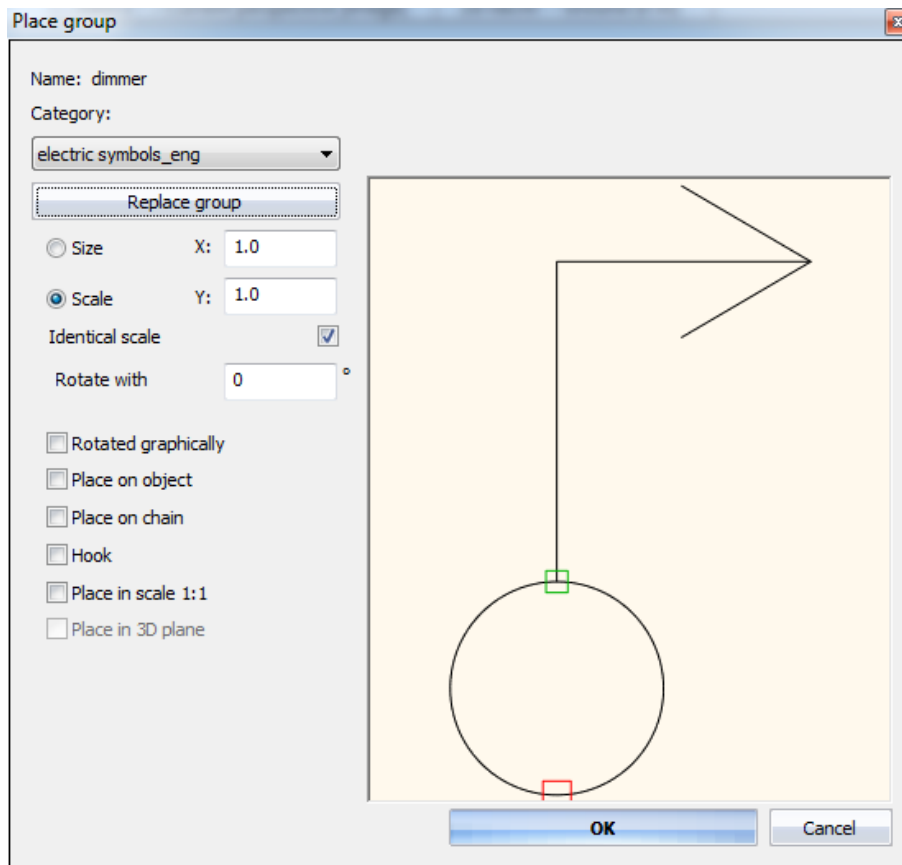


With the *Shortcut menu – Explode* command you can explode the group in such a way that the architectural objects become available again.



11.9.4. Insert group

Groups can be placed from **Insert group** dialog, or from the Design centre.
 Default groups of the program are in the *Groups* library.
 Groups created by users will be found in the selected category of Groups.



Activate command *Tools menu – Insert group*, with the help of the appearing dialog place the selected group on the drawing.

Group can be placed from the *Design Centre* also. Double click on the group to open the dialog *Place 2D group*.

In the list above the *categories of Group library* are listed. In the list to the bottom clicking on the name of groups the objects will be presented.

Reference point

The reference point for the actual placement can be selected directly in the drawing field of the dialog. The hotspots are identified graphically by small green points (the active hotspot is red). The group can be placed by its active reference point. (When creating a new group the first defined reference point becomes the default active hotspot.)

Rotate

Define the angle of rotation. The group will be rotated according to the value relative to its original position. In case of a North symbol it is a must.

Size of group

The size of group can be given by scale or value.

Scale

Give the scale. It is divided into X and Y values. It is enough to define only one of the two if *identical scale* is checked in.

Size

Specify the size in X and Y directions.

Place group simply

- Having selected the group, reference point, rotation and size press **Ok**.
The selected group appears on the drawing area.

Place group advanced

- Select an option among the possibilities of placing methods and press the **Ok** button.

- ☐ Rotated graphically
- ☐ Place on object
- ☐ Place on chain
- ☐ Hook
- ☐ Place in scale 1:1
- ☐ Place in 3D plane

Rotated

If option **Rotate** is checked in:

- Select the active hotspot.
- Define graphically the angle of rotation, or
Select the option **XANGLE** and give the value of rotation.
The program places the group rotated according to the defined angle.
Enter Terminates the program.

Place on object, place on chain

If option **place on object** or **place on object** options are checked in, you can place more copies of the group along an object or a chain (you can define or the distance between the neighbouring groups or the copies of the groups to be placed). In the case of option **place on chain** you can place the same groups on more different objects.

You can define the **distance**, which is regarding the distance between the hotspots of the neighbouring groups

- Define the value, or select an option:

Options:

| | |
|------------------|--|
| ENDIVIDED | Places the symbol in 'n' copies. <ul style="list-style-type: none"> • Give a number of equal steps. |
| LRATIO | Defines the distance between groups by the ratio of the distance and the group width. <ul style="list-style-type: none"> • Give the values. |

You can define **width** of group. The group will be deformed relative to the original value.

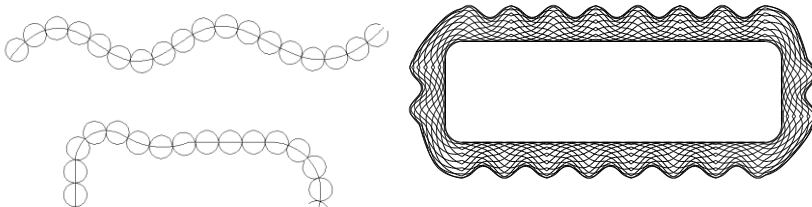
- Define the new width value or
Select an option:

Option:

| | |
|-----------------|--|
| ORIGINAL | Program uses the original width. |
| ENTER | Program uses the step distance as the width of the symbol. |

You can define the **height** of group. The group will be deformed relative to the original value.

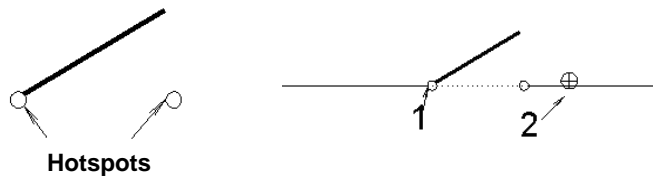
- Enter the new height of symbol, or
Select the option **ENTER** to keep the original ratio of the width and height.
- Define the number of extra hotspots to place the group closer to the objects.
If the groups are placed along a spline or curve these extra hotspots help to follow the curve more precisely.
- Choose an object to place a series of groups along it.
Enter Terminates the command.



Hook

When you place a symbol on a line, the line will be cut and deleted between the hotspots.

- Select the place of the group origin (active hotspot) on a line.
- Choose the direction of the hooked symbol on the line. Select the direction parallel to the line direction
Enter terminates the command.



Place in scale 1:1

When you place a group on the draw, the symbol will keep its original size independently of the drawing scale factor. For example you can use this check box to place the part of the drawing-paper (frame, stamp etc.)

Place on 3D plane


Places and glues the group on a surface of a 3D object. If you move the object, the view of the group follows the changes. Using this check box you can easily place ornamental objects to a surface of a house.

- V Select a planar surface of a solid to place the group on it.
ENTER to accept the signed surface, or
NO to select another surface.
- Enter the place of the group origin, or

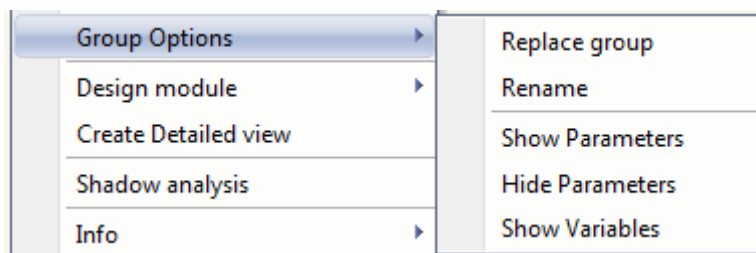
Options:

| | |
|---------------|--|
| ROTATE | Define graphically or numerically (XANGLE option) the angle of rotation. |
| DELETE | Deletes a selected group from a 3D surface. |

Enter Terminates the command.

To delete a group from a surface you can also select the option **SURFACE** of **Edit toolbar** -  **Delete icon**.

11.9.5. Group options



11.9.5.1. Replace group

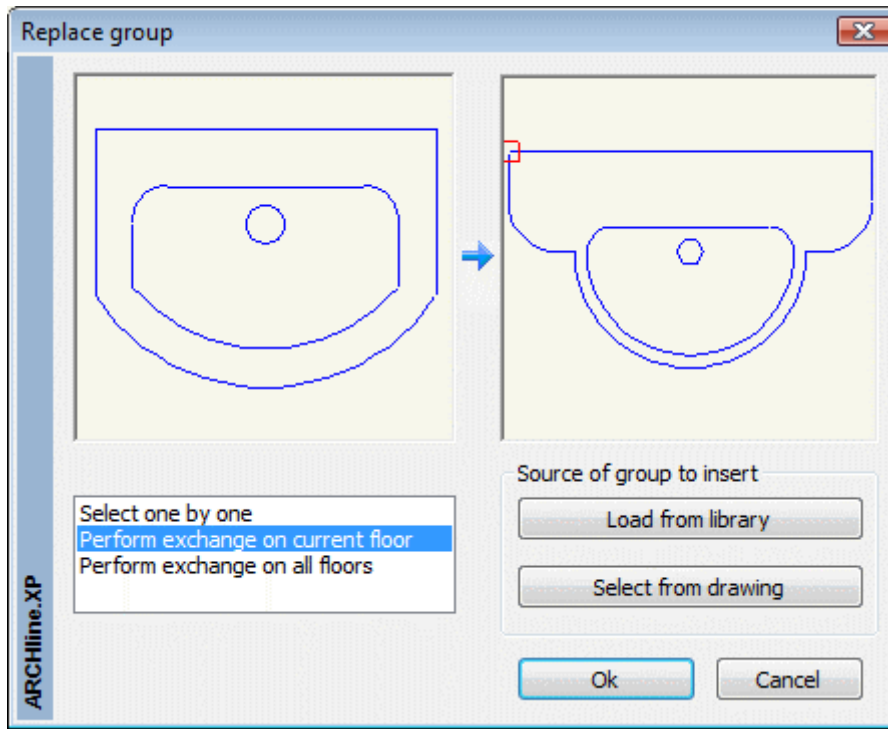
Introduction

ARCHLine.XP makes the replacement of 2D groups and 3D objects found in projects easier and more effective. With the replacement of identical objects it is possible to replace groups, and objects identical with the selected one with another one.

During the design work it can easily happen that you need the replacement of the previously designed furniture objects of a bathroom or a living room. In that case the *Replace group* function gives you an effective help.

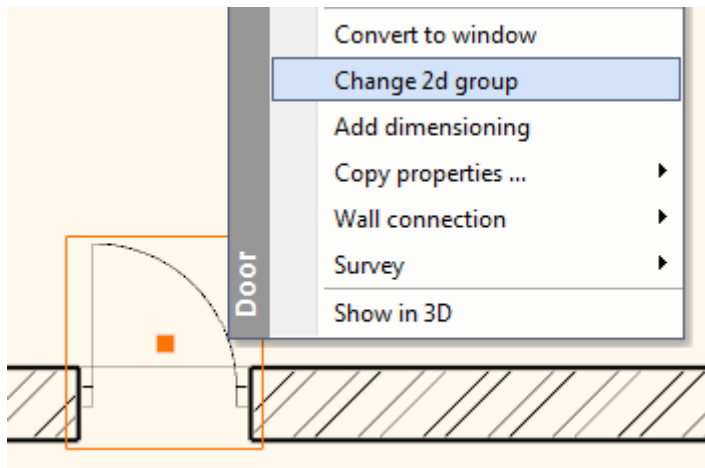
How to use

The function is available in the *Tools menu* – *Group options* – *Replace group*.



The function works as follows:

- Select a group. This is the group you want to replace.
- Specify a group for the replacement. The previously selected group will be replaced with this one.
- Specify the scope of objects for the replacement. The replacement will be performed on these objects.
- Another option for doors and windows: if you right click on the 2D symbol of a door or window, you can choose the Change 2D group command to change the actual 2D representation, using another already saved 2D group.



Group to exchange window

Here you can see the selected group you want to replace.

Exchange group window

Here you can see the group you want to use for the exchanging of the group you see in the *Group to exchange window*.

Source of group to insert

- ❖ **Load from library**
You can select an object as exchange group from an existing library.
- ❖ **Select from drawing**
You can select an object as exchange group from the 2D groups or 3D objects that exist on the drawing.

Replacement rule

- ❖ **Select one by one**

After specifying the *Group to exchange* and the *Exchange group* you can select *Group to exchange* exemplars on the drawing you want to replace one by one.

❖ **Perform exchange on current floor**

The exchange is performed on all *Groups to exchange* exemplars on the active floor.

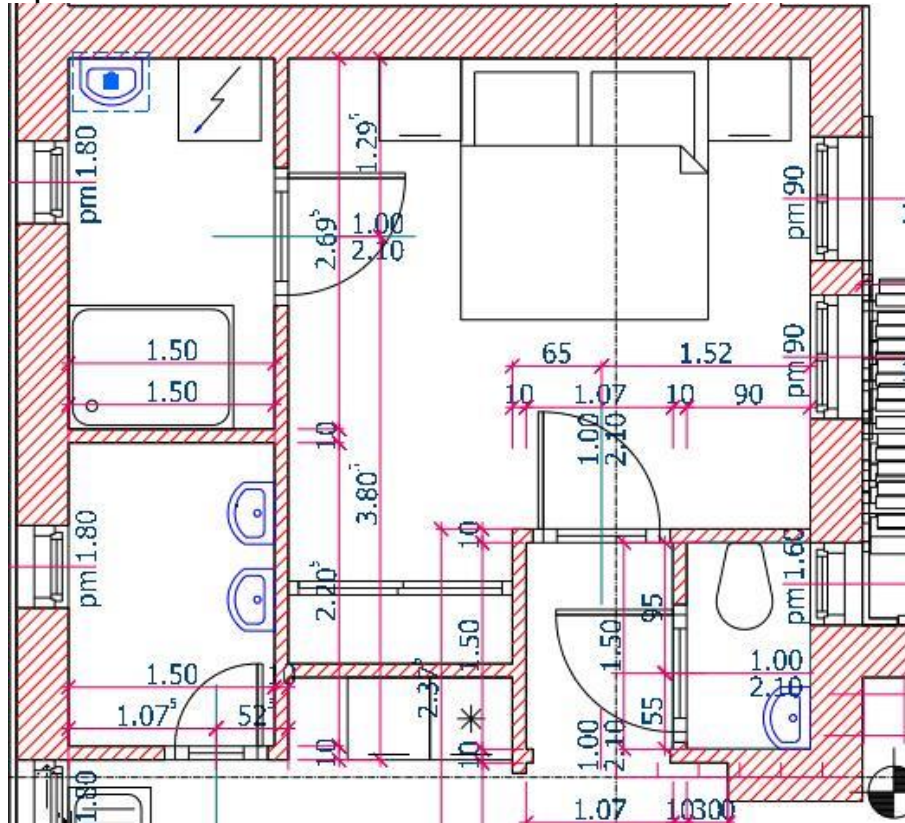
❖ **Perform exchange on all floors**

The exchange is performed on all *Groups to exchange* exemplars on all floors of the current drawing.

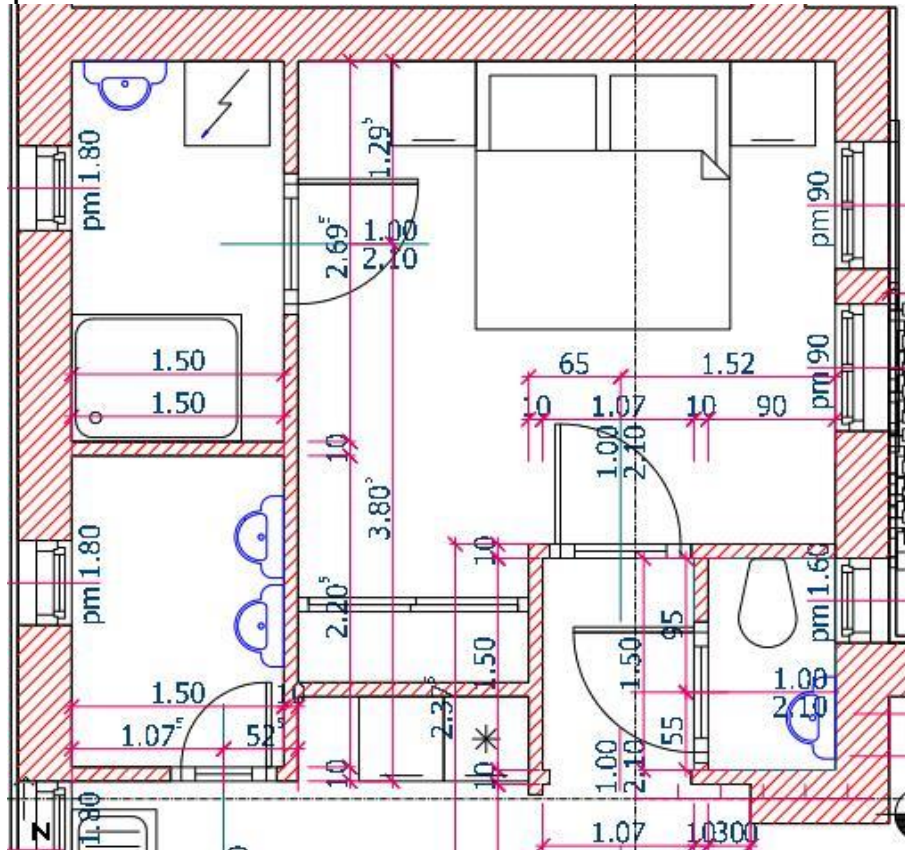


The *Replace group* command is available from the shortcut menu of groups/objects, too. Click an existing 2D group/object with your right mouse button and select *Replace group/object* from the appearing shortcut menu.

Before replacement:



After replacement:



11.9.5.2. Rename

The groups can be renamed.

- Activate the group you want to rename by clicking on the name of it. The group becomes visualized in the left part of the dialog.
- Type the new name of the group in *New name* field.
OK Closes the command.

11.9.5.3. Parameters

As it was explained in Create group chapter text can be assigned to groups that start with \$ and are handled as variables. Values can be assigned to variables.

In **Group Options** submenu parameters and values can be activated.

| | |
|----------------------|--|
| Active | The value of variable will be presented. |
| Off | The name of variable and its value will not be visualized. |
| Variable name | The name of variable appears. |

11.9.6. Create local group

Usage of local group is recommended when more objects are placed together on the actual drawing. This group will not be saved in the group library; it cannot be loaded into other project. A local group can contain groups.

- Give the name of the new group. Use alpha-numeric characters, space can also be used. **OK**.
- Select the objects already existing on the plan that will be handled together in one group.
Enter Closes selection.
- Define the reference points, or
- **Enter** to use the corner points of the enclosing box of the group as reference points

Any of these points can be used as reference point when placing the group.

- **Enter** Closes definition of reference points.

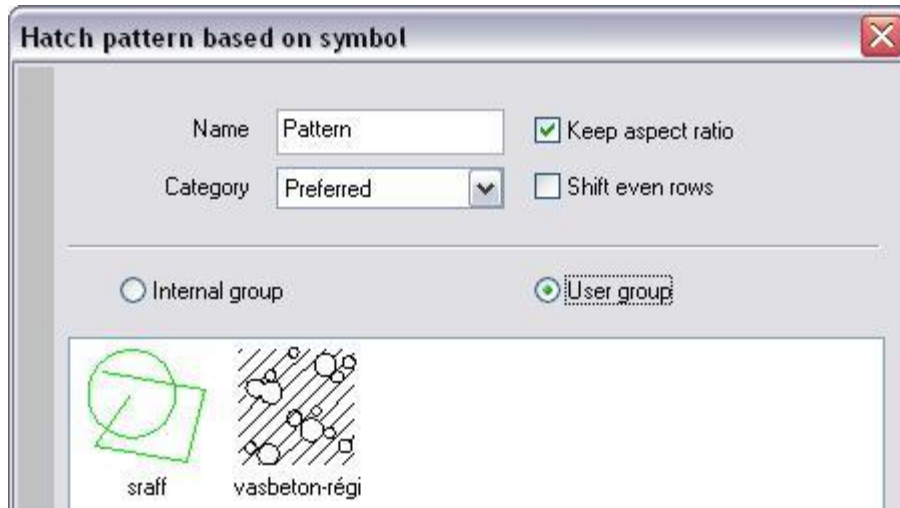
11.9.7. Create hatch pattern

This command helps in creation of hatch pattern based on groups.

User can define new line type with the help of command: **Tools menu - Accessories – Create hatch pattern**.

- Select the objects of group. **Enter**.
- Define the reference point for placing the group. **Enter**.
In the appearing dialog the new group is visualized.
- Give the name of the group, the new hatch pattern.
- **Ok** Closes the dialog.

Dialog **Hatch pattern based on symbol** appears, where you can also select the hatch pattern category.



This pattern can be used for hatch.

It appears among the *Architectural patterns* in the *Hatch properties* dialog.

It can be placed in a new category.



See chapter 11.7.1 *Hatch properties*.



A hatch itself can be pattern among the objects of user defined line type or 2D group of hatch pattern. This may have importance when a new line type with text in it is defined. E.g.—GAS-- In this case the text must be exploded by the command *Modify menu – Explode with selection*. The filled hatch created in this way can be used as pattern.

11.9.8. Define line type pattern

User can define new line types with the help of **Tools menu - 2D Accessories – Create new line type** based on groups that will be repeated periodically as part of the line.

The method has two parts:

- ❖ Create the 2D group that will serve as pattern.
- ❖ Define the line type based on this pattern.

Create pattern

- Select the objects of the pattern.
Enter Closes the selection.
- Define the reference points.
Enter Closes reference point definition.
- Type the name of the new group. Use alphanumeric characters, do not use space.
OK Closes the dialog.

Define line type

Dialog *User line types* appears.

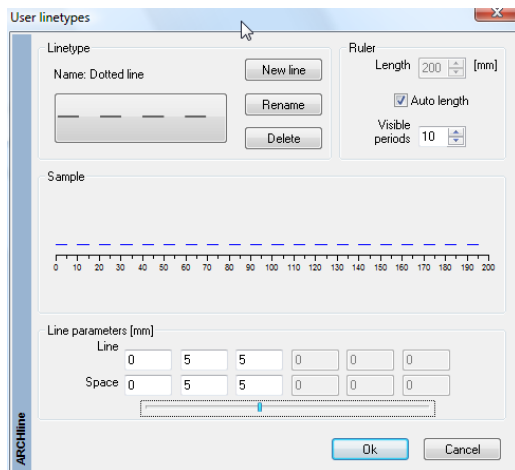
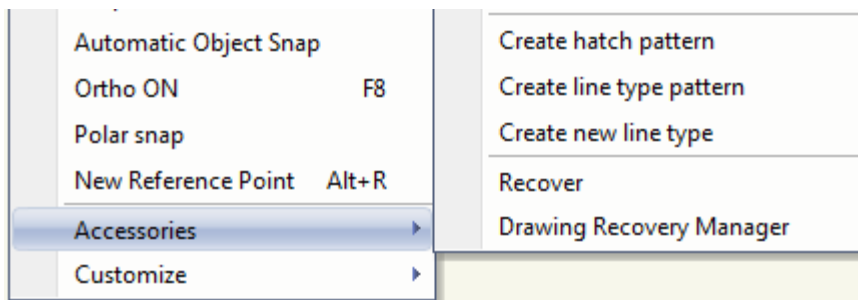
- Click on the New line button, switch on *Symbol* option and select from the list the group created for the line type.
- Define the values of the new line type.
Operation from this point is the same as that of *Create line type*.



See detailed description in the following, 11.9.9. *Create line type* chapter.

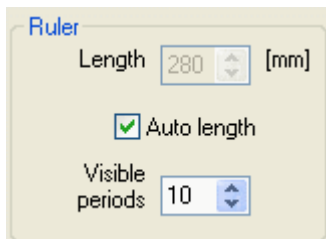
11.9.9. Create line type

User can define new line type with the help of command: **Tools menu - Accessories – Create new line type**.



Define the ruler

Visible part of ruler can be defined as follows.



- set the length of the ruler, or
- set the *Visible periods* of the line type on the ruler.
- if you *switch on* the *Auto length* check box, the number of periods will define the length of the ruler, if you *switch off* the *Auto length* check box; it visualizes the defined period and the defined ruler length.

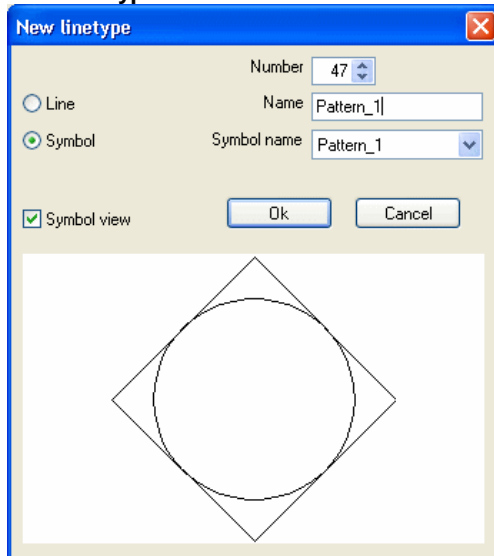
Modify existing line type

- Select the name of **line type** to be modified. Only user defined line types can be modified.
- Define the sections and spaces within a period.

Name line type

Select the line type name from the combo box either to rename the line or to delete it. The first 22 entries are predefined. You cannot modify them.

Define new line type



Pressing the **New line** button, a dialog appears. Here you can define the name of the new line type and decide that it will be made up.

- ❖ of lines, or
- ❖ Groups.

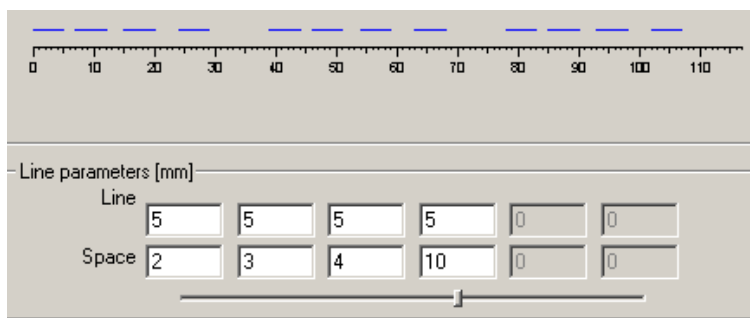
- Give the name of the new line type.
- Switch on the **Line** button. In this case the new line type can be defined by line sections and spaces, or
- Switch on the **Symbol** button, the line type can be defined by the predefined patterns among the patterns appear those that were created by the *Create line type pattern* command. Choose a group from the list.

Check in the **Show** button, the image of the selected group appears.

Close the dialog. The new line type will be put at the end of the list, from where it can be selected.



I. New line type by periods



If you have selected the *Line* option when creating a new type, you can define the periods of repetition. The period of the new line type can be given by the definition of lines and the spaces between them. A period cannot contain more than six line part and six spaces. Using the slide fill in the adequate fields.

Line

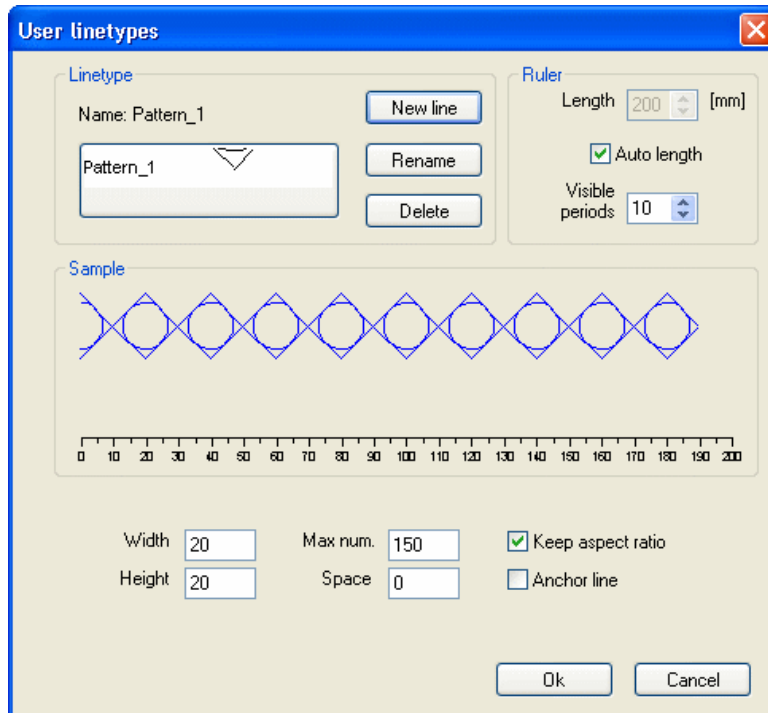
Define the length of line parts.

Space

Define the distance between the line parts.

By the definition of the last space the distance between the periods can be given.

II. New line type by group



Width and height

Define the width and height of the group. By modifying these values you can stretch the group.

Max. number

Define the **maximum number** of the groups.

If there are more groups on the drawing than this value, the program displays the line only.

Space

Define the **gap between** the symbols. If the gap is 0, the symbols are connected.

Keep aspect ratio

If you check in this option the width and height values of group will change proportionally.

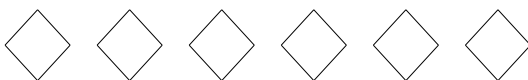
Anchor line

In Anchor line is visible.
Off Anchor line not visible.

OK Closes the dialog.



Space = 0



Space > 0



Anchor line in

Rename

Press the **Rename** button to change the name of the selected line type.

Delete

Press the **Delete** button to delete the selected user defined line type

11.9.10. Activate

To be able to modify the objects of a group first enter the group. Having done the modifications closes the group. This can be done by commands *Tools menu – Edit Group*, or through the popup menu of the objects.



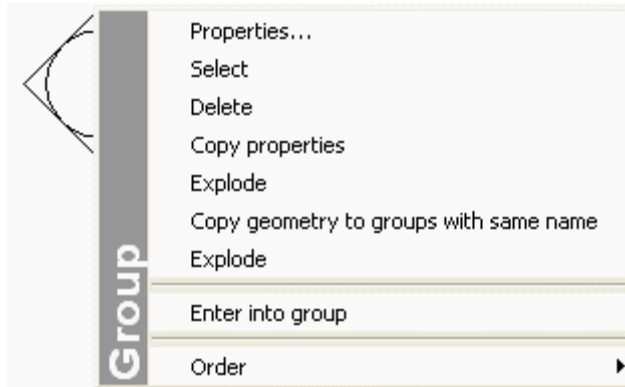
Activation can be seen graphically on the screen. Objects that do not belong to the group become lighter and they cannot be modified now, but their point can be referred to.

The objects in the active group have priority against the outside objects in the object selection operations.

Select the group or symbol on the drawing to activate it.

Popup menu

Right click on the group. Select the Enter into group command. The selected group becomes active.

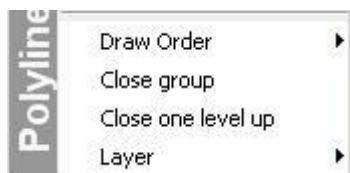


Each modification after activating the group will be attached automatically to the group. That way you can add new objects or modify, delete the existing ones.

11.9.11. Close group

The command *Tools menu – Close group* closes the editing of a group and returns to the top level of the drawing. Choose a subcommand:

The group can be closed from its popup menu of the object.



Close group

Closes all groups and returns to the top level of the drawing.

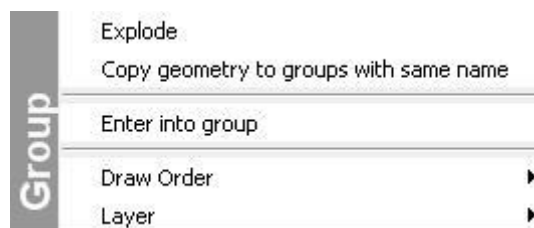
Close one level up

Closes the active group and activates the group on the previous level.

11.9.12. Copy geometry to groups

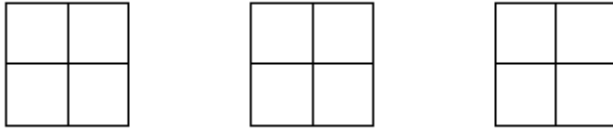
In the case of user defined groups the modification made on one group can be copied to the other similar objects.

The command is in the *Group* popup menu.

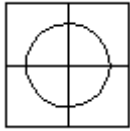


Example:

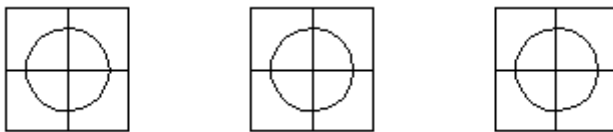
- Create a group and save it in an OLI library e.g. *Cursor* sign.
- Use the *Design centre* to place some copies of the recently created group on the drawing area.



- Right click with the mouse on one of the groups and select the *Enter into group* command from the popup menu. The group becomes active, so modifications can be done on it, the colour of other groups changes to light blue.
- Modify the active group: e.g. draw a circle in the middle.



- As changes have been done, right click on an object of the group and select the *Close group* command from the popup menu.
- Click again with the right button of the mouse on this group and select the *Copy geometry to groups with same name* command from the popup menu.
- All other *Cursor* signs of the drawing area will be changed; they become the same as the previously modified one.



11.9.13. Continue tiling popup menu

If tiling layout is placed on the drawing there is a possibility to continue with distributing tiles or making other modifications on the decoration. If you right click on the decoration group of the drawing, the **Continue tiling** command can be selected from the popup menu of the group. In the appearing **Tiling** dialog the option for continuing the decoration modifications can be selected.

11.10. Detailed view

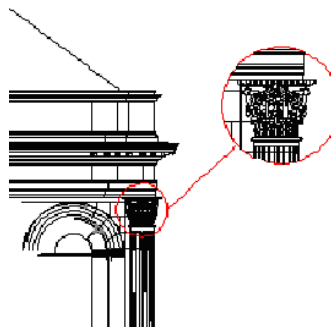
When you want to get a detailed view of a part of a picture, a detailed group is created.

The detailed group is defined by the objects, belonging to an area (rectangle or polygon). These objects are copied to the defined place and scaled by the given scale factor.

The detailed group is useful when you want to enlarge a part of the drawing and place it near the original drawing.

Use the *Tools* menu - Create detailed view command.

- **Define** the corner points of the rectangle, or Choose any Profile definition command **from** Profile toolbar
- Define the base and end points of the displacement.
- Define the value of the new drawing scale, e.g. 3.
- Dialog *Scale factor* appears. If it is needed select the adequate opening scale or the hatches scale.
(We do not change scale factor in our example)



11.11. External references

You can perform several operations on referenced drawing files including attaching, updating and detaching them. When you attach a drawing as external reference (referred later as xref), you link that referenced drawing to the current drawing; any changes to the referenced drawing are displayed in the current drawing when it is open or reloaded. Attached xrefs can be nested: that is, you can attach an xref that contains another xref. When you open a drawing, all xrefs update

automatically. You can also update xrefs whenever you want to ensure that the most current versions are displayed in your drawing. When you archive final drawings that contain xrefs, you can choose how you store the xrefs in the drawings. The xref drawing can be DXF, DWG or ASC drawing.

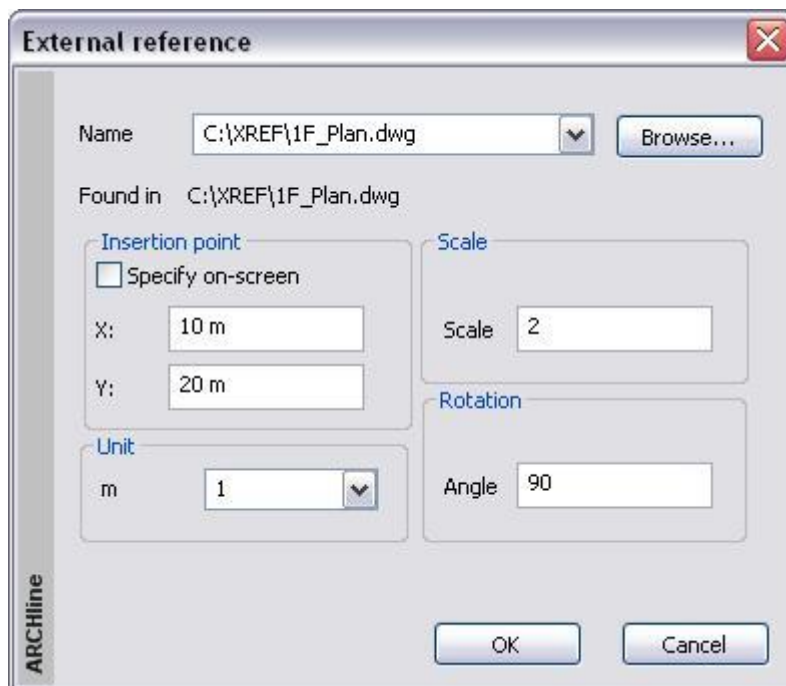
11.11.1. Load external reference

Using the *Tools menu – External Reference* command you can load a DXF, DWG or ASC file like an external reference. The *Open file* dialog appears:

- Select the file type: .dxf, .dwg, or .asc.
- Select the file you want to attach.
- Click Open.

In the *External reference* dialog, under Name, you can browse to select another file.

- Specify the insertion point, scale, unit, and rotation angle. Click Specify on-screen to use the pointing device. Attachment includes all nested xrefs.
- Click OK.



11.11.2. External reference manager

External references can be managed in the *External reference manager* dialog; you can attach, list, bind, detach, reload, unload external references (xrefs) or modify their path in the current (or host) drawing.

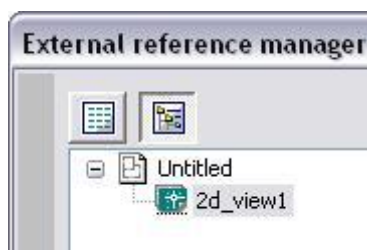
Click the *Tools menu – Xref Manager* Command. The *External reference manager* dialog appears.

In the dialog you can see all xrefs in the drawing in a  tree view or a  list view:



Tree view

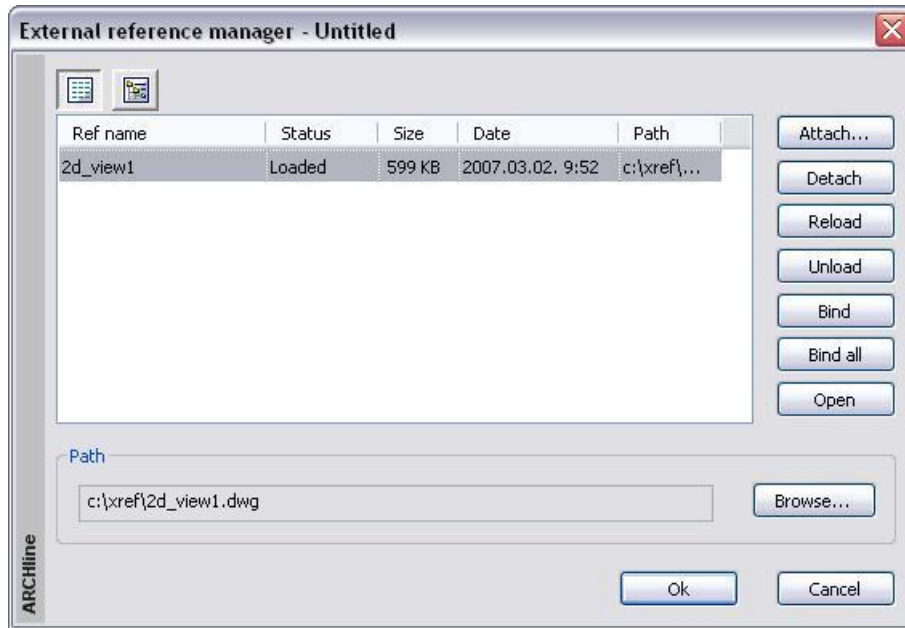
This view represents the external references, displaying the relations between them. The tree view lists the level of nesting relations of the attached external references. In tree view you can easily overview the nesting of each xref.



List view

It displays the flat listing of the attached external references and their attributes.

In list view you can see the reference name, status, size, date of modification, and path information of each xref.



Ref name

Display the external reference name in the list after an external reference is attached. When the attached external reference is selected in the list, its path is displayed in the Path column. (See below: *To change an xref path*)

Status

Shows whether the external reference is loaded, deleted, reload, not to load, bind, bind all, or open.

Size

Display the file size of the related reference drawing.

Date

Show the last date when the related reference drawing was modified.

Path

Show the saved path of the related reference drawing.

In the *External reference manager* dialog you can manage the xrefs as follows:

Attach

Attach an external reference using the *Open file* dialog. This command is identical with the *Tools menu – External Reference* command.

Detach

Detach the selected external reference from your drawing. Only the external references attached to the current drawing can be detached.

Nested external references cannot be detached.

- Select the reference name that you want to detach.
- Click *Detach*. Click *Ok*.

Reload

This option updates the selected xref - use this if the external reference was changed.

- Select the reference name that you want to reload.
- Click *Reload*. Click *Ok*.

Unload

Removes an external reference, but retains the reference for future use. Unloaded external references can be reloaded. Unload hides the external reference in order to improve speed and performance.

- Select the reference name that you want to unload.
- Click *Unload*.
- Click *Ok*.

Bind

Permanently attaches an external reference, so that it is part of the drawing.

- Select the reference name that you want to bind.
- Select Bind. Click OK.

From that point all objects of the drawing, except with the nested external references, will be part of the current drawing.

Bind all

Permanently attaches an external reference with its nested xref drawings to the current drawing:

-
- Select Bind all.
- Click OK.

From that point all objects of the drawing, along with the subsequent xref drawings, will be part of the current drawing.

Open

Open the selected external reference drawing for editing in a new window.

- Select the reference name of the drawing that you want to open in a different window.
- Click Open.
- Click Ok. In the Import file dialog select the first option to show the drawing in a different window. Click Ok.
- The drawing will appear in a different window. Modify the drawing and save it. All the changes you make in this window will appear on the xref of this drawing after reloading it.

To change an xref path

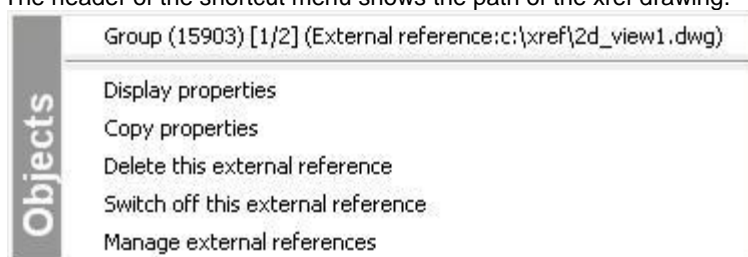
- Select a reference name.
- Use the *Browse* button on the bottom of the dialog to change the path.
- Click Ok. The other external reference properties like insertion point, scale, unit and rotation will not change.
- or
- Double click on a reference name.
- In the *External reference* dialog, under Name, you can browse to select another file (if you want to change the referenced file).
- Specify the insertion point, scale, unit, and rotation angle. Click Specify on-screen to use the pointing device.
- Click OK to exit from the *External reference* dialog and to place the xref.



The second method gives you the possibility to relocate an existing xref drawing.

11.11.3. XREF Shortcut menu

Right click on any object of the xref drawing appears the shortcut menu.
The header of the shortcut menu shows the path of the xref drawing.

**Display properties**

The properties of the drawing objects inside an xref can be viewed through the shortcut menu.

- Click on the object with your right mouse button and select *Display properties*, or
- Go over the object of an xref with your mouse and wait a little bit. You will see the information about the object in the tooltip.

Copy properties

In the shortcut menu of an xref you can copy the properties of an object inside the xref to other objects in your current drawing with the *Copy properties* command.

Delete this external reference

It detaches the selected xref. This command is identical with the Detach command in the External reference manager dialog.

Switch off this external reference

It unloads the selected xref. The referenced drawing will not be seen on the current drawing. This command is identical with the Unload command in the *External reference manager* dialog.

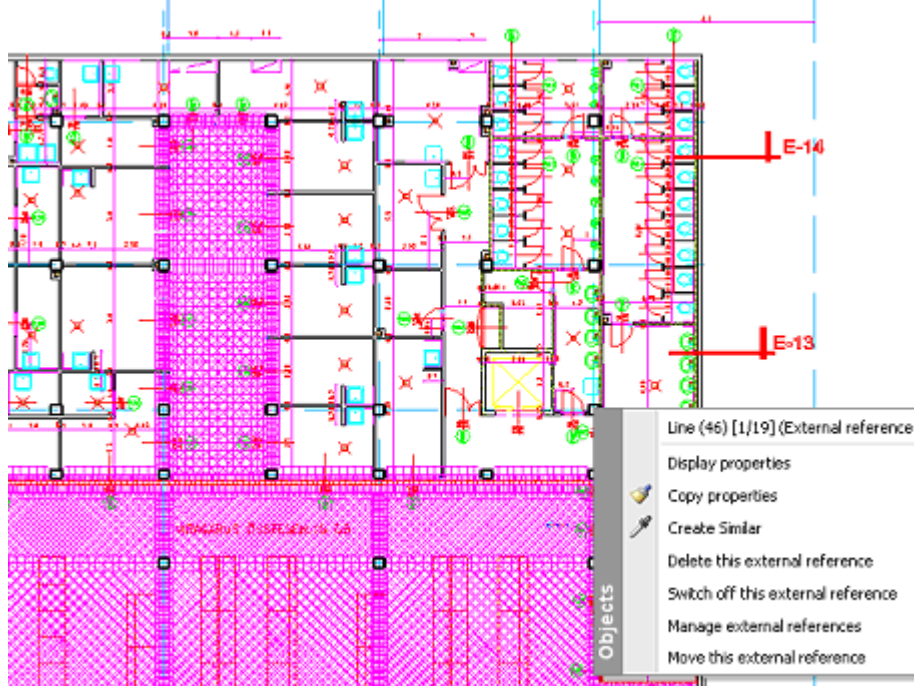
Manage external references

It displays the External reference manager dialog.



11.11.4. Move external reference command

XREF allows many users to work on individual components of a project. As XREF can be updated, added, or unattached to the project the new Move command enables to relocate an XREF easily according to the user needs.



Click on the external reference with right mouse button and select the Move this external reference command. You can move the external reference by clicking first on the reference point and then on the target point.

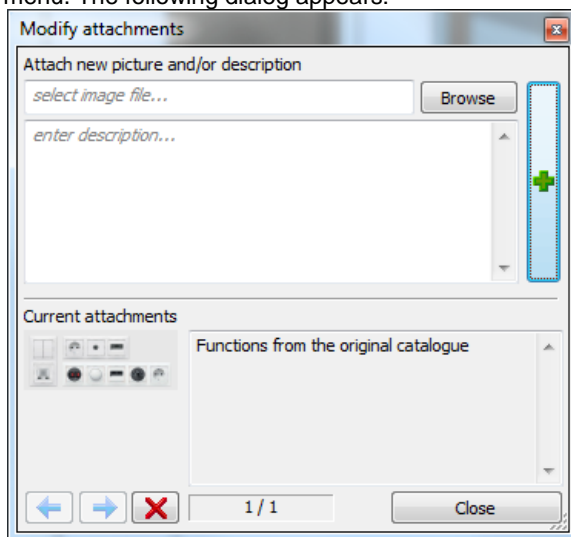
11.12. Attaching photo and description to objects

You can attach pictures and photos to any object of a drawing. This can be useful during a survey of a building by using the original photographs and compare it with the actual state of the model or 2D drawing.



11.12.1. Attaching photo and description to objects

Click on an object with right mouse button and select the **Attaching photo / description** command from the local pop menu. The following dialog appears:

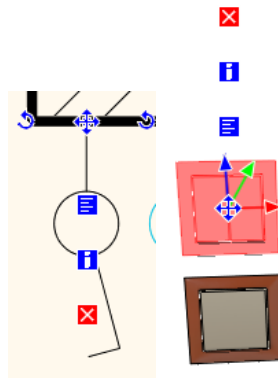


You can select an image with the Browse button and describe the object in the text field. Press the + button to attach them to the object. If more objects are attached, you can step to the next one by pressing the arrow buttons. An object can be deleted by the X button.

11.12.2. Viewing attached photos and descriptions

Select an object on the drawing or in the 3D window. If an object has photos and descriptions attached to it, a

marker appears besides to the regular ones. By clicking on it you can see the attached photos and descriptions. If more objects are attached, you can step to the next one by pressing the arrow buttons.

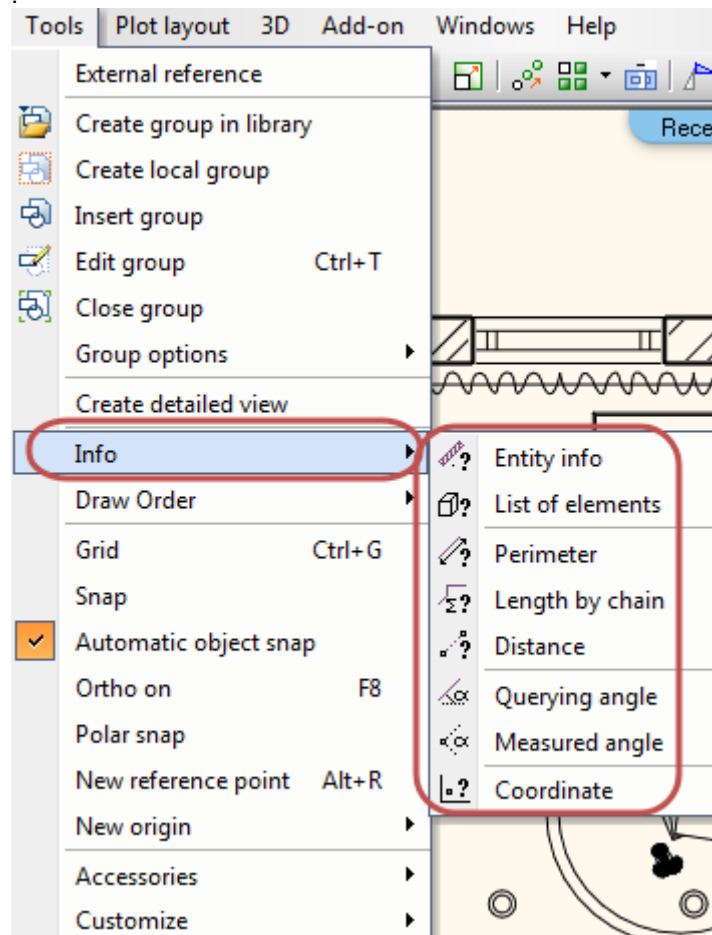


12. Inquiry

12.1. Query information

ARCHLine.XP offers a wide range of options to query information concerning the drawing, geometry, properties and commands.

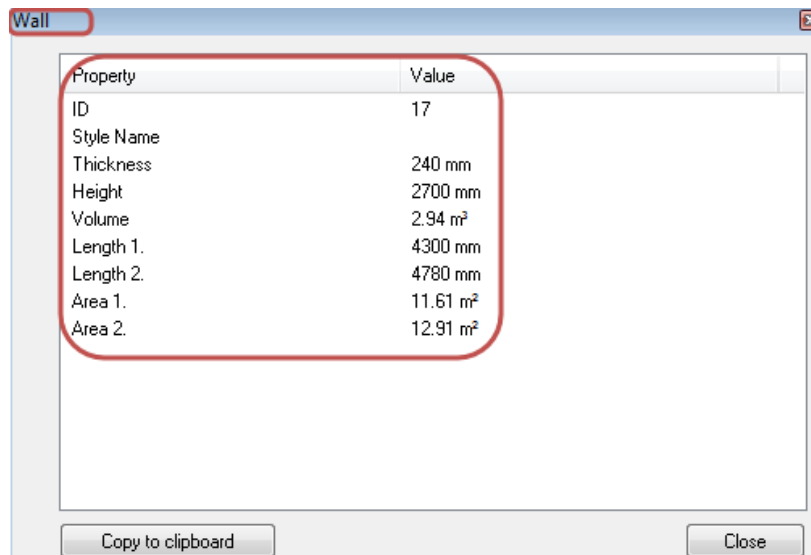
You can access the information requesting commands in the **Tools menu – Info** commands



12.1.1. Entity Info

This command lists the graphical properties of the selected objects with their respective assigned costs (if applicable).

- Select an object.
The **Info** dialog box concerning the selected object will appear.



You can copy and paste the content of the window to the Windows clipboard and use the information in other applications.



You can also query information concerning architectural objects by moving the mouse pointer over the object concerned.

Then the information table tool tip appears. Use the **Text** –  *Place tool tip text* icon to insert this table into the drawing.

Wall (17)

Layer: Wall01
 Floor Ground
 New wall
 1. length: 4300.00 [mm]
 2. length: 4780.00 [mm]
 Width: 240.00 [mm]
 Height: 2700.00 [mm]
 Height from floor: 0.00 [mm]
 1. Area: 11.61 [m²]
 2. Area: 12.91 [m²]
 Volume 2.942 [m³]

| | |
|--------------------|--------------|
| Wall | (17) |
| Layer : | Wall01 |
| Floor | Ground |
| New wall | |
| 1. length: | 4300.00 [mm] |
| 2. length: | 4780.00 [mm] |
| Width: | 240.00 [mm] |
| Height: | 2700.00 [mm] |
| Height from floor: | 0.00 [mm] |
| 1. Area: | 11.61 [m²] |
| 2. Area: | 12.91 [m²] |
| Volume | 2.942 [m³] |



Any tool tip table placed into the drawing is still connected to the selected object, so it follows any modification to the object.

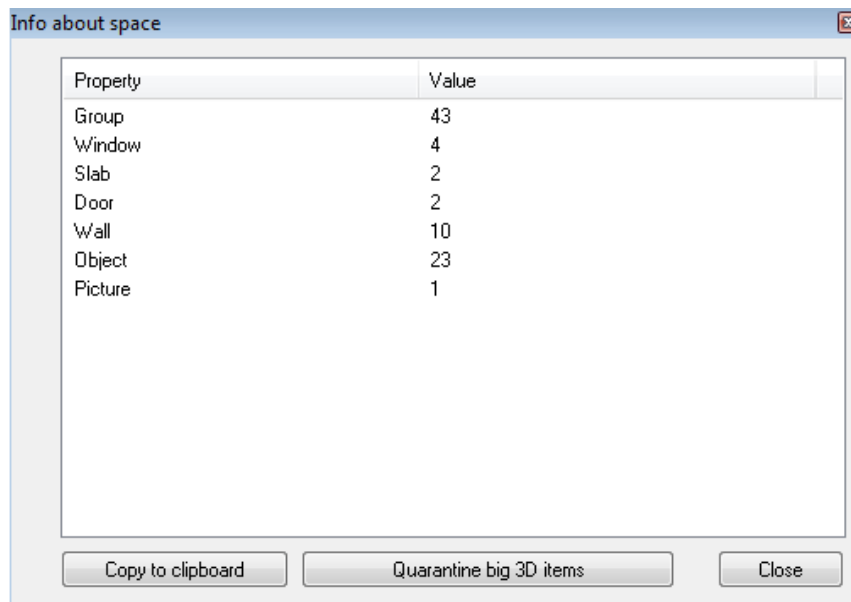
12.1.2. 3D object info

12.1.3. List of Objects

The program lists all the objects of the current project floor plan.

You can request the list from the floor plan window where you will see the following summary:

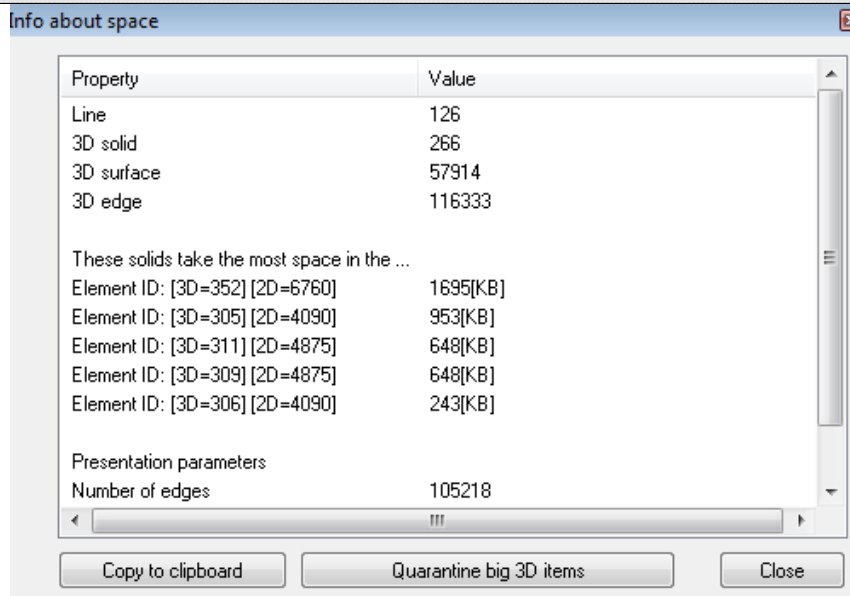
The **Info** dialog box concerning the sum of objects will appear.



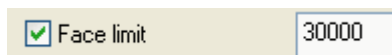
You can also request the list from the 3D window; the program will then list the 3D solids and surfaces, too.



The 3D solids taking the most space in the memory are listed when you start the tool in a 3D window.



! It is good to know the number of surfaces used in the drawing. An excessive number of surfaces may slow down the computer considerably. To prevent this, you can limit the number of surfaces in ARCHLine.XP. To limit faces, go to File menu – Options – General – 3D Preferences:



12.1.4. Perimeter

Define the length of the selected object.

- Select the desired object.

12.1.5. Length by chain

With this command you can measure the length of an open or closed chain of lines.

The objects constituting the chain of line can even be walls. In the case of a closed external contour you get the perimeter of the building.

12.1.6. Distance

Display the distance between two points.

- Specify the first point.
- Specify the second point.

| | |
|------------------------|----------|
| Measured distance | 1.485 m |
| Measured distance in x | 1.138 m |
| Measured distance in y | 0.9545 m |

12.1.7. Querying angle

Display the angle of a selected object in the drawing.

- Select the object whose angle you want to measure.



The program will measure the angle in the direction clockwise or anti-clockwise defined in the **File menu – Options – General – Angle** dialog box.

12.1.8. Measured angle

Measure the desired angle graphically.

- Specify the vertex of the angle.
- Specify a point on one of the rays of the angle.
- Specify another point on the other ray of the angle.

12.1.9. Coordinate

Display the coordinates of any selected point on the screen.

- Select the desired point of the screen.

12.2. Quantity Take-Off

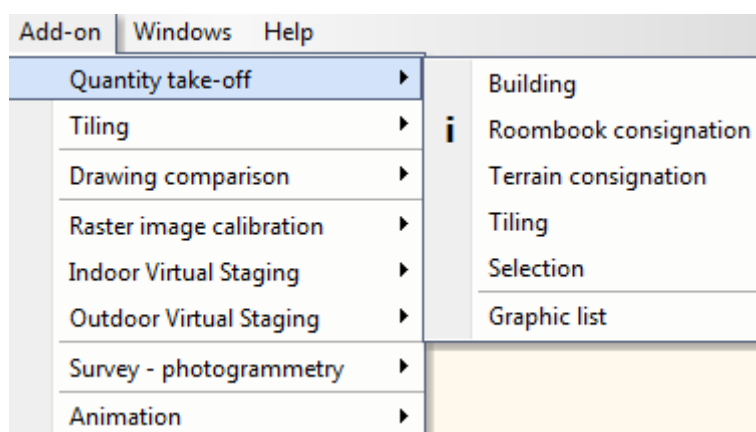
Cost-estimation calculations constitute a basic part of projects.

ARCHLine.XP is capable of extracting quantitative, geometrical and descriptive data of the objects (rooms surveyed, walls, slabs, roofs, etc.) used in a project. These data can contain calculations on length, perimeter, area, volume or lighting (the latter is based on the window area / wall area ratio). The calculations can be listed:

- ❖ Graphically
- ❖ In tables – Object geometrical info
- ❖ in .RTF format – Word list
- ❖ in .XLS format – EXCEL list

You can assign material and labour costs to the objects in the *Properties* dialog box with the *Cost parameters* option. The program prepares cost estimation with the help of the geometrical data and the cost parameters. Results can be presented in an EXCEL list.

You find the listing commands in the **Add-On menu Quantity Take-Off list**.

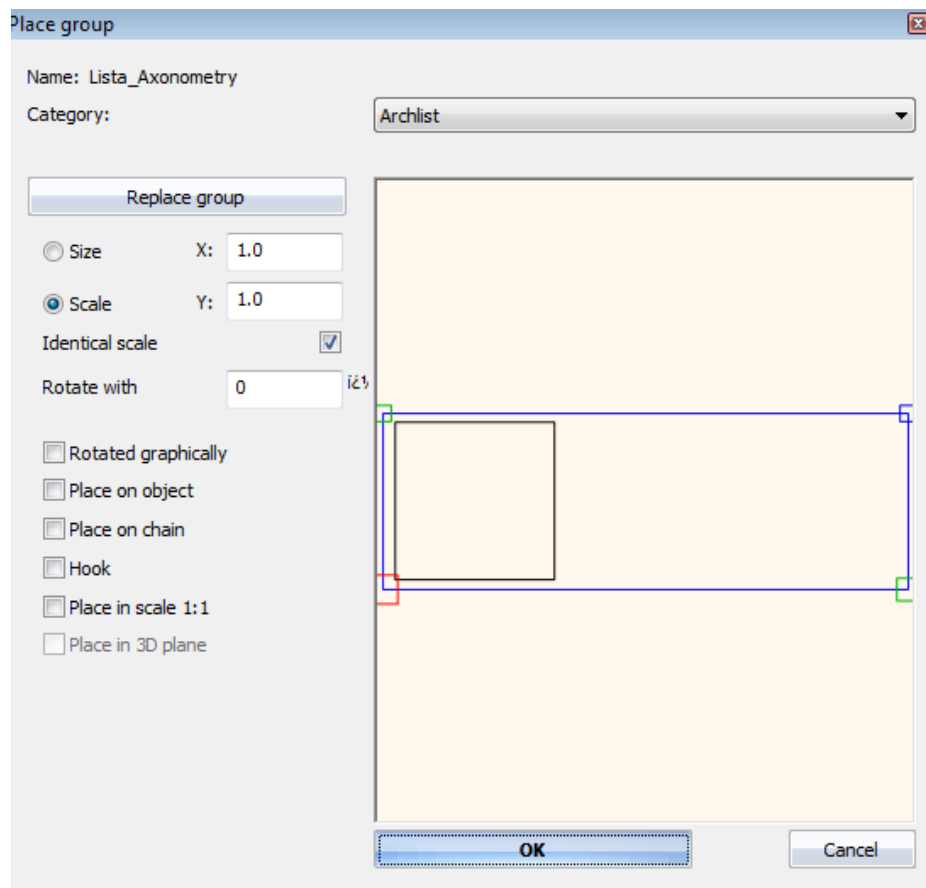


12.2.1. Graphic list



If you want to make a detailed graphical list of the objects in the drawing and also wish to place that list in the drawing, use the *Add-On menu Quantity Take-Off – Graphic list* command.

You can find several list schemes in the *Groups – Archlist.oli* directory, to be displayed (or some of them to be displayed) when using the *Info – Object query* command. You can request the front view and the axonometric view of the object (or both views if you like), and you can also colour them.

- In the **Insert group** dialog box select any list group from the *Archlist.oli* library.



- Specify the properties for placing the group.
- **OK** closes the dialog box.
- Select the architectural objects with those parameters you want to display in the list.
Enter completes the selection of the objects.
- If you selected multiple objects, specify the number of columns of the graphical list of the objects.
- Specify the origin of the list in the drawing.
The program places the graphical lists in the drawing.
- Select new objects, or
Enter completes the command.

| | | |
|---|------------|---------|
| | ID | 49 |
|  | Storey | 0 |
| | ID | 49 |
| | Height | 2.7 m |
| | Av. Height | 2.7 m |
| | Thickness | 0.38 m |
| | Volume | 5.13 m3 |
|  | Length 1. | 5 m |
| | Length 2. | 5 m |
| | Area 1. | 13.5 m2 |
| | Area 2. | 13.5 m2 |



The list of parameters and the 3D view of the object forms a group.

If you want to modify the text in the list or the 3D view image of the object, you must enter the group. To do so, use the *Tools menu – Activate – Select* command. To deactivate the group, use the *Tools menu – Deactivate – Top level* command. You may also use the Group shortcut menu – Activate group or Deactivate group commands.

! Lists already inserted are no longer connected to the selected object, so they do not follow the modification of the object.

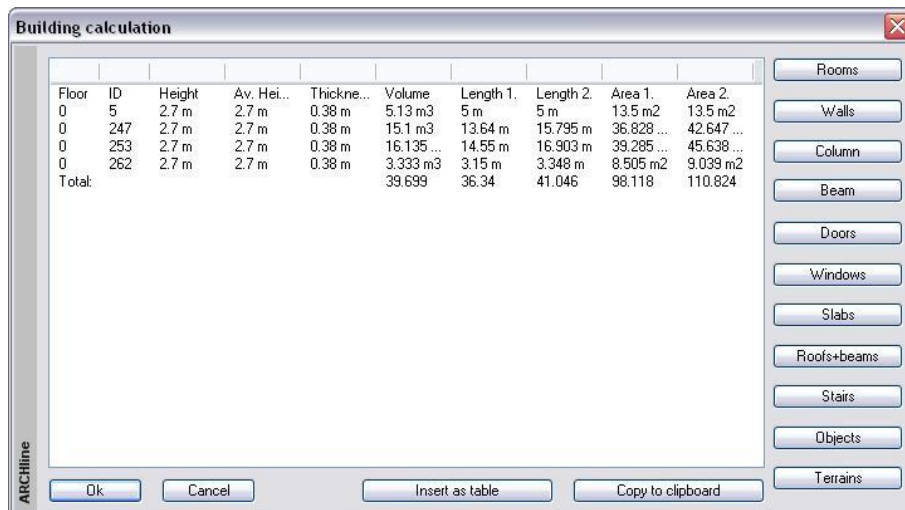
12.2.2. List by selection

With the *Add-On menu Quantity Take-Off – Selection* command the program will list the calculation data concerning the selected objects in a dialog box as a table.

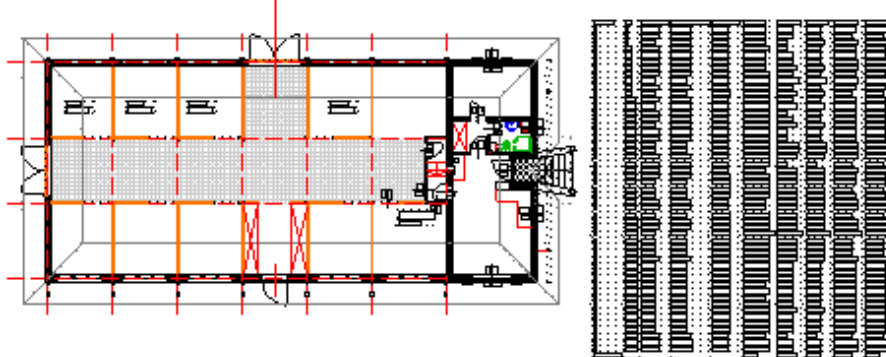
- Select the objects to obtain calculation data about them, or
Enter to select all the objects in the drawing.

The **Building calculation** dialog box appears.

Use the buttons on the right to select object types (walls, columns, beams and doors, etc.) for the information you want to display in the dialog box.



- Press the **Position as table** button and place the table with the calculation lists on the screen, or



- Press the **Copy to clipboard** button. The program copies the content of the dialog box to the Windows clipboard, so you can export them to external applications. You can place the list in a Word or EXCEL document.
OK Closes the dialog box.


12.2.3. Building list

ARCHLine.XP comprises quantitative, geometrical and descriptive data concerning the architectural objects (walls, slabs, doors and windows, roofs, etc.) used in the projects.

The *Add-On menu Quantity Take-Off – Excel list* command lists the data in an .XLS list.

The program calculates the list and after specifying the file name opens an **Excel** document which displays relevant data of element types on different worksheets.

The door and window worksheets refer to the consignment of doors/windows. The program will sum up object types in the integrated worksheet:

| ID | Name | Picture | Width [mm] | Height [mm] | Area | Code | Description | Price | Unit | Value |
|--------------|-------------------|---|------------|-------------|------|------|-------------|-------|------|-------|
| 31549;137282 | 2 Leaves standard |  | 885 | 2135 | 1.89 | | | | | |


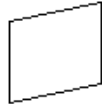


Calculation sheets

Excel lists created by the program can be used as calculation sheets. After creating the lists you have the possibility to add new columns with relevant cost data. Based on these data you can make further calculations and create tables.

ARCHLine.XP link in the Excel list

In the completed Excel list the tables contain the ARCHLine.XP ID of the objects. ARCHLine.XP can visualize the requested object in the drawing according to the object ID in the *Excel* list.

- Right-click the object ID in the list.
- Select the *Show ID in ARCHline.XP* command in the shortcut menu popping up.

| A | B | C | D | E |
|---------|---|---|-----|-------|
| 73 1286 |  | | 0.1 | 1.329 |
| 78 1305 |  | | 0.1 | 1.33 |
| 83 1345 |  | | 0.1 | 2.184 |
| 88 1403 |  | | 0.1 | 1.852 |



To enable this function, you have to move the **ARCHLine.xls** file from the ARCHLine.XP\Templates\XLStart folder to the Office\... \XLStart folder.

12.2.4. Room book consignment

Using the *Add-On menu Quantity Take-Off – Room book consignment* command you can create three kind of list of all Room books referenced in the current plan sorted out by floors and apartments.

Calculation of used area:

| | A | B | C | D | E |
|----|---------------------------------|------------------|-------------------|------------------|-----------------|
| 1 | Calculation of used area | | | | |
| 2 | <i>Level</i> | <i>Room name</i> | <i>Gross area</i> | <i>Reduce by</i> | <i>Net area</i> |
| 3 | | | | | |
| 4 | | 19 Rooms | | | |
| 5 | <i>Ground</i> | 0 Utility | 3.07 | 0 | 3.07 |
| 6 | | 0 Kitchen | 26.34 | 0 | 26.34 |
| 7 | | 0 Toilet | 1.36 | 0 | 1.36 |
| 8 | | 0 Garage | 15.05 | 0 | 15.05 |
| 9 | | 0 Living-room | 24.71 | 0 | 24.71 |
| 10 | | 0 Study | 16.09 | 0 | 16.09 |
| 11 | | 0 Entrance-hall | 13.07 | 0 | 13.07 |
| 12 | | | | | 99.69 |
| 13 | <i>F1</i> | 0 Study | 7.9 | 0 | 7.9 |
| 14 | | 0 Bedroom 1 | 21.37 | 0 | 21.37 |
| 15 | | 0 Bedroom 2 | 13.6 | 0 | 13.6 |
| 16 | | 0 Bedroom 3 | 13.38 | 0 | 13.38 |
| 17 | | 0 Bedroom 4 | 9.69 | 0 | 9.69 |
| 18 | | 0 Bathroom 1 | 4.55 | 0 | 4.55 |
| 19 | | 0 Bathroom 2 | 6.08 | 0 | 6.08 |
| 20 | | 0 Hall | 14.28 | 0 | 9.03 |
| 21 | | | | | 85.6 |
| 22 | <i>Roof</i> | 0 Bedroom 5 | 13.73 | 0 | 16.53 |
| 23 | | 0 Bathroom | 1.99 | 0 | 3.89 |
| 24 | | 0 Store | 2.47 | 0 | 4.29 |
| 25 | | 0 Store | 0.44 | 0 | 1.88 |
| 26 | | | | | 26.59 |
| 27 | Net area | | | | 211.88 |
| 28 | | | | | |
| 29 | Total used area | | | | 211.88 |
| 30 | | | | | |
| 31 | <i>Unit: m2</i> | | | | |

Room book information in details

| | A | B | C | D |
|----|----------------------|----------|----------------------------------|---|
| 1 | Ground | | | |
| 2 | | | | |
| 3 | Entrance-hall | | | |
| 4 | ID | 16839 | | |
| 5 | Flat | B2 | | |
| 6 | Room kind | | | |
| 7 | Gross area | 13.07 m2 | 0.70*1.25 | |
| 8 | | | 1.65*3.13 | |
| 9 | | | 0.77*0.77/2 | |
| 10 | | | 0.77*1.65 | |
| 11 | | | 0.55*2.42 | |
| 12 | | | 3.96*0.18 | |
| 13 | | | 0.83*0.83/2 | |
| 14 | | | 0.83*3.13 | |
| 15 | | | 0.34*0.34/2 | |
| 16 | | | 0.34*1.25 | |
| 17 | | | | |
| 18 | Used standards | DIN 277 | | |
| 19 | DIN277 area | 13.07 m2 | | |
| 20 | Net area | 13.07 m2 | | |
| 21 | WoFIV area | 13.45 m2 | | |
| 22 | Perimeter | 19.79 m | | |
| 23 | Door areas (5) | 10.14 m2 | 1.70 + 1.70 + 3.15 + 1.70 + 1.89 | |
| 24 | Window areas (1) | 1.15 m2 | 1.15 | |
| 25 | Wall surfaces | 52.16 m2 | | |
| 26 | Volume | 34.54 m3 | | |
| 27 | Room height | 2.64 m | | |
| 28 | Illumination area | 11.29 m2 | | |
| 29 | Illum. ratio | 0.86 | | |
| 30 | Room number | 16 | | |


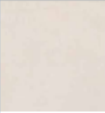

Combined list

| | A | B |
|----|----------------------|-----------|
| 1 | Combined list | |
| 2 | | |
| 3 | Ground | |
| 4 | Room areas | 99.69 m2 |
| 5 | Window areas | 8.52 m2 |
| 6 | Door areas | 35.68 m2 |
| 7 | Wall surfaces | 0.00 m2 |
| 8 | Volume | 263.35 m3 |
| 9 | | |
| 10 | F1 | |
| 11 | Room areas | 90.85 m2 |
| 12 | Window areas | 11.95 m2 |
| 13 | Door areas | 23.81 m2 |
| 14 | Wall surfaces | 0.00 m2 |
| 15 | Volume | 192.34 m3 |
| 16 | | |
| 17 | Roof | |
| 18 | Room areas | 26.79 m2 |
| 19 | Window areas | 1.26 m2 |
| 20 | Door areas | 9.21 m2 |
| 21 | Wall surfaces | 0.00 m2 |
| 22 | Volume | 58.29 m3 |
| 23 | | |
| 24 | | |
| 25 | Whole plan | |
| 26 | Room areas | 217.34 m2 |
| 27 | Window areas | 21.73 m2 |
| 28 | Door areas | 68.71 m2 |
| 29 | Wall surfaces | 0.00 m2 |
| 30 | Volume | 513.99 m3 |

12.2.5. Tiling list

Using the Tiling report feature, you can view four kind of list of all tiling and areas without tiles referenced in the current plan.

Menu: Add-on > Quantity take-off > Tiling

| | A | B | C | D | E | F | G | H |
|----|---|------------|-------------|-----------|------------|--------------------|-------|-------|
| 1 | Tile summary | | | | | | | |
| 2 | metallic crema 25x40 | | | | | | | |
| 3 |  | Width (mm) | Height (mm) | Area (m2) | Total (pc) | Full/Part/Fragment | Price | Value |
| 4 | | 250 | 400 | 17.95 | 256 | (138/14/104) | 0 | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |
| 7 | | | | | | | | |
| 8 | | | | | | | | |
| 9 | metallic crema 33x33 | | | | | | | |
| 10 |  | Width (mm) | Height (mm) | Area (m2) | Total (pc) | Full/Part/Fragment | Price | Value |
| 11 | | 333 | 333 | 2.86 | 35 | (15/9/11) | 0 | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | metallic flower 25x40 | | | | | | | |
| 17 |  | Width (mm) | Height (mm) | Area (m2) | Total (pc) | Full/Part/Fragment | Price | Value |
| 18 | | 250 | 400 | 3.73 | 46 | (30/3/13) | 0 | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |

| | A | B | C | D | E | F | G | H | I |
|----|---------------------------|-----------|-------|------|------|------------|-------------|------------|-------------|
| 1 | Tile detailed data | | | | | | | | |
| 2 | Slab | | | | | | | | |
| 3 | ID | Area (m2) | Whole | >50% | <50% | Total (pc) | Material | Width (mm) | Height (mm) |
| 4 | | | | | | | | | |
| 5 | 5 | 2.86 | 15 | 9 | 11 | 35 | metallic cr | 333 | 333 |
| 6 | | | | | | | | | |
| 7 | Wall | | | | | | | | |
| 8 | ID | Area (m2) | Whole | >50% | <50% | Total (pc) | Material | Width (mm) | Height (mm) |
| 9 | | | | | | | | | |
| 10 | 2 | 6.05 | 54 | 0 | 26 | 80 | metallic cr | 250 | 400 |
| 11 | | | | | | | | | |
| 12 | 8 | 3.12 | 24 | 0 | 24 | 48 | metallic cr | 250 | 400 |
| 13 | | | | | | | | | |
| 14 | 8 | 2 | 18 | 0 | 6 | 24 | metallic_fl | 250 | 400 |
| 15 | | | | | | | | | |
| 16 | 19 | 4.71 | 42 | 0 | 22 | 64 | metallic cr | 250 | 400 |
| 17 | | | | | | | | | |
| 18 | 19 | 1.34 | 12 | 0 | 4 | 16 | metallic_fl | 250 | 400 |
| 19 | | | | | | | | | |
| 20 | 48 | 3.46 | 18 | 10 | 24 | 52 | metallic cr | 250 | 400 |
| 21 | | | | | | | | | |
| 22 | 129 | 0.61 | 0 | 4 | 8 | 12 | metallic cr | 250 | 400 |
| 23 | | | | | | | | | |
| 24 | 129 | 0.39 | 0 | 3 | 3 | 6 | virágos utc | 250 | 400 |

| | A | B | C | D | E | F |
|----|-----------------------------------|------------------|--------------|--------------|---|---|
| 1 | Area without tiles summary | | | | | |
| 2 | Dark_grey | | | | | |
| 3 | | <i>Area (m2)</i> | <i>Price</i> | <i>Value</i> | | |
| 4 | | 21.22 | 0 | | | |
| 5 | | | | | | |
| 6 | | | | | | |
| 7 | | | | | | |
| 8 | | | | | | |
| 9 | 25%Grau | | | | | |
| 10 | | <i>Area (m2)</i> | <i>Price</i> | <i>Value</i> | | |
| 11 | | 3.96 | 0 | | | |
| 12 | | | | | | |
| 13 | | | | | | |

| | A | B | C | D | E | F |
|----|---|-------------|-----------------|---|---|---|
| 1 | Area without tiles detailed data | | | | | |
| 2 | Slab | | | | | |
| 3 | <i>ID</i> | <i>Area</i> | <i>Material</i> | | | |
| 4 | | | | | | |
| 5 | 5 | 2.92 | 25%Grau | | | |
| 6 | | | | | | |
| 7 | Wall | | | | | |
| 8 | <i>ID</i> | <i>Area</i> | <i>Material</i> | | | |
| 9 | | | | | | |
| 10 | 2 | 6.21 | Dark_grey | | | |
| 11 | | | | | | |
| 12 | 8 | 5.26 | Dark_grey | | | |
| 13 | | | | | | |
| 14 | 19 | 6.21 | Dark_grey | | | |
| 15 | | | | | | |
| 16 | 48 | 3.54 | Dark_grey | | | |
| 17 | | | | | | |
| 18 | 129 | 1.03 | 25%Grau | | | |



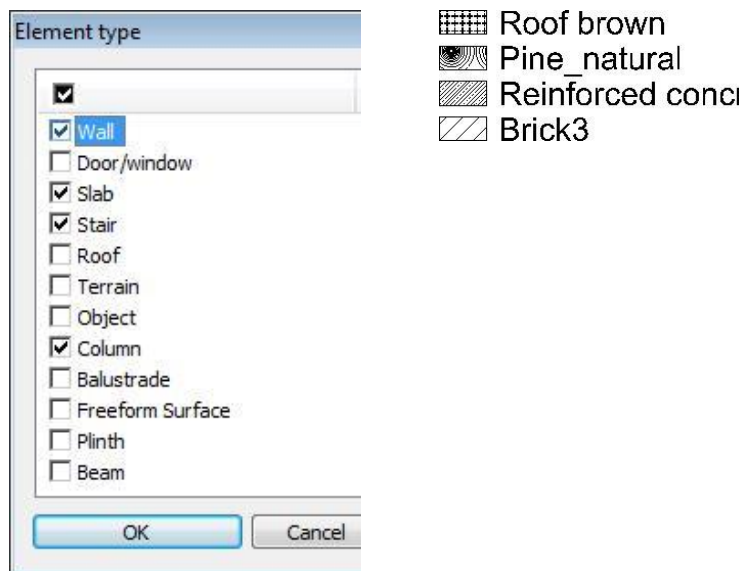
See chapter 15.1.Tiling.

12.2.6. Terrain consignation

Using the *Add-On menu Quantity Take-Off – Terrain consignation* command you can save terrain data in Excel (.xls or .xlsx) file. Terrain, Road and Plateau data can be found on different worksheets.

12.3. Legend of materials

Architectural versions – Drafting menu – Legend of materials tool generates a legend of the selected objects' materials representing the names and hatches of the materials used on the drawing.



13. Rendering

13.1. Introduction

ARCHLine.XP provides an integrated powerful, easy-to-use rendering and visualization technology based on the latest release of LightWorks product.

This photorealistic-rendering engine includes a physically based lighting model supported by advanced sky, analytical anti-aliasing, ray-trace algorithms, and a range of global illumination techniques.

This release contains High Dynamic Range Images, or HDRI's, which makes easy Image Lighting and scene creation.

13.1.1. 64 bit rendering support

ARCHLine.XP 2013 comes with extended 64 bit rendering engine. ARCHLine.XP 2013 rendering engine runs on Windows 7 32-bit and 64-bit, and Windows XP 32-bit operating system.

The 64-bit version is able to access larger amounts of memory than 32-bit, providing customers increased efficiency, which is particularly useful for those working with very large and complex 3D models and lot of lights.

13.1.2. More about rendering

Techniques and quality of rendering can differ. We would like to introduce the background of this technology in the followings.

Ray tracing

Ray tracing is a technique for generating an image by tracing the path of light through pixels in an image plane. The technique is capable of producing a very high degree of photorealism.

See more: [http://en.wikipedia.org/wiki/Ray_tracing_\(graphics\)](http://en.wikipedia.org/wiki/Ray_tracing_(graphics))

Global illumination

Global illumination is a general name for a group of algorithms used in 3D computer graphics that are meant to add more realistic lighting to 3D scenes. Such algorithms take into account not only the light which comes directly from a light source (direct illumination), but also subsequent cases in which light rays from the same source are reflected by other surfaces in the scene, whether reflective or none (indirect illumination).

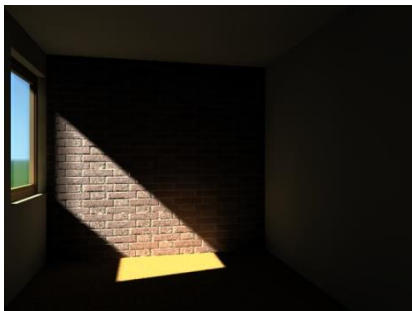
Theoretically reflections, refractions, and shadows are all examples of global illumination, because when simulating them, one object affects the rendering of another object.

See more: http://en.wikipedia.org/wiki/Global_illumination

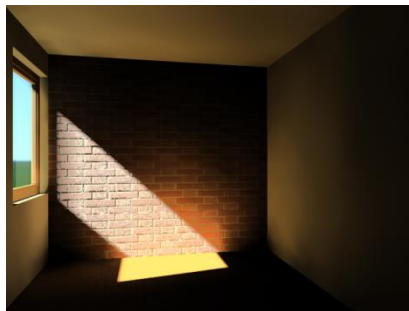
Global illumination – Colour bleeding

The transfer of colour between nearby objects is caused by the colour reflection of indirect light. This is a visible effect that appears when a scene is rendered with Radiosity.

See more: [http://en.wikipedia.org/wiki/Colour_bleeding_\(computer_graphics\)](http://en.wikipedia.org/wiki/Colour_bleeding_(computer_graphics))



Ray tracing



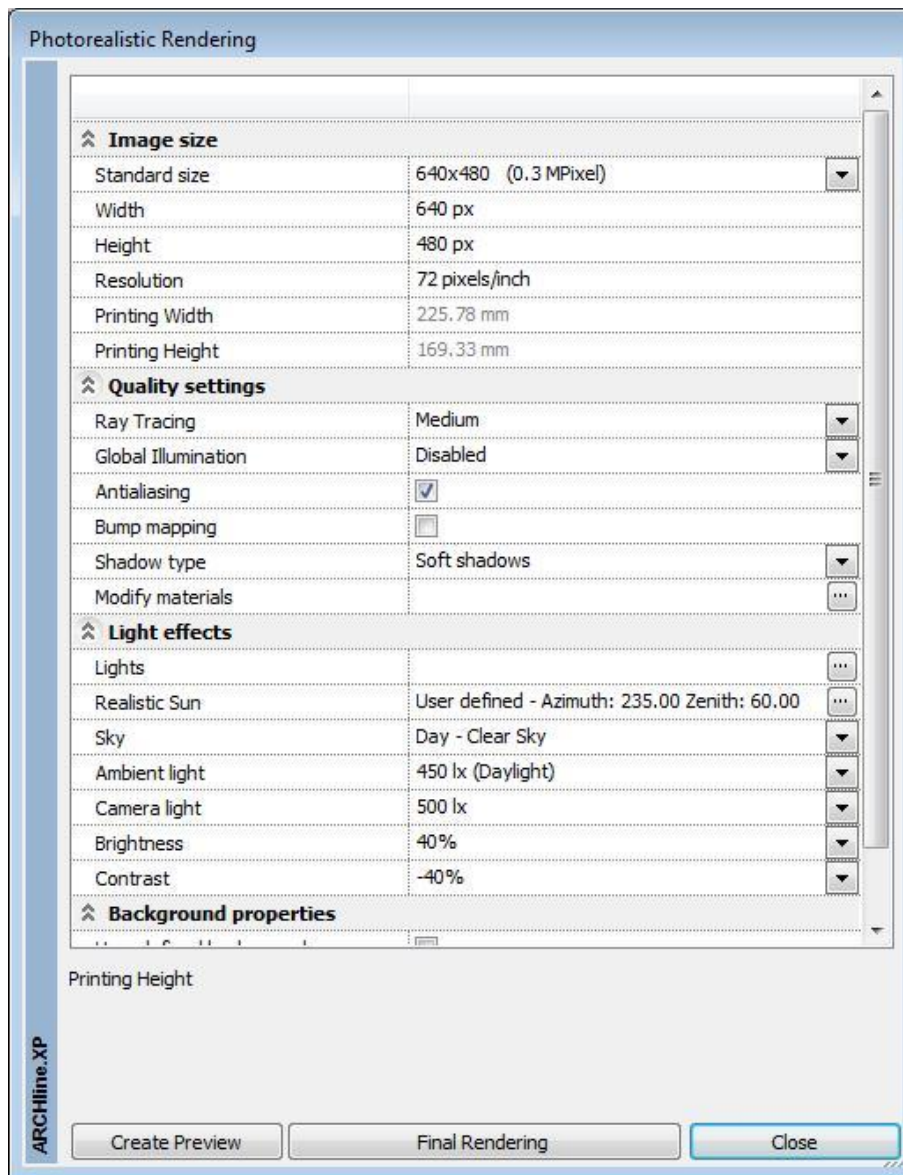
Global illumination

13.1.3. Usage of rendering

You can make photorealistic pictures with 'rendering' icon.

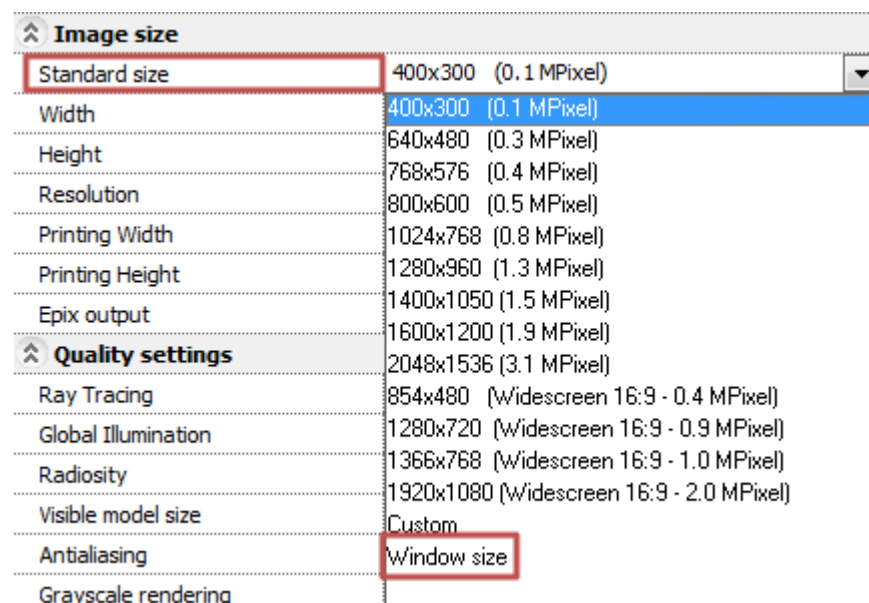


Icon is active if you work in the 3D window
If you click on the icon you will go to 'rendering' window.



13.1.4. Rendering Settings

13.1.4.1. Image size



Standard size

You can use from the standard sizes in the list. The Window size option will make the software use the 3D window content size for rendering. This option is very useful when you would like to see the same part of the scene in the 3D view and on the rendered image.

Width

The width of the final image in pixels. You can use custom values as well .

Height

The height of the final image in pixels. You can use custom values as well .

Resolution

The resolution (pixel density) of the final image. This value has an influence on printing size.

Printing width

This value is calculated from Image size and Resolution.

Printing height

This value is calculated from Image size and Resolution.

13.1.4.2. Quality settings

| Quality settings | | |
|--------------------|-------------------------------------|---|
| Ray Tracing | Medium | ▼ |
| Radiosity | Exterior | ▼ |
| Visible model size | 20 m (Large) | ▼ |
| Antialiasing | <input checked="" type="checkbox"/> | |
| Bump mapping | <input type="checkbox"/> | |
| Shadow type | Soft shadows | ▼ |

Ray Tracing

Ray Tracing displays the model with tracing the path of direct light through pixels in an image plane. Higher quality will improve accuracy at the expense of performance."

Radiosity

Radiosity represents real-world lighting situation. It calculates the amount of lights distributed from each surface to every other surface. This method is also capable to calculate colour bleeding on surfaces. 'High' template will improve accuracy at the expense of performance."

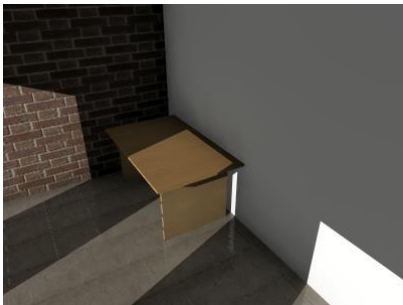
See more: [http://en.wikipedia.org/wiki/Radiosity_\(3D_computer_graphics\)](http://en.wikipedia.org/wiki/Radiosity_(3D_computer_graphics))

Visible model size

You should set up this value to approximately the main, visible part of the model. Reducing this value will improve accuracy at the expense of performance.



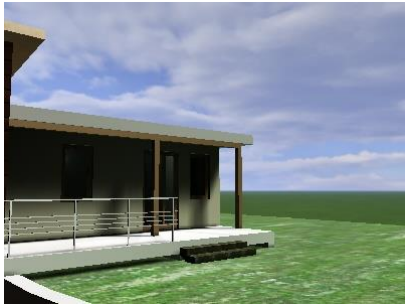
Large visible model size



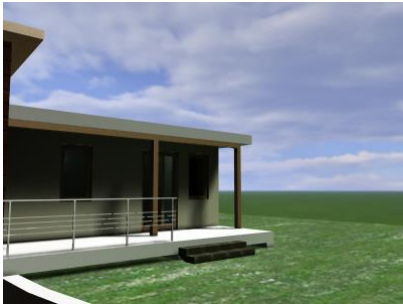
Small visible model size

Anti-aliasing

With the help of Anti-aliasing, the edges of a rendered scene will be more realistic, smoother.



Without anti-aliasing



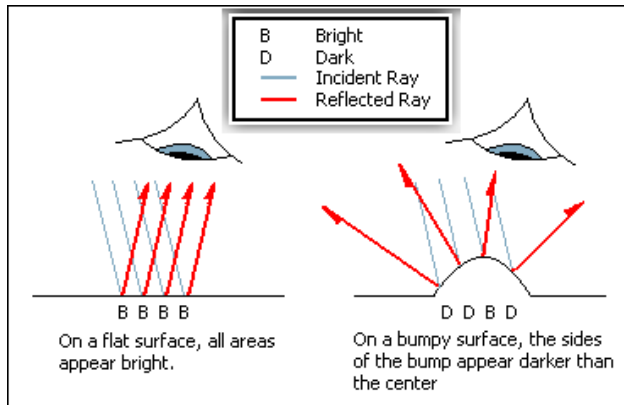
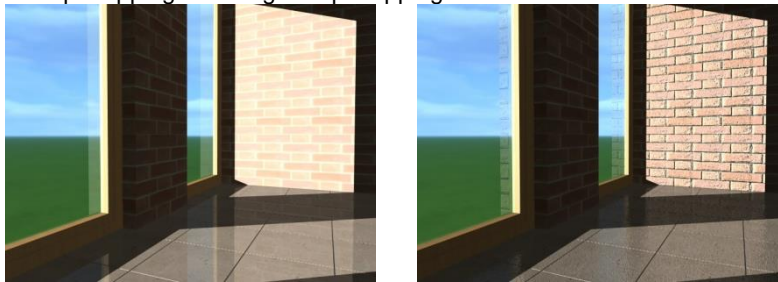
Using anti-aliasing

Bump Mapping

Bump mapping is a technique used to add more realism to images without adding a lot of geometry. Texture mapping adds realism by mapping images to geometric surfaces. Bump mapping adds per-pixel surface relief shading, increasing the apparent

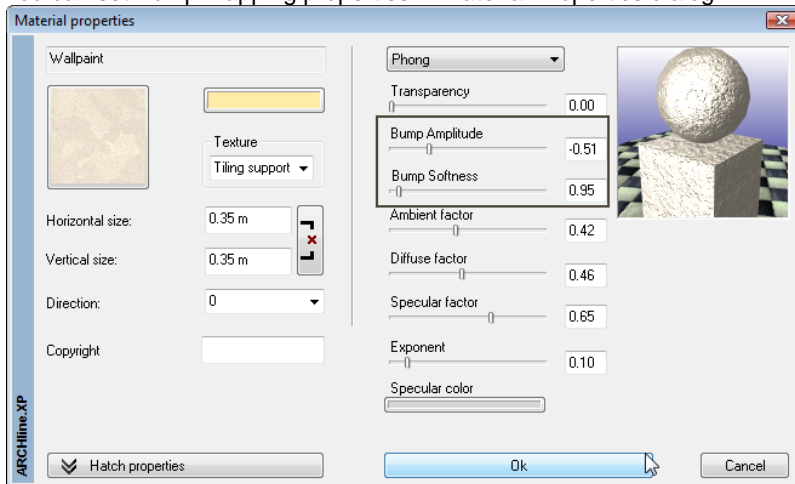
complexity of the surface. This uses lighting properties and indicates which parts are dark and which are light on a texture, making it look more geometrically complex because of light refraction.

Without Bump Mapping Using Bump Mapping



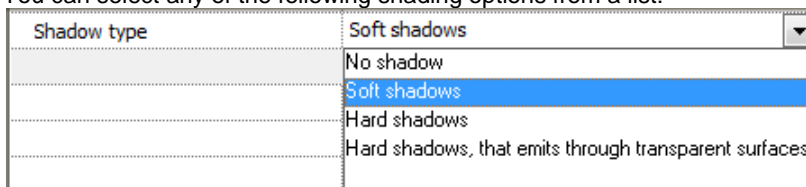
See more> <http://www.tweak3d.net/articles/bumpmapping/>

You can set Bump Mapping properties in Material Properties dialog:

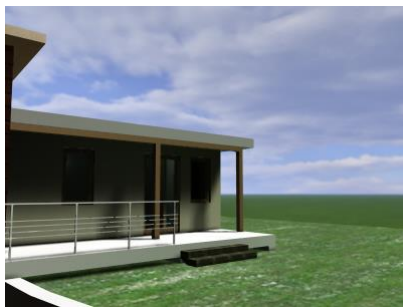


Shadows type

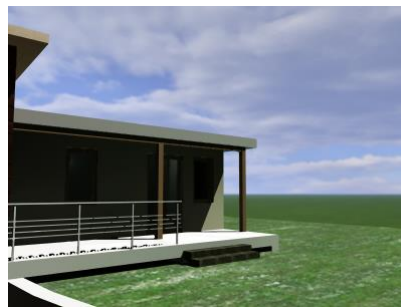
You can select any of the following shading options from a list:



Calculating shadows may slow down the rendering process, but provides more realistic images.



Soft shadows



Hard shadows

13.1.4.3. Light effects

| Light effects | |
|----------------------------|--|
| Lights | ... |
| Realistic Sun | Budapest - 11 July 2009, Saturday 12:30:00 |
| Sky | Day - Partly Cloudy |
| User defined ambient light | <input type="checkbox"/> |
| Ambient light | 450 lx |

Lights

You can change the values of the artificial light sources, represented in your model before rendering or you can switch off all the lamps or groups of the lamps.

Lumen based estimation of lights

Unlike the definition of previous versions the source of light is defined by lumen flux units.

The below chart shows the utilization of different light sources which gives us practical help in defining flux (lumen) according to different lamp types. In ARCHLine.XP source of light's type is based only on incandescent lamp.

Luminous efficacy = Ratio of luminous flux emitted from a light source to the electric power consumed by the source lumen per watt lm/W

| Light source type | Luminous efficacy (lm/W) | Light source emission (Lumen) |
|-------------------------------|--------------------------|-------------------------------|
| Incandescent 100 W (220 V) | 14,4 | 1440 |
| Halogen 100 W (220 V) | 17 | 1700 |
| Compact fluorescent 9–26 W | 57–72 | 513-1872 |
| Metal halide lamp | 90 | |
| High pressure sodium lamp | 85–150 | |
| Low pressure sodium lamp | 100–200 | |

See more: <http://hu.wikipedia.org/wiki/F%C3%A9nyforr%C3%A1s>

Sun

You can set sun by defining the geographical location, the north direction, the date and the time, or you can set the sun to an optional position.

Sky

You can choose the aspect of the sky that influences the light from outside in HDRI panoramic images background.

| | |
|--|-----------------------|
| Sky | Day - Partly Cloudy |
| User defined ambient light | Dawn |
| Ambient light | Day - Clear Sky |
| Background properties | Day - Partly Cloudy |
| | Day - Heavy Cloudy |
| | Sunset |
| | Night - Partly Cloudy |
| Sky | Night - Heavy Cloudy |
| Sky-type influences the environment at | |

Panoramic background affects the light coming from the surroundings. HDRI panoramic background not only shows the realistic appearance of any models, but even more. With its help very near to reality it shows different light distributions. For example if we display a certain picture with morning light we will get totally different light conditions such as we try it with sunset lights where the rays will give slightly red colour light.

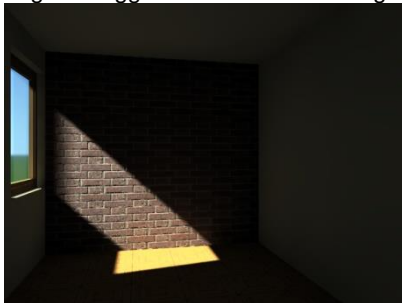
Prospective in different panoramic backgrounds.



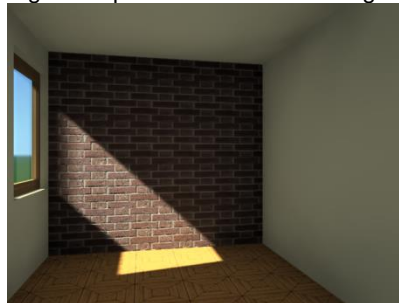
User defined ambient light

Using this option you can set unique ambient lights. Basically the HDRI panoramic background's ambient light is shown in the picture which can be chosen at the „sky” option. The unit of lighting is in Lux. (lighting is 1 Lux if 1 Lumen flux is perpendicular to 1 m2. 1 Lux is equal to the light of full moon and lights at noon is roughly equal to 30,000 Lux)

Ambient light in bigger volume is increasing lighting in the picture. The disadvantage is that it is decreasing the contrast of tones.



Low ambient light



High ambient light

Camera light

With the camera light you can switch on and control the camera's high light. A light source is emitting light from the view position. No shadows are ever cast from a camera light. It can be well used for lighting dark or under lighted places. The light unit is defined in lux.

In use of radiosity the camera light is going to switch off automatically.

Light solids

The source of the light is usually not visible on renders, as they have no visible bodies in 3D space. By enabling the Use light solids option, the software will generate tiny fake-light source-bodies where the light sources are present.

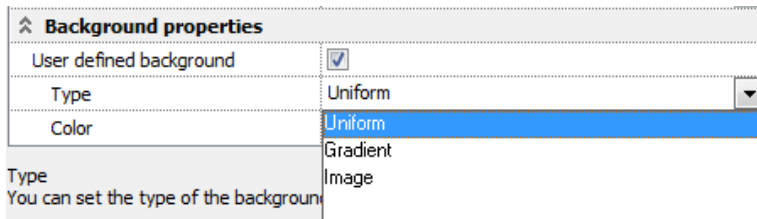


Light solids OFF



Light solids ON

13.1.4.4. Background type



User defined background

The image background can be monochrome, uncoloured or an imported picture. If you switch off the user defined background option, you will see the HDRI panoramic background that has been chosen for 'sky' option. In case of switching it on you can set properties of the image background behind the model.

Plain

Use this scroll down menu or the colour dialog box to set background colour.

Set background colour with the colour table.

Graduated

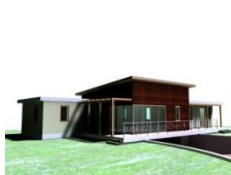
Define a top and a bottom colour to set the background colour of the image. The colour of the background will change gradually from the top colour to the bottom colour.

Set the top and the bottom colour of the background in the colour table.

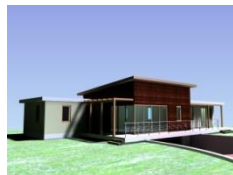
Image

You can load an image into the background of rendering.

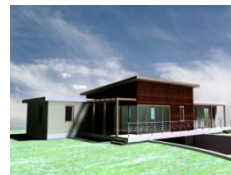
In the **Open image** dialog box select the appropriate background image.



Plain



Graduated



Image

13.1.5. Render modes

Create Preview

The image quality simplified compare to that of image created in Final Rendering mode. It takes less time to create images in Preview mode, and you can easily change the rendering parameters before starting the time consuming Final Rendering.

Final Rendering

Here you can start creating the final photorealistic image.

Create Preview



Final Rendering



Save to File

When the rendering image is ready you can save the output to a file.

- Define the name and the path of the image file in the **Save as** dialog box appearing.
- Define the file format of the image file (.bmp, .jpg, .tiff, .tga).
These formats differ in their quality and their respective size too.

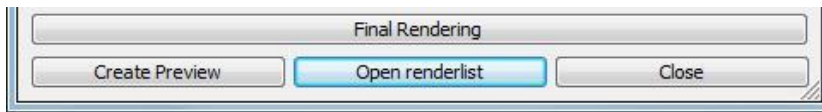
13.1.6. Render list – batch render

Introduction

Render list feature in ARCHLine.XP® raises the efficiency of workflow of generating photorealistic spectacular views. Render list can store all necessary information and settings to create rendered images later on. You can add views of a model to render list, even if they are scenes from different projects.

How to use render list

You can access render list by pressing the Render list button at the bottom of Photorealistic Render dialog. You can find Photorealistic Render by clicking on its icon on 3D mode toolbar of ARCHLine.XP. The tool is available when you are working in 3D view.



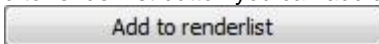
Using render list is quite simple. First you need to add a scene from the activated 3D view to the list with the previously set parameters of photorealistic render. There is the possibility to add one or more project's several view to the same render list.



Please note that ARCHLine.XP keeps render list until it is running. When you close ARCHLine.XP the actual render list will be erased, and the list will be empty next time you start the software!

Add to render list

With the help of the Add to render list button you can add a specific scene to render list with the settings made in Photorealistic render dialog window.

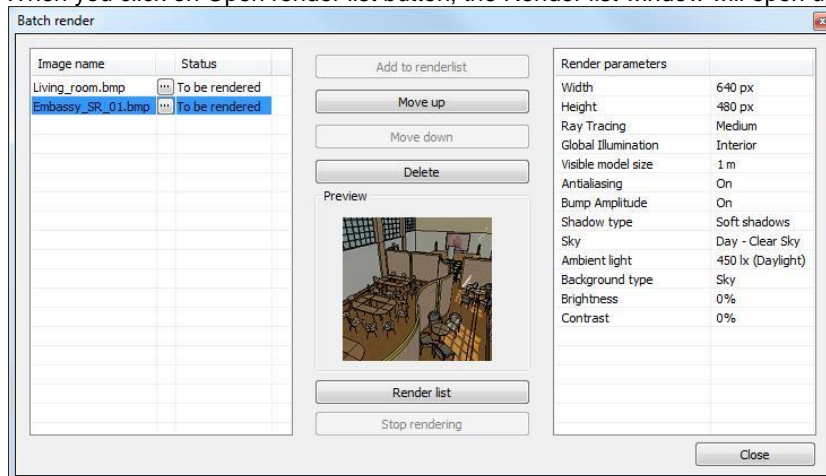


The Save as... window will appear where you can define the final picture's path, name and extension.

Click on Save, and the scene with the settings will be added to render list. The final image file will not be created this time, only when you render an object of the render list.


Open render list



When you click on Open render list button, the Render list window will open up.



At the left side of the dialog window you can see the actual render list, in the middle you can find the control buttons and the preview area, and at the right side you can check the render settings of the selected render list object.

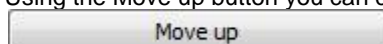
Render list

The two rows of the render list are showing the name of image and the status of it. Image name shows the name of the final image after rendering the scene. You can change it any time before rendering by clicking on the  button. Status shows the actual status of the render list object. It can be the following: To be rendered, Rendering, Finished.

| Image name | Status |
|---|----------------|
| Living_room.bmp  | To be rendered |
| Embassy_SR_01.bmp  | To be rendered |

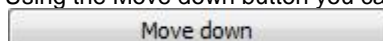
Move up

Using the Move up button you can change the order of the render list, setting the selected object to be rendered earlier.



Move down

Using the Move down button you can change the order of the render list, setting the selected object to be rendered later.

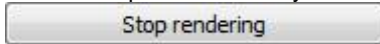


Delete

You can remove a render list object by pressing the Delete button.

**Stop rendering**

With the help of this button you can stop rendering the render list. The already rendered images will be kept.

**Preview**

In the preview window you can see a simple version of the scene. This will help you when you have multiple scenes to render, to find the one you are looking for.

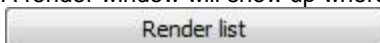
**Render parameters**

You can check the render parameters of the selected render list object.

| Render parameters | |
|---------------------|-------------------|
| Width | 640 px |
| Height | 480 px |
| Ray Tracing | Medium |
| Global Illumination | Interior |
| Visible model size | 1 m |
| Antialiasing | On |
| Bump Amplitude | On |
| Shadow type | Soft shadows |
| Sky | Day - Clear Sky |
| Ambient light | 450 lx (Daylight) |
| Background type | Sky |
| Brightness | 0% |
| Contrast | 0% |

Render list

By pressing the button the rendering of the render list objects will begin in sequential order from the first object of the list. A render window will show up where you will see the actual state of rendering.



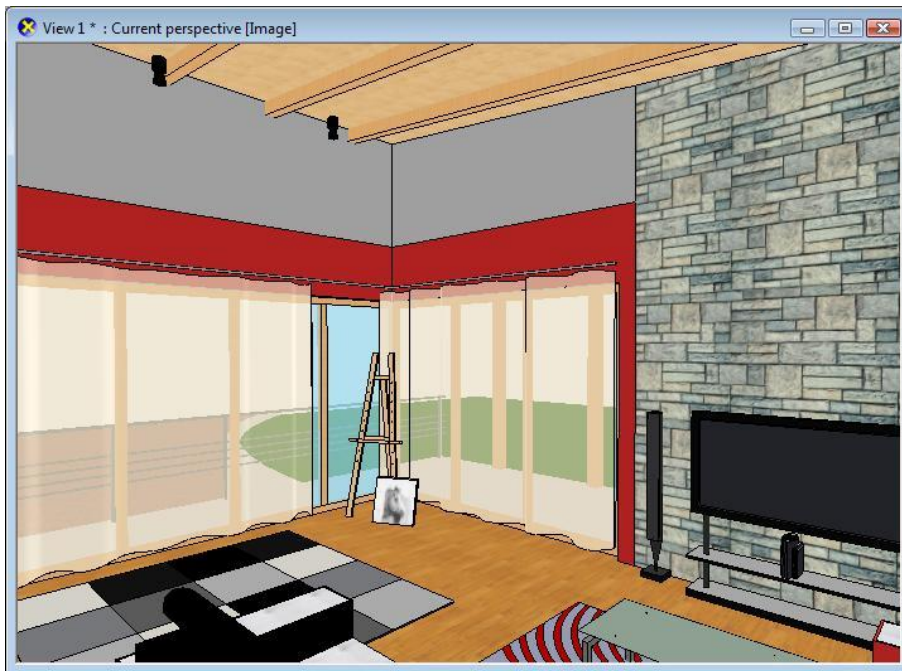
Rendering a photorealistic image costs a lot of the computer's resources (like memory and processor). Because of this, we recommend you to start rendering a render list in times when it is not disturbing.

13.2. DirectX 3D**Introduction**

The ARCHLine.XP put the appearance of drawing and 3D contents on different technological bases. This new technology is the Microsoft DirectX.

The DirectX is such a driver for computers running Microsoft Windows operating systems that you can also use for the accelerating methods offered by the hardware.

With help of DirectX the ARCHLine.XP can use efficiently the ability of the video card, which is the most important device in the appearance.



More about DirectX

Microsoft DirectX is a collection of application programming interfaces (APIs) for handling tasks related to multimedia, game programming and video, on Microsoft platforms. Direct3D (the 3D graphics API within DirectX) is widely used in the development of video games for Microsoft Windows. Direct3D is also used by other software applications for visualization and graphics tasks such as CAD/CAM engineering. As Direct3D is the most widely publicized component of DirectX, it is common to see the names "DirectX" and "Direct3D" used interchangeably.

From the Windows XP the DirectX is the organic part of Windows. It is also applied in such software, where the fast and true-life appearance is important.

It is important, that the DirectX gives a possibility to represent 3D and 2D contents faster and in higher quality.



Due to this you have a chance to handle larger and more complicated plans and other drawings or models, in such way, that the processor responsible for general calculations gets a little or not at all gets load. It is very useful because the work will be easier as the video card makes the representation, which is very hard work in many cases.

Use DirectX

When you start ARCHLine.XP, it recognizes automatically the ability of the graphic card and arranges the work for it. If the video card can do it, the hardware-accelerated appearance will be default automatically with the help of DirectX technology.

On older computers the program changes to a slower hardware not accelerated display method.

So you don't have to switch on/off the DirectX representation, it's automatic. You can get information from the representation method by controlling the icon on the left side of the header in the active window.

If you see the  icon, it means, that the content of the window appears faster. If you see the  icon, the content of the window appears with a slower and processor load method.

13.2.1. DirectX settings

You have new settings and fine-tuning possibilities with introducing DirectX.

It has to be emphasized that if the quality of the represented 2D and 3D content is required, you don't need the following mentioned settings modifications or fine tunes.

When the ARCHLine.XP runs on such computer, that supports the DirectX technology, there is a possibility to fine-tune the quality of the displayed content. Fundamentally we can mention two types of settings area in this respect: the representation settings of 2D windows and the 3D windows.

The modification of settings depends on, that which window is active. For example if a 2D (floor plan) window is active, then you can modify that settings belonging to it with opening *Property*.

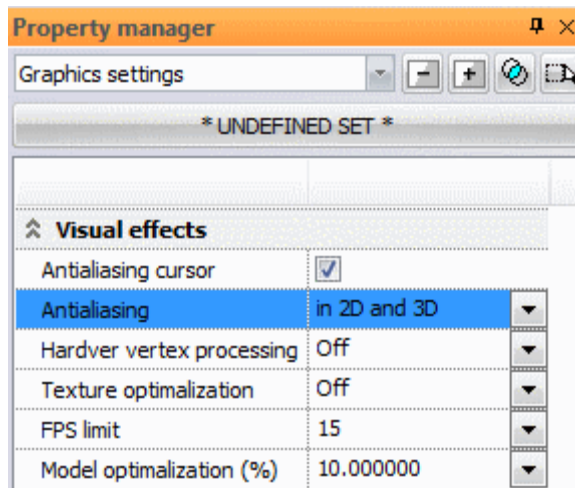
For this click on *Property* on the bottom of *Toolbox*:



It is important not to select any drawing objects in the active window, because in this case the *Property* represents the preferences of the selected object.

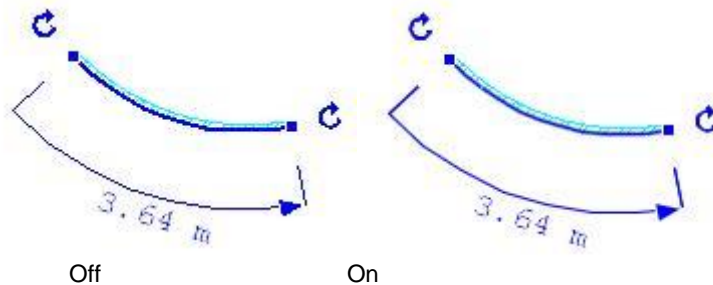
Visual settings in the 2D windows

The available visual effects in the 2D windows are as follows:



Anti-aliasing cursor

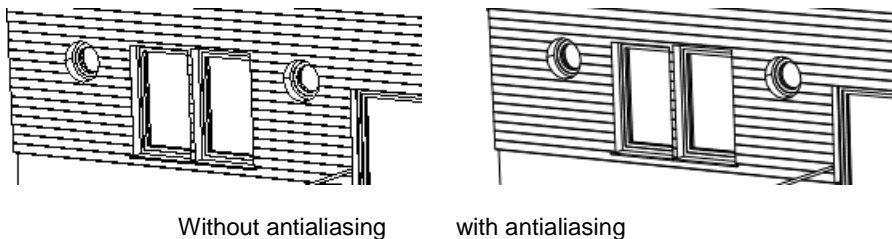
With this option you can apply the antialiasing on the markers. As a result, markers that appear at selection and drawing have a smoother look.



Antialiasing

The antialiasing can be applied to the representation of the content in the selected window types. There are four options:

- ❖ **Off**
The Off setting means that there is no antialiasing. In that case the contents of the 2D and 3D windows look coarser.
- ❖ **Only in 2D**
The Only in 2D setting means that antialiasing is applied only to the content of the 2D (floor-plan) windows.
- ❖ **Only in 3D**
The Only in 3D setting means that antialiasing is applied only to the content of the 3D windows.
- ❖ **In 2D and 3D**
The In 2D and 3D setting means that antialiasing is applied to the content of all windows in the project.



Hardware vertex processing

With hardware vertex processing the video card stores and processes the data of vertices found on the drawings. Since two vertices belong to each line, it is easy to imagine the amount of vertices on a drawing. Hardware vertex processing can speed up your work if you have a fast video card.

Texture optimization

Texture optimization is a useful setting if you have large drawings. Using this setting, the program anti-aliases only the visible content of a window, while the appearance of the content outside the window (which is not visible) is simplified substantially.

This simplification is visible at pan. However, the visible content is refreshed as soon as the pan is finished, and then it looks smooth again.

By enabling the texture optimization it is possible to use the FPS limit and Model optimization (%) options too.

FPS limit

FPS stands for frames per second or we can say images/second. The program tries to represent the content of any windows with the highest speed that it is possible. This speed is expressed in frames per second, which means the number of frames represented consecutively in one second. (When representing a moving model or a video, at least 24 frames/second are needed to make full motion for a human eye.)

When the program detects that it is not possible to keep the limit value, it starts to simplify the representation of the content by texture optimization.

Model optimization (%)

Model optimization (%) is an adjustable checking function. Setting 10% here, for example, means that the program checks whether the specified FPS limit can be kept or not only at that time when 10% change has been made in the project compared to the previous checking. If yes, then it switches off the texture optimization automatically because there is no need of it for increasing the speed. If it finds that the specified FPS limit cannot be kept, then it leaves the texture optimization switched on to increase the speed.

14. Printing

Introduction

ARCHLine.XP offers two kinds of printing opportunities:

I. **Printing the active drawing:**

The program prints out the drawing in the current window using the command *File menu – Print*.

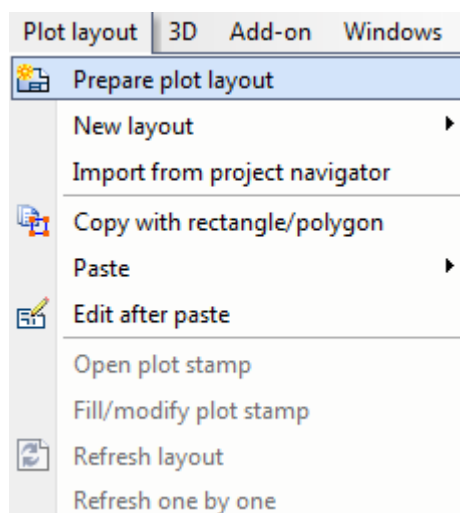
II. **Plot layout:**

ARCHLine.XP divides printing into two phases:

- ❖ The first phase is the **Prepare printing**:
It prepares the files to print. You can set the physical measurements of the plot layout. You can open projects and files and place them on the plot layout and save them as a printing. You can add to the plot layout stamp, north sign, notices etc. The plot layout belongs to the current project; the command save project will save the plot layout as well.
- ❖ The second phase is the real printing, using the command *File – Printing*.

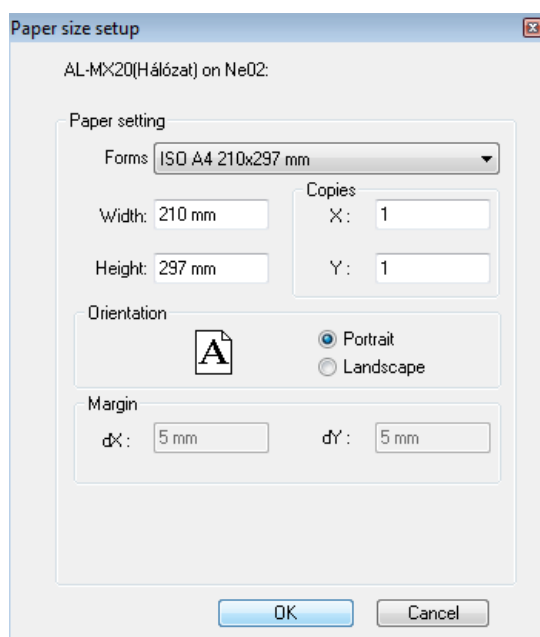
14.1. Plot Layout

ARCHLine.XP offers the environment to prepare plot layout where you can place projects, but independent files as well. The plot layout prepares the right printing with different functions. The plot layout belongs to the current project, as a new kind of window called plot layout. The project can contain several plot layouts in the same time. You find the commands to manage the plot layout in the **Plot Layout menu**.



14.1.1. Prepare plot layout

Select the **Prepare plot layout** command to activate the 'prepare printing' function: The *Paper size setup* dialog box appears



Paper sizes

Define the plot layout size. This format can be different from the current printing format. The user can also define the custom size. The default format is equal to the current paper size of the current printing device, so it is recommended to use.

Orientation

The Orientation setting indicates which way the paper you selected in Paper Size will be oriented.

Margin

The dialog displays the margin values that belong to the current printer driver. They are the absolute minimum; you should not enter values less than these because it might happen that some part of the drawing will be out of the paper printable area.



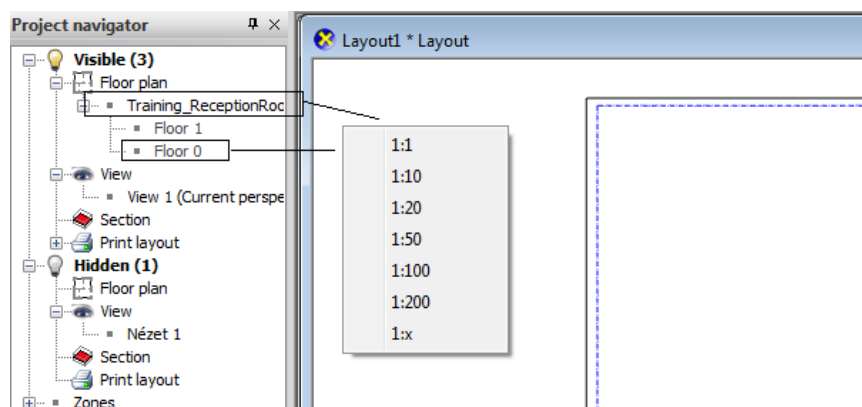
How to calculate a printable area? The dimensions of the printable area of a particular sheet of paper are simply the dimensions of the paper minus the minimum margins required by the printer. The dimensions of the printable area can be calculated as follows: Printable area length = paper length - (top + bottom margins) Printable area width = paper width - (left + right margins)

14.1.2. Project Navigator – Drag and Drop drawings

In the next step the Project navigator will appear from where you can drag and drop the drawings from the previously saved version of the current project.

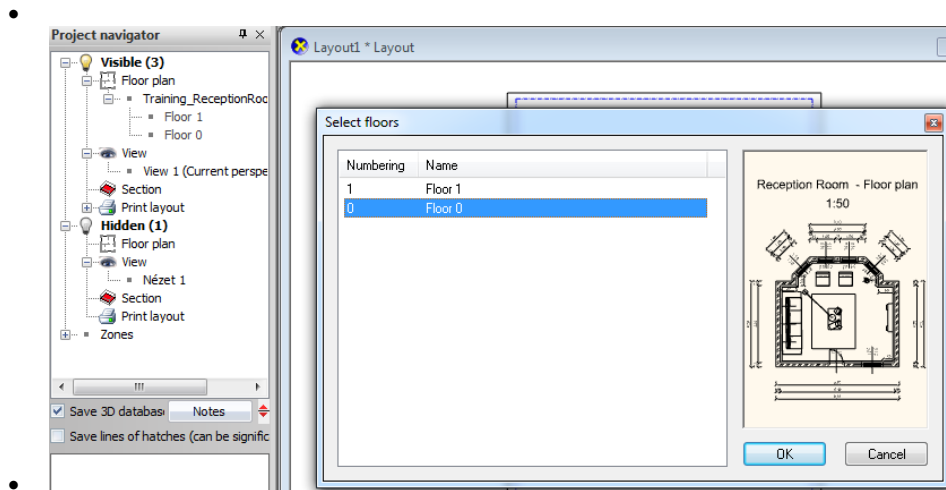
You can place one or more floors in one step if you drag the drawing name onto the printing layout window.

When you dropped the drawing you can set its scale factor.



If you wish to place only one floor, click on the floor plan name and drag it.

If you wish to place more floors click on more floor name while holding the SHIFT button down.



You can add to the plot layout north sign, notices, and images. So you can place the render image you made before of your building.

14.1.3. Import drawing

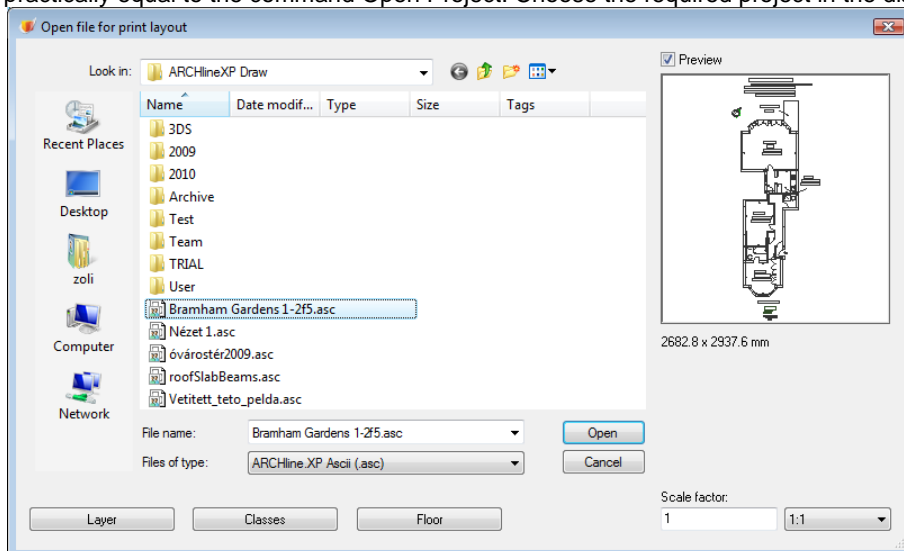
The command loads and places the file on the layout for printing. The file can be part of the current project, any kind of .asc drawing or a drawing of another project as well.

The submenu displays the drawings of the current project. Simply click one of them to place on the plot layout.

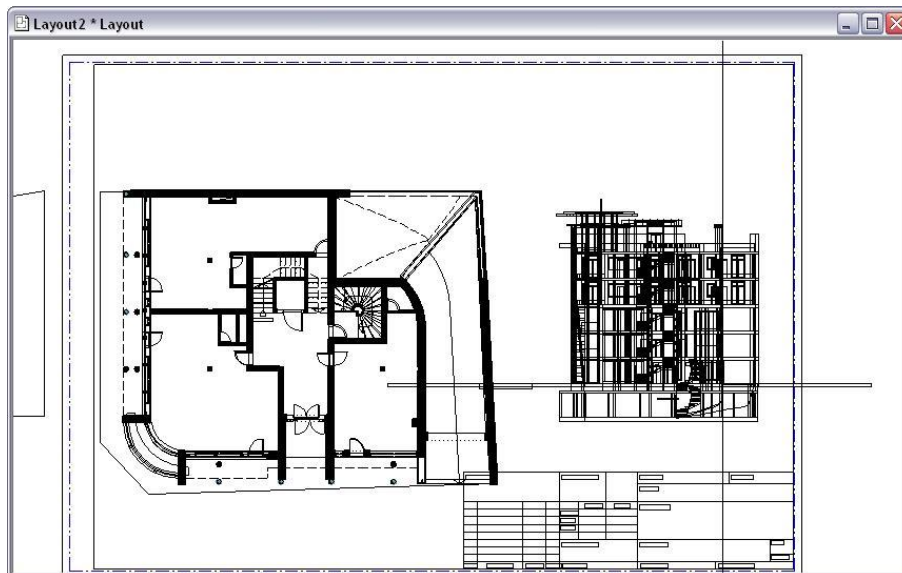


Or:

- When you wish to load a drawing from different project use the command Open file from project. This command is practically equal to the command Open Project. Choose the required project in the dialog. Press the Open button.



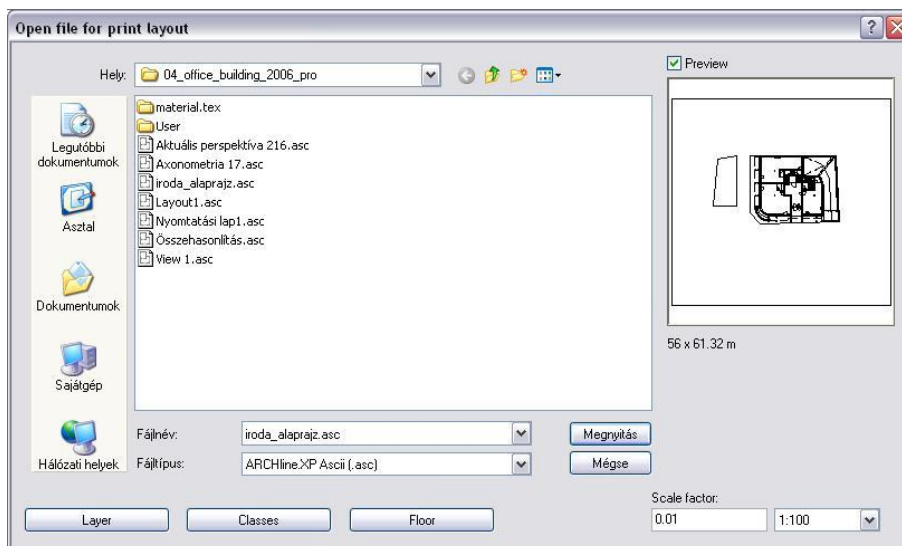
- Define the drawing scale in the dialog.
- Place the drawing on the plot layout. You can place several drawings from a project one by one or you can place the same drawing with different scale factor e.g. 1:100, and 1:200.



14.1.4. Modify properties of drawing

You can modify the properties of a drawing with a left button double click on it. The program displays the Open/Modify new drawing dialog where you can modify the scale factor, floor, layer, and class information.

As an example you can visualize another floor of the building.



14.1.5. Copy with rectangle/polygon

The command is used to copy just a selected part of a drawing which you would like to place on the plot layout. The selection can be defined either by a rectangle or a polygon.

The command differs from the general *Edit menu / Copy* command, because with the *Copy with rectangle/polygon* command the selected part of the drawing is defined by a given borderline in a way that it even cuts the dimensioning, texts of the crossing rectangle/polygon.

After the needed part has been copied, you can paste it on the plot layout in different scales with the *Plot Layout menu - Paste* command.

- Define the two opposite corners of the selection rectangle, or
- Select the **SPOLYGON** option if you would like to define the selection with a polygon.
- Define a reference point, which is going to be used to place the detail on the drawing surface.



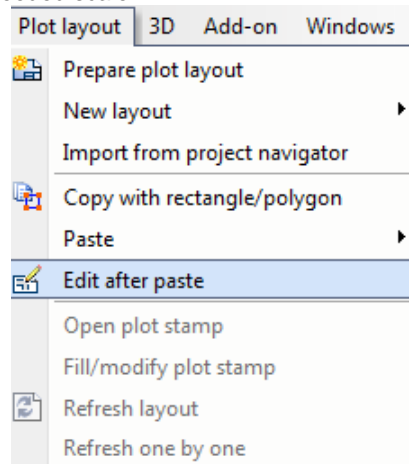
See example at chapter 14.1.6. *Paste on layout*.

14.1.6. Paste on layout

The command is used to place the contents of the clipboard on the plot layout with the needed scale. The advantage of this command is that not only complete drawings (floor plan, frontal view, section, etc.), can be placed, but if the previous

Copy with rectangle/polygon command is used, parts of drawings, details, or only selected objects can be placed on the layout and printed with the needed scale.

- Place the contents of the clipboard (selected with the *Copy – Ctrl+C* command or with the *Plot layout – Copy with rectangle/polygon* command) on the plot layout with the needed scale. The command offers the following scales:

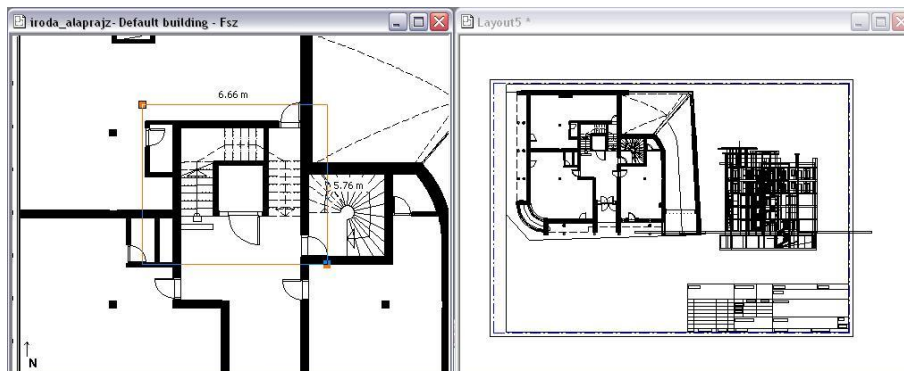


-
- If you would like to define a different scale, select the **Free** command, write the new scale to the appearing dialog then place the drawing on the layout.

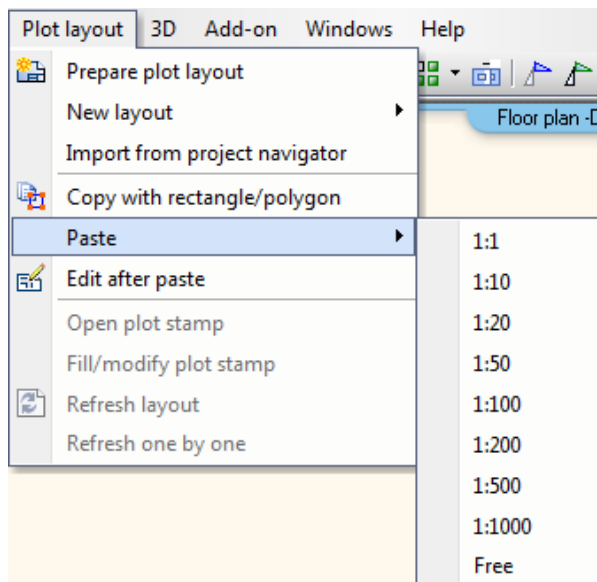
Example

Let's place a part of the floor plan onto the plot layout with the scale 1:50:

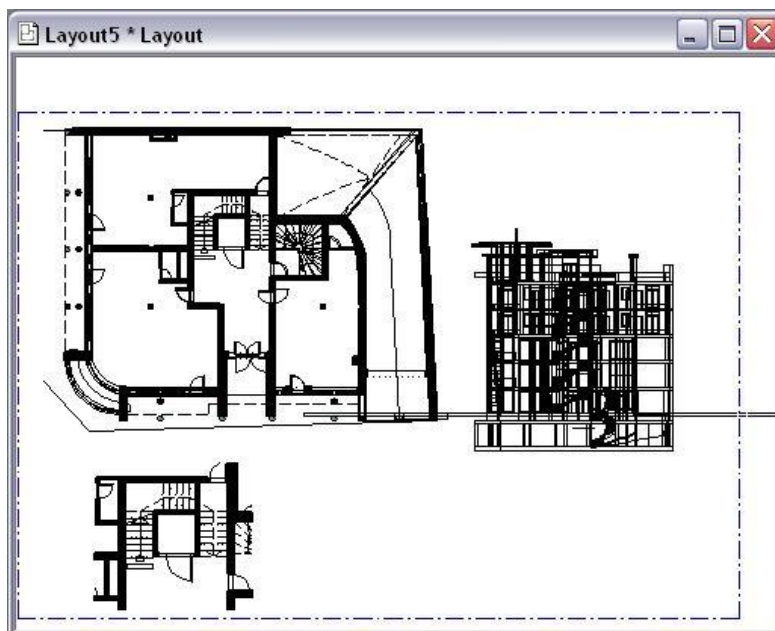
- Be sure the floor plan window is the active one.
- Choose Plot Layout - Copy with rectangle/polygon command.
- Define the two opposite corners of the selection rectangle.
- Define a reference point, as a bottom left point of the selection rectangle.



- Click with the mouse left button to the plot layout window to make it active.
- Choose the *Plot Layout - Paste* command.
- Select the scale 1:50.



- Place the drawing on the layout.



! Please do not use the Edit menu - Copy and Paste commands instead of the *Plot Layout - Copy with rectangle/polygon and Paste* commands.

14.1.7. Edit drawing parts

Introduction

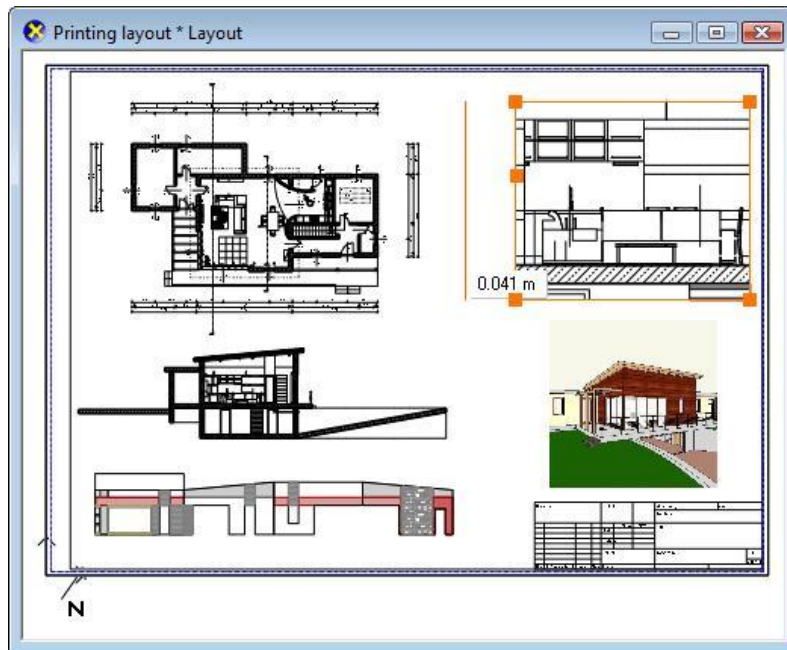
The plot layout developments made in ARCHLine.XP ensures more comfortable and flexible editing when you place drawing parts with different scale.

After paste it is possible to edit the boundary of the drawing parts. During the design work you may need to extend a previously placed drawing part; or to the contrary, you should cut it. This situation can be handled easier by the new plot layout functions.

The command is available in the *Plot layout menu – Edit after paste*.

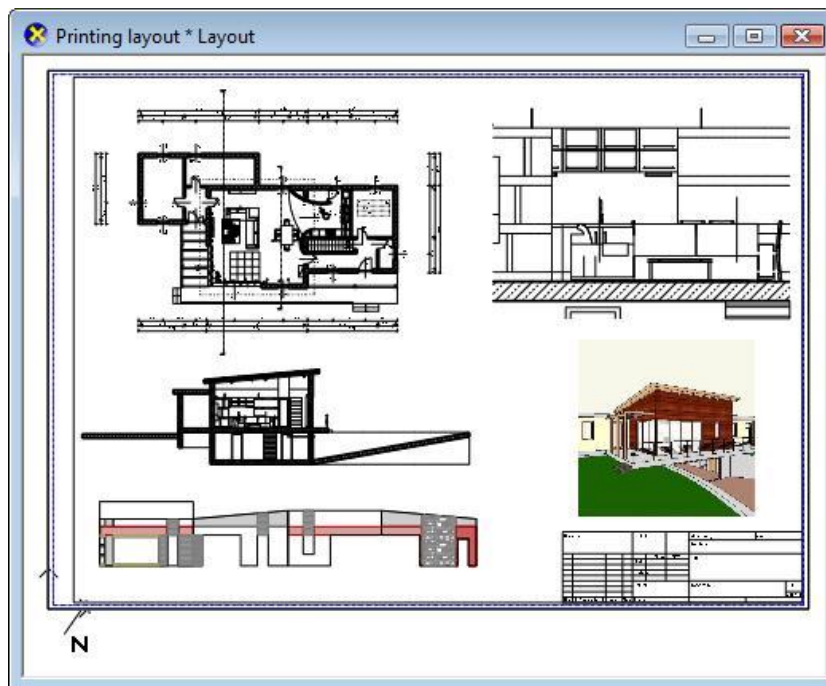
How to use

Assuming that you have a previously created plot layout:



- Select a part of the drawing with the Plot layout menu – Copy with rectangle/polygon command.
- Make the appropriate plot layout window active and then place the previously selected drawing part with the *Plot layout menu – Paste – Scale factor* command.
- Select the *Plot layout menu – Edit after paste* command and select the previously placed drawing part. You can also find this command in the shortcut menu of the drawing part.
- Modify the contour with the *Profile definitions* commands that appear on the left, and then press Enter.

The drawing part is represented on the plot layout with its modified contour:



If the content of the drawing part was changed between the time of placing and the time of its contour modification, the up-to-date state of the drawing part appears after the execution of the command.



The *Plot layout menu – Refresh layout* command updates all drawings on the plot layout.

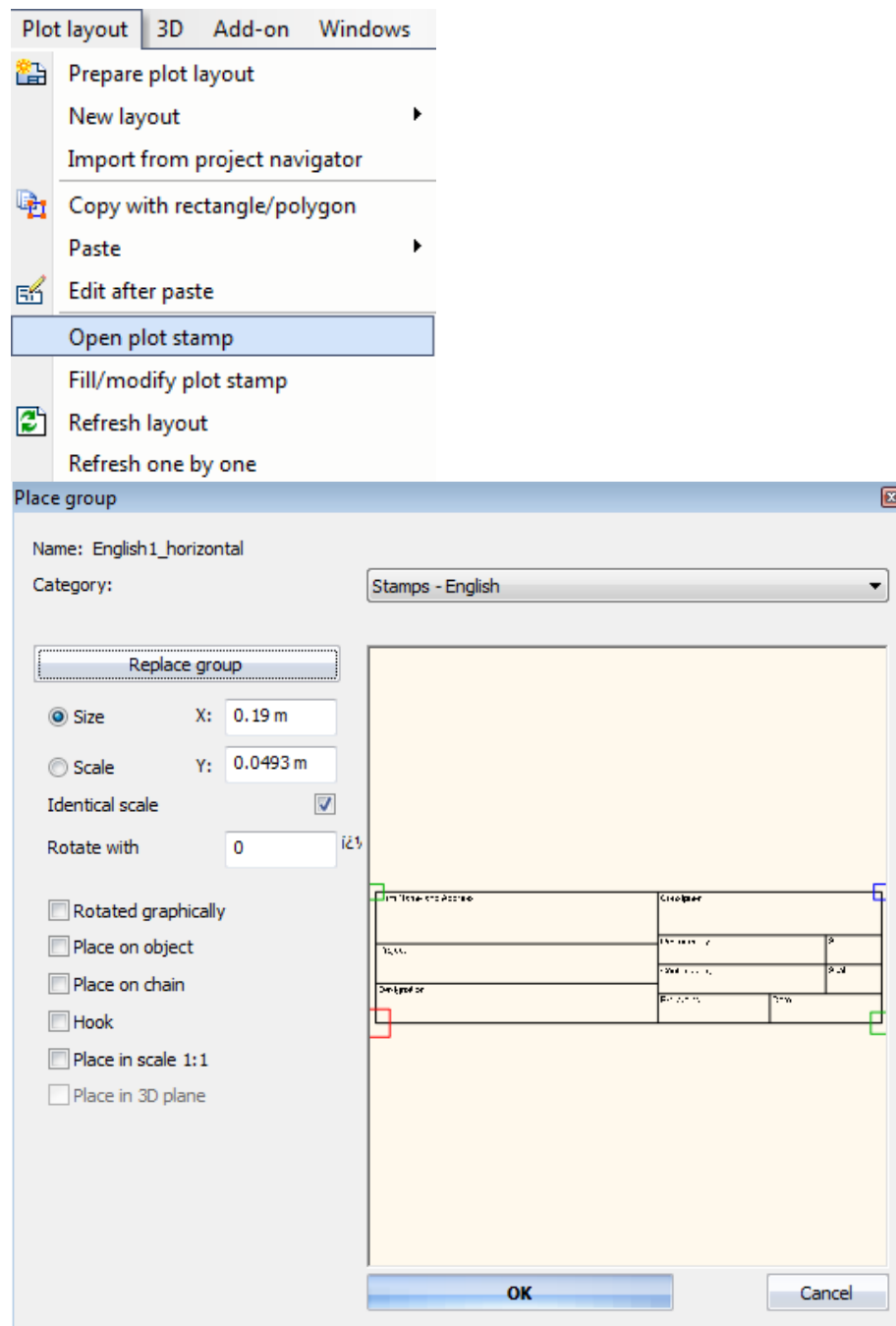


The *Edit after paste* command can be applied only to the drawings that have been placed with the *Plot layout menu – Paste* command.

14.1.8. Open plot stamp

When a plan is completed, plot stamp should be added to them. The command is used to place plot stamp on the plot layout. These plot stamps contain information about the drawing, like the name of the plan, the number of it, designer, scale, etc.

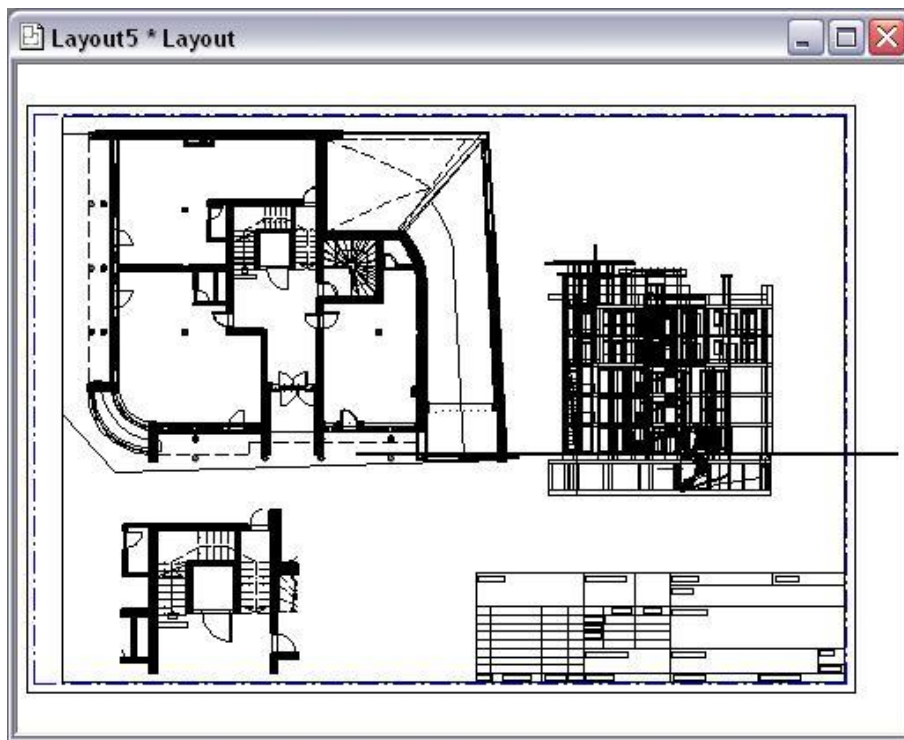
Select a plot stamp from the appearing **Place group** dialog, from the *Groups library– Stamp* category. Select the Stamp file of the program, or the file containing your own Stamp.



- Select a plot stamp. In this example we choose the A3 landscape stamp.
- Define the parameters of placing then press the **OK** button.
- Place the stamp on the Plot layout. Define the origin of the stamp, or select the **ROTATE** option if you would like to rotate the stamp first; then define the place of origin and the angle of rotation.
- **Enter** Close the command



The detailed description of placing groups can be read in chapter 11.9. *2D groups*.



14.1.9. Fill/modify plot stamp

Used to fill in the data of the stamp, or to modify an existing stamp.

- Select the stamp.
- A dialog appears with the data of the stamp.
- Fill in the necessary fields.
- **OK** Close the dialog.



Only the original stamps can be filled with the command. In case of user defined stamps we suggest to use the Text command.

14.1.10. Refresh Layout

The program keeps the relation with the original files; the modifications made on the drawing appear on the layout as well. When the layout has already been created, but you are still working on the project, the modifications are automatically refreshed on the layout when the command is selected.

When the layout contains a drawing that is not a part of the project, the command looks for this drawing on the hard disk and loads and refreshes it.

When you move the project to another computer, the command is not able to find the drawing with the original path, therefore it asks for the new path of the drawing.

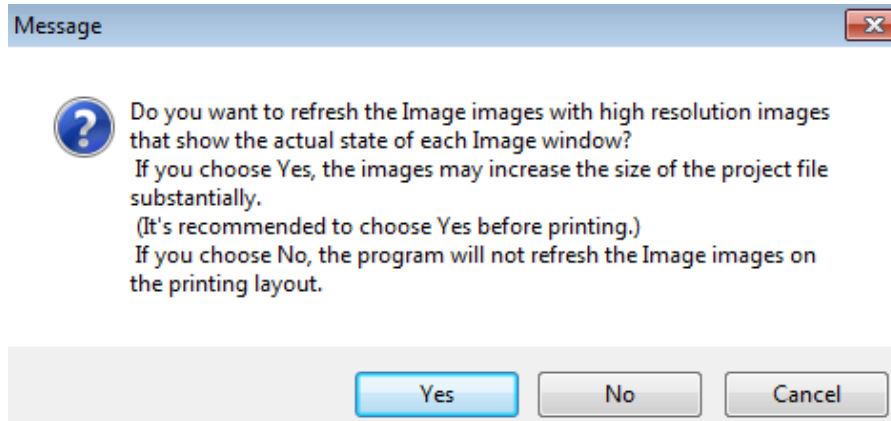
! Attention! Before you execute the Refresh Layout command please save the project because the layout will be updated with the latest version saved on the hard disk'

Placing the Image 3D window content on the plot layout

It is possible to place the content of the Image 3D window on the plot layout. The resolution of the image will be the same as the resolution of the screen.

Before printing, it is suggested to apply the *Plot Layout menu – Refresh layout* command, so the resolution of the image will change to the available best settings.

! The refresh layout resolution means that the image size, together with the project file size, will be increased substantially.



14.1.11. Refresh One by One

Instead of refreshing the whole plot layout in one step, there is now a possibility to refresh a single drawing only by clicking on it with the right mouse button and selecting the Refresh this command.

! New menu object for opening .pef (Printing environment) files from previous ARCHLine.XP versions in the Plot Layout main menu: **New layout / Import layout**

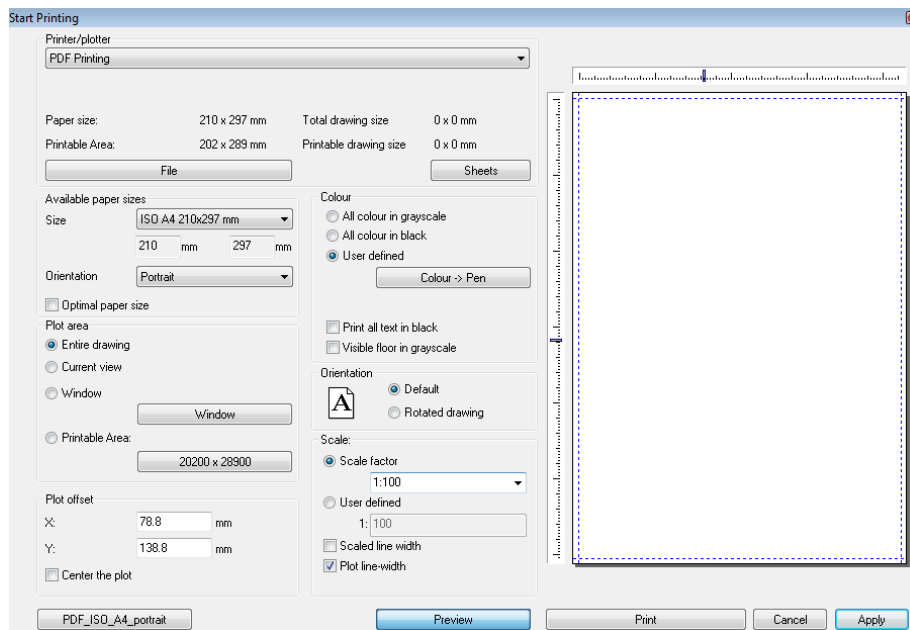
14.2. Print to printer

The Print command enables to print

- ❖ the current drawing, or
- ❖ The current plot layout.

To print to a file, you must configure the target printer or plotter first and define the *Page setup*, just as if you were going to send print output directly to the plotter

The **Print** dialog sends the drawing to the current printing device.



Printer

On the top of the dialog you see the type of the printer the paper size and the printable area. The dimensions of the printable area of a particular sheet of paper are simply the dimensions of the paper minus the minimum margins required by the printer.

You can select here the type of the printer tool.

Set

The Setup button displays the MS-Windows standard Printer Setup dialog.

Here you can set up the printer properties.

If you would like to print in file, switch on the here appearing **Print to file** option.

There values are valid for the current printing only!

If you wish to use your new setup continuously, please use the MS-Windows standard Printer dialog (*Start menu – Setting – Printers*).



We recommend, that define the sheet size and orientation in the below found Paper size part.

Tiling support

Here you can divide the drawing on several pages.

Define the new paper size. You can define a custom paper size as well.

Click OK to return to the Print dialog. The Tiling button displays the number of pages needed in X and Y direction (e.g. *your A4 printer can print an A3 size drawing as 2 pieces of A4 paper, adding the margin!*).



See chapter 14.1.1. *Start prepare printing*.



As you wish to use the default paper size of your printer please choose the DEFAULT object in the Paper size list. Any other choice will indicate you need more than one paper to complete the printing.

Paper size

Define the paper size, orientation and number of copies. According to the here defined values, the paper size and printable area information refresh in Printer part.

Orientation

It's for define the position of drawing. You can select Default or Rotated drawing.



Don't confuse the orientation with paper orientation. The first one means the drawing and the second one the paper sheet.

Window

This area lets you select the optimal enclosing box or the current window size of drawing to print

Plot area

☒ Entire drawing

☐ Current view

☐ Window

☐ Printable Area:

Window

20200 x 28900

Entire drawing

Shows and prints the optimal enclosing box of the drawing.

Window

Shows and prints only a part of drawing that actually appears on the current window.

Print screen

Shows and prints only the selected part of the drawing. When you choose this option the Print dialog closes and the program and activate the drawing to select a part of the drawing with a selection rectangle. Later the program returns to the Print dialog.

Printable Area:

20200x28800

Printable area

Shows and prints only the selected part of the drawing with predefined size.

- First choose a printing scale.
- Choose the paper size.
- When you choose this option the Print dialog closes and the program and activate the drawing to select a part of the drawing with a predefined selection rectangle. It fits to the selected paper size multiplied by the scale factor. Later the program returns to the Print dialog.



We recommend using this option when you print only a part of your drawing!



The *Printable area option* uses the paper settings of default printer. So if you use the paper settings in *Printer* dialog window, or *Rotated drawing* option it gives incorrect result. We recommend in case of *Printable area option* using, set the paper in *Windows – Control panel – Printer settings* window. This problem is not in case of PDF printing.

Scale

You can define the scale factor in the following ways:

Scale

Choose a predefined scale factor:
e.g.: 1:100

The Scale to Fit calculates the best scale to fit the current paper size.

Scale:

☒ Scale factor

1:100

☐ User defined

1: 100

☐ Scaled line width

☒ Plot line-width

User defined

Enter the scale value in the edit box:
1: 15



We recommend using for plot layout the scale 1:1!

Scaled line width

Scales the line width when activated.

Line width active

If the check box is switched **Off** state, all the lines are printed with zero line width. It can reduce the printing time significantly.

If the check box is switched **On**, the program prints all lines with the defined line width.

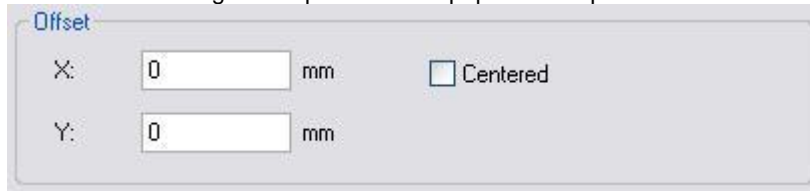
Shift

X and Y

The X and Y fields let you shift the printing origin.

Centre point

It moves the drawing centre point into the paper centre point.



Offset

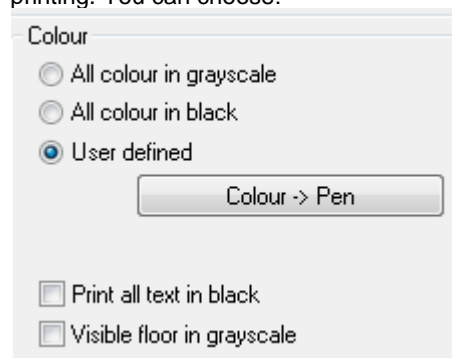
X: mm ☐ Centered

Y: mm

Colour

There are different possibilities for printing. You can choose:

- ❖ **All colour in grayscale**
- ❖ All colour in black
- ❖ User defined
Here you can change colours and associated line width.
- ❖ Print all text in black



Colour

☐ All colour in grayscale

☐ All colour in black

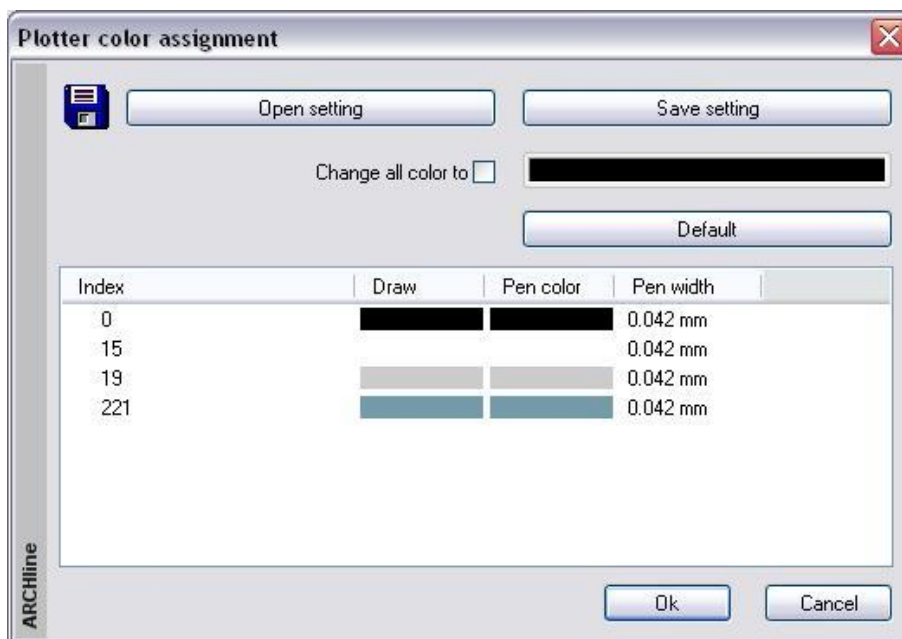
☒ User defined

☐ Print all text in black

☐ Visible floor in grayscale

Pen Colour assignment

In this dialog you can assign to colours of the drawing, another colour and different pen width.



Plotter color assignment

Change all color to ☐

| Index | Draw | Pen color | Pen width |
|-------|------|-----------|-----------|
| 0 | | | 0.042 mm |
| 15 | | | 0.042 mm |
| 19 | | | 0.042 mm |
| 221 | | | 0.042 mm |

ARCHline

You can save your settings with the Save setting button and later you can reload it with the OPEN button. The **Change all colour to** checkbox assigns the same colour to each colour in the list.

Visible floor in grey scale

In the Print dialog window you can find the *Visible floor in greyscale* option at the top right frame. When you turn on this option, you will be able to print out the content of the visible floor too, as you see it on the drawing.

The content of the active floor will be printed out as previously set, and the content of the visible floor will be printed out in plain grey.

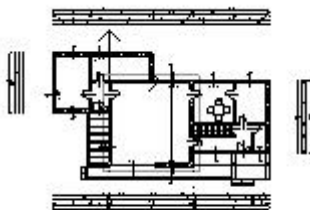
Turn on this option if you want to print out the content of the visible floor as well.

Color

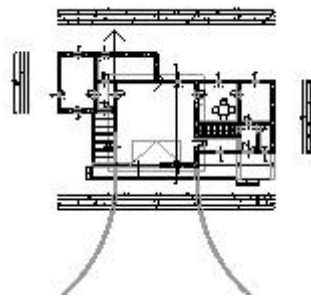
☐ All color in grayscale
☐ All color in black
☐ User defined

Color -> Pen

☐ Print all text in black
☒ Visible floor in grayscale



Visible floor in greyscale OFF



Visible floor in greyscale ON

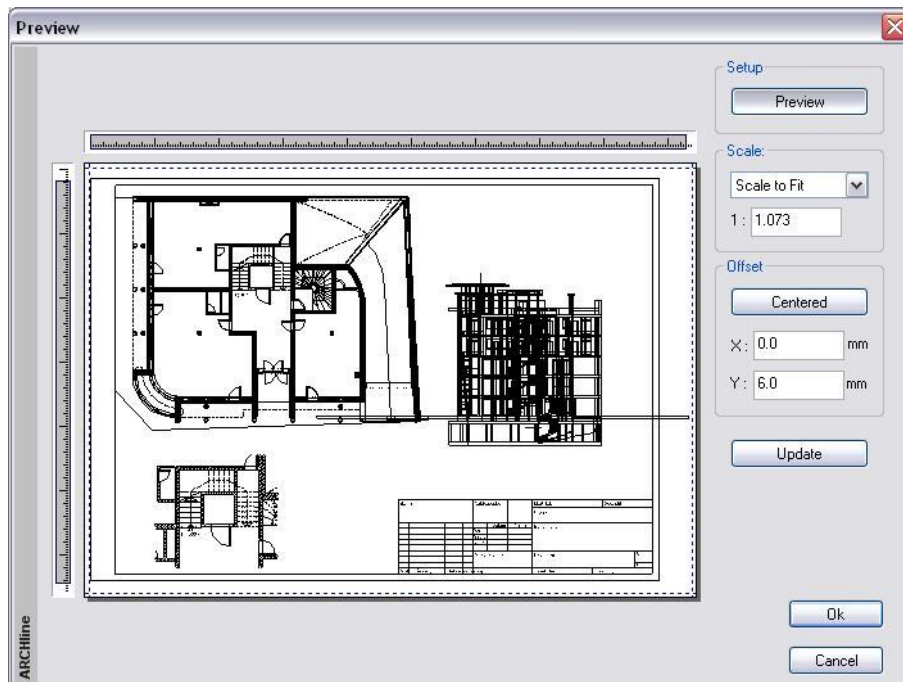
Preview

Preview feature helps you to be ensuring that your print is as you would like it. Then, when you are satisfied, click OK to print.

The white rectangle represents the paper. The drawing size is represented by the grey rectangle. The rulers on the top and side helps you to move the drawing graphically.



If the drawing window exceeds any boundary of the paper size, that part will not be printed!



Preview

Display the print on the screen as a preview.

Scale

You can define the scale factor.

Offset

Centre point

It moves the drawing centre point into the paper centre point.

X and Y

Enter the value in the edit boxes: the X and Y fields let you shift the printing origin.

Update

Update the preview using the latest scale and offset values.

- **Ok** return the Printing dialog window.

Sets

You can save the printing settings to sets, and the sets to template file.



See: description of sets in chapter 3.2.3. Using sets of properties

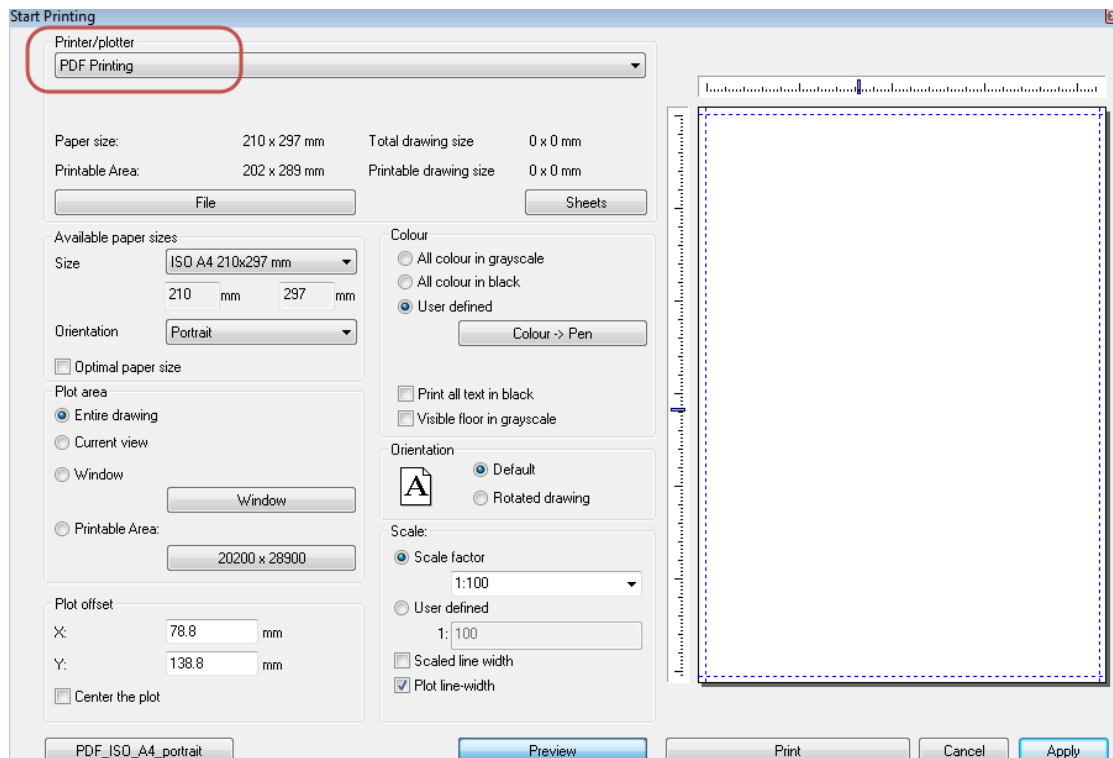
Printing

Start printing clicking on the button.

14.3. Printing directly in PDF format

Printing in PDF provides industry-standard solution to publish the document in the popular PDF file format.

- For printing in PDF format please select the *File menu – Print to PDF* command.
- If you select the *File menu – Print* command, switch on the *Print to PDF* option in dialog window.



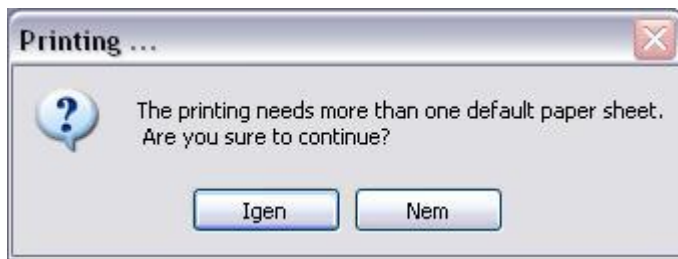
- Define the file name. The file extension will be .pdf. This file can be viewed or printed on any computer with a PDF viewer.
- Specify the size of the paper. Custom size is also selectable (choose Custom from the list). In that case you can specify the size in *Horizontal* and *Vertical* input fields.
- To specify the paper orientation, choose portrait or landscape in the *Orientation* list.
- File name and path can be specified by clicking on the *File* button.

Tiled pages

If one page is not enough to print out the drawing in the specified size, you can print out the whole drawing on tiled pages by specifying the size of the printing page in the *Paper size setup* dialog, for example A3 landscape.

On the *Tiled pages* button you can check the number of pages you need for printing.

The following message appears when you start to print:



In case of tiled pages extra PDF documents will be generated automatically. The extra PDF files are identified by numbers added to the end of the specified file name. For example, if the file name is *Printing_example.pdf* and you need 4 pages for printing out the drawing, 4 files will be created with the following names: *Printing_example.pdf*, *Printing_example2.pdf*, *Printing_example3.pdf* and *Printing_example4.pdf*.

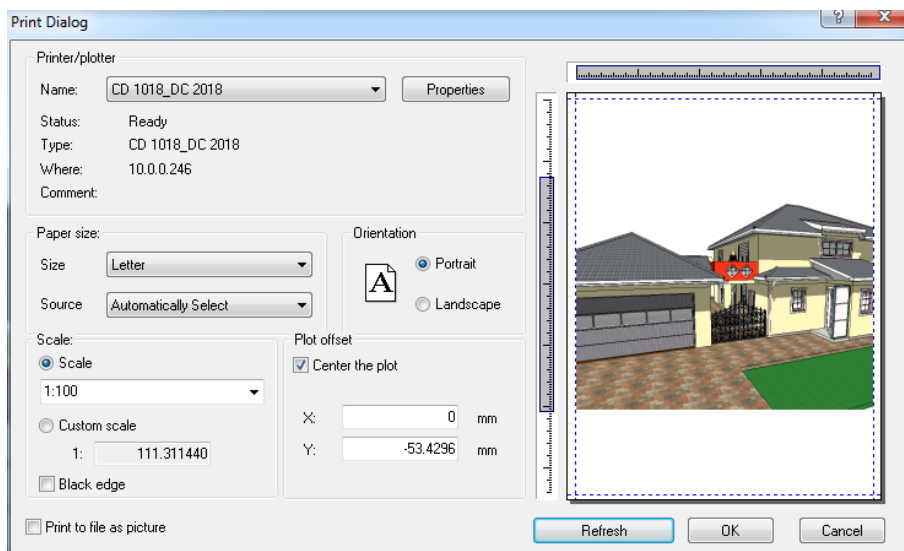
14.4. Printing the Image 3D image window

Print directly

It is possible to print out the Image 3D image window, or to save it as an image file.

- Activate an Image window.
- Select File menu – Print.

The settings are analogous to the general printing dialog, with fewer possibilities.



Print to file as picture

The program saves the content of the Image 3D window as a jpg image file. The image can be printed out afterwards.

Print to Pdf file

If you select the *File menu – Print to Pdf* file command, a similar window will appear as the previous, where you have to define the name of PDF file. There is a possibility to set the image resolve.

We recommend scaling the 1:100 (In case of 1:1 the file size will be too large.)

Placing the Image image window on the plot layout

It is possible to place the content of the Image window on the plot layout. The resolution of the image will be the same as the resolution of the screen. Before printing, it is suggested to apply the *Plot Layout menu – Refresh layout* command, so the resolution of the image will change to the best available settings..

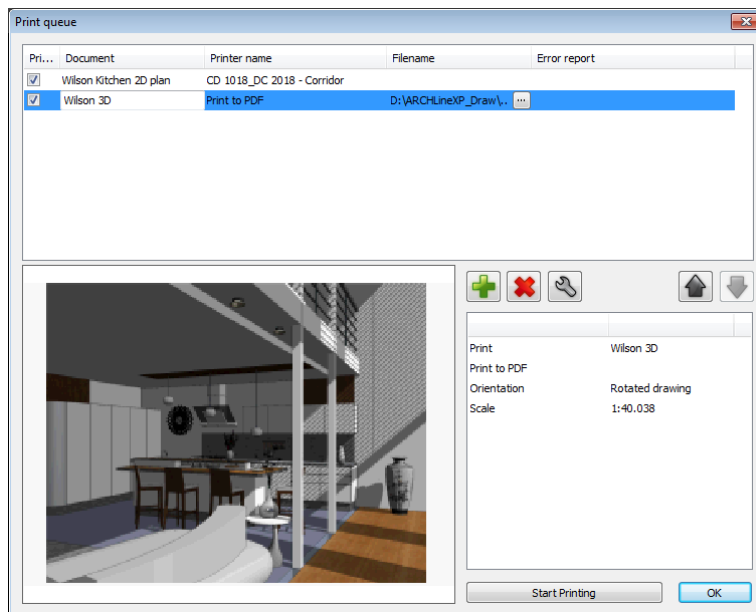


The refresh layout resolution means that the image size, together with the project file size, will be increased substantially.

14.5. Print queue

The Print Queue dialog lets you collect upcoming print documents. You can add, modify and cancel documents before they print. You can print the documents as one PDF file with multiple pages or you can print directly to the selected printer.

The Print queue list is stored in the project, which means you can collect print jobs of multiple drawings of your project into the same list.



The Print queue dialog has an actual job list, a preview area, a settings area and a controller area.

14.5.1. Current job list

The current job list is at the very top of the dialog, and it is empty by default. When a print job is added it will be listed in this area. A print job has the following properties:

- Printable
- Document
- Printer name
- Filename
- Error report

Printable

You can use the Printable option in the Current job list to enable or disable the printing of a print job.

When you add a print job to the list, this option is enabled by default. If you do not want to print the selected print job, but you want to keep it in the queue just disable this option. When the print queue is started to be processed all disabled print jobs will simply be skipped.

Document

The document field of the selected print job shows the name of the document. You can easily rename it at any time.

Printer name

The Printer name shows the name of the printer that will be used to print the selected print job.

If you selected the Print to PDF option you will see the Print to PDF text here.

Filename

If a print job is selected to be printed into a PDF file, the name of the file is represented here.

Error report

If there was an error at processing the print queue you will see the error report message in the Error report field.

14.5.2. Print preview

The Print preview shows the preview of the selected print job. The quality of the print preview is usually lower than the final result.

14.5.3. Print job information

The Print job information list shows information about the selected print job, such as the print size, orientation and scale of the printed drawing.

14.5.4. Controllers

The Print queue dialog has a few controllers which allow you to modify the print queue by adding or removing a job or changing their execution order.

Add print job

You can add the current active drawing as a new print job to the print queue by pressing the Add print job button.

If you would like to add another drawing to the print queue please press OK on the Print queue dialog, activate the drawing you wish to add, open the Print queue dialog again and press the Add print job button.

Remove print job

You can remove the currently selected print job from the print queue by pressing the Remove print job button.

Print job details

The Print job details button allows you to modify details of the currently selected print job such as: Paper size, printer, orientation, and scaling or pen settings.

Move up

The print queue is ordered by print priority. This means that the list that you can see is the actual printing order. The first object of the print queue will be printed first and the last object will be printed at last. If you press the Move up button, the selected print job will be moved up one level in the print queue.

Move down

The print queue is ordered by print priority. This means that the list that you can see is the actual printing order. The first object of the print queue will be printed first and the last object will be printed at last. If you press the Move down button, the selected print job will be moved down one level in the print queue.

14.5.5. Start printing

The Start printing button starts the print queue based on the current order. Print jobs will be sent to the printer (or printers) you set and PDF files will be saved and automatically open when the printing is done.

15. Add-On

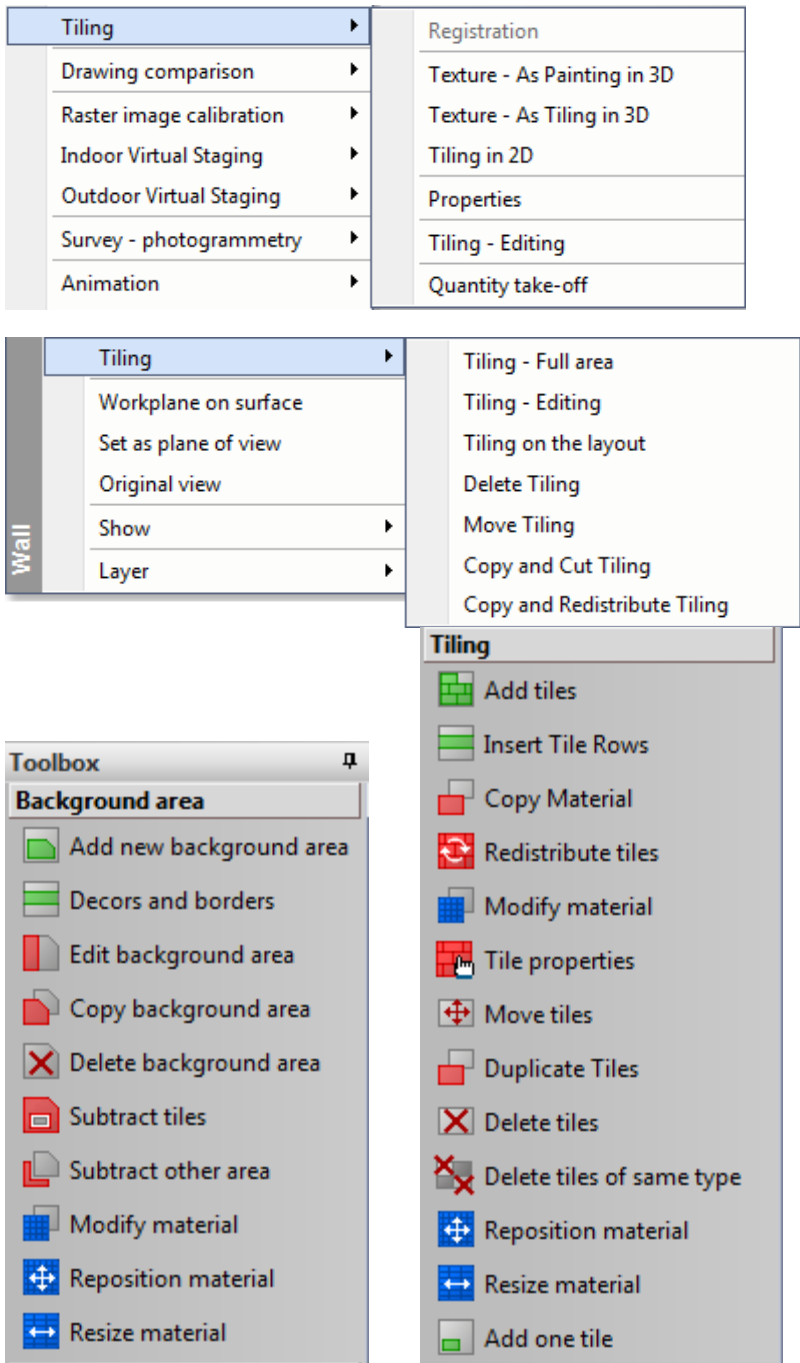
15.1. Tiling

The *Tiling* function can be used on any surface designing the real arrangement of tiles and paving.

Tiling layout definition means that the distance between the tiles and the direction of them have to be defined. The pattern given out by them can also be defined. Inside an area covered by tiles it is possible to define another background area with arbitrary shape and different pattern.

You can insert individual tiles too.
The quantity take-off reports the number of tiles grouped according to the whole and cut size.

To define new tiling use commands of the *Add-On menu -- Tiling* or *3D objects Popup menu – Tiling....*

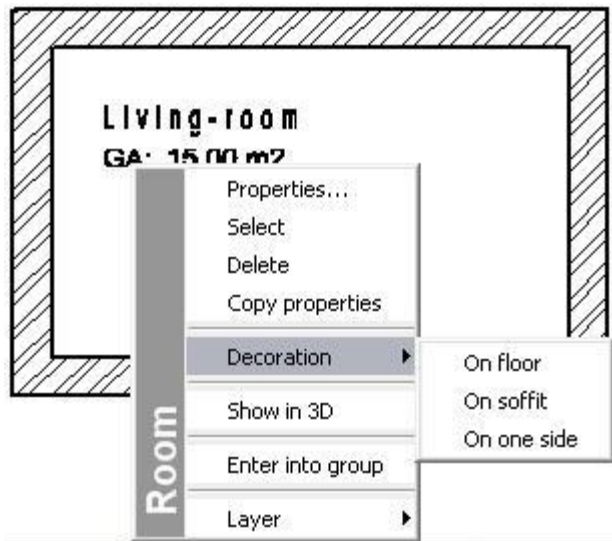


Room book

Decoration layout can be added to the floor, to the ceiling or to any sidewall of a room through its room book.



Note that you can add decoration to these surfaces only if a room border surface template is attached to the room book. About Room border surface templates see the chapter 9.5.1.5. Border surfaces.



The difference between the decoration added to the sidewall of a room and the sidewall decoration added through a room book is that in the first case the decoration will be defined along the full wall length, whereas in the second case only a part of the wall defined by the wainscot of the sidewall will be decorated.

Apart from this the decoration layout definition works like for any other objects.

New tile

Decoration definition consists of two phases.

Background area definition

Tiling

To decorate a surface of a wall/slab/room book/terrain, click on the object by right mouse button. Select one of the Tiling... commands in the shortcut menu. If you have selected the Tiling In 3D, Slab/Tiling on Floor or Slab/Tiling on Ceiling command, you can start the decoration immediately, otherwise the program first creates the layout of the selected area and you have to place it on the drawing.

Once the surface to decorate is selected, a number of decoration commands appear in the Toolbox. You can start the decoration by selecting one of them.

You can close the decoration process by selecting the "Close" command in the Toolbox or pressing the ESC or ENTER key. Use the "Close and remove layout" command instead of "Close" if you do not want to keep the decoration layout on the drawing.

15.1.1. Tiling Properties

Before starting the tiling, set the global properties. Click on *Add-on Menu - Tiling - Properties* command.

15.1.2. Background area

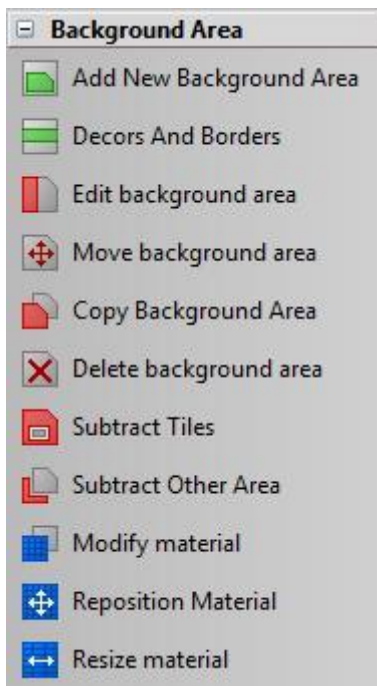
You can assign new material to the selected face of a wall or slab with the help of a contour. In this way it is simple to create for example a plinth or other decoration that can be well presented on the photorealistic image. If your decoration includes only homogeneous materials then your decoration is complete with the background area definition.

You can also use the created background area for the grounding of tiling. The material of the background area is important, because it defines the material representation of the gap between tiles. Additionally, the shape of the background area defines the surface geometrically where the distribution of tiles will apply (See later: Tiling).



Tiles can be placed only on those areas where the background has already been defined.

With the help of the available options background area can be added, edited or modified:



For the last three commands see the details in chapter 15.1.22. *Modify Material*

15.1.3. Add New Background Area

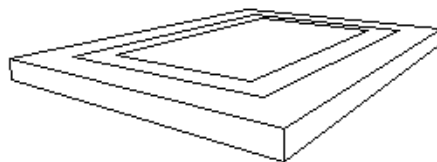
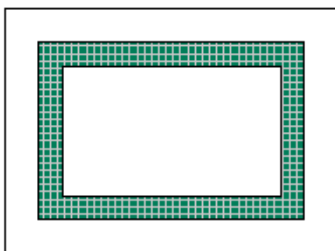
- Select the Add New Background Area command in the Toolbox.
- Define the profile of the decoration using any option in the *Toolbox – Profile definition tool*.
From the appearing *Material* dialog select the material that will belong to the closed contour.



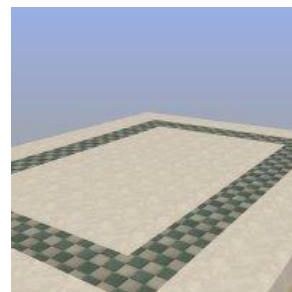
See the details of *Profile definition* in chapter 8.9. *Specifying profile*.

In case of decorating a floor or ceiling select the **ROOM** option instead of defining the profile, if you want to assign new material to the entire floor (top face of a slab) surrounded by the walls.

Decorations appear both on the wall layout, 3D view and on the photorealistic image.



Don't be confused! The pattern you see on this drawing is only a background area used as decoration. Define a background area according to the glue line material used for tiling if you want to place tiles on this background area.



15.1.4. Decors and Borders

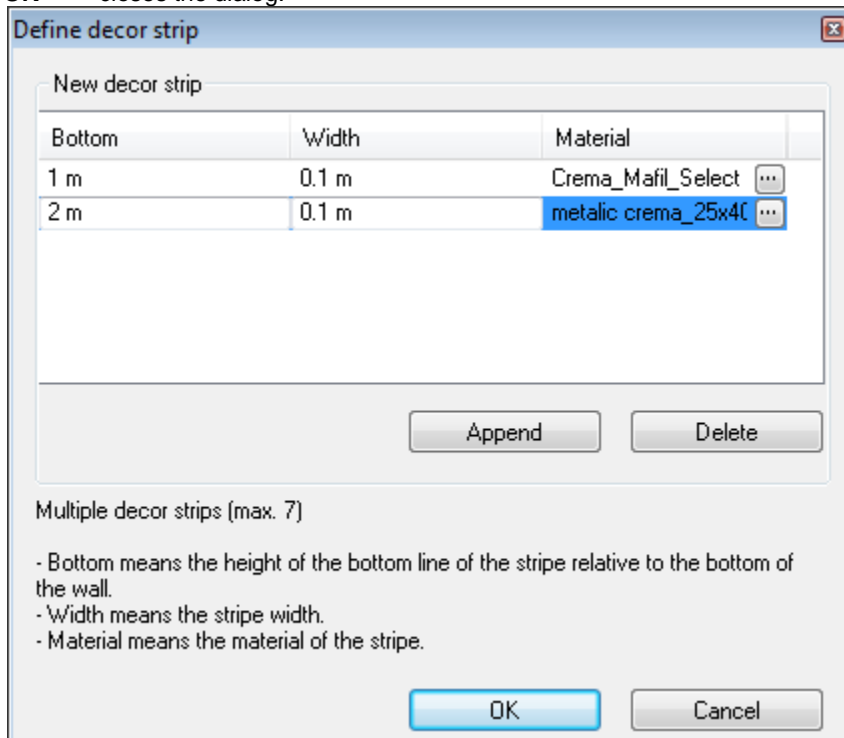
This option can be used for wall side only. More decor stripes can be defined to the selected wall surface (max 7).

- Select the Decors and Borders command in the Toolbox.
- The *Define decor strip* dialog appears.
- Define the height of stripe bottom from the bottom of the wall.

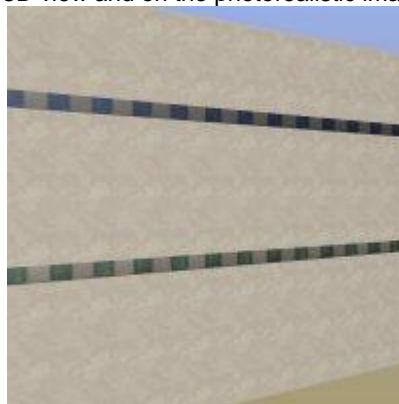
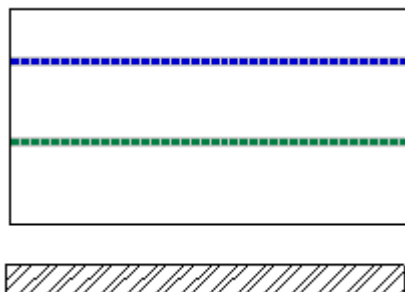
- Define the width of stripe counted from the bottom of it.
- Select the material of stripe.
- Press the Append button if you need to create more stripes on the wall. Stripes already existing appear in the list. Select one and modify if it is needed.

The selected stripe can be deleted by the Delete button.

OK closes the dialog.



Decor stripes appear both on the wall layout, 3D view and on the photorealistic image.



Don't be confused! The pattern you see on this drawing is only a background area used as decoration.

Define a background area according to the glue line material used for tiling if you want to place tiles on this background area.

15.1.5. Edit Background Area

- Select the Edit Background Area command in the Toolbox
- Select the contour you want to edit.
- **Enter** to close the selection.
- Select from the appearing Edit Profile tool (move node, rounding, etc.) and modify the selected contour.



See the details of Profile editing in chapter 8.9.9. *Editable profile*.

15.1.6. Move Background Area

- Select the Move Background Area command in the Toolbox
- Select the areas to be moved.
- **Enter** to close the selection.

- Give the reference point of the contour and move it to its right place.

15.1.7. Copy Background Area

- Select the Copy Background Area command in the Toolbox
- Select the areas to be copied.
Enter to close the selection.

Give the reference point of the contour and move it to its new place.

15.1.8. Delete Background Area

- Select the Delete Background Area command in the Toolbox
- Select the areas to be deleted

Enter to close the selection.

15.1.9. Subtract Tiles

If individual tiles are defined on an existing background area you can subtract the area of them from the surrounding pavement area.

- Select the Subtract Tiles command in the Toolbox
- Select a background area
- Select tiles

Enter to close the selection.

You can leave “gaps” between the area and the tiles by selecting the **Offset** option while selecting the tiles and entering an offset value. This way the program shifts the profile of the tiles with the given value and subtracts these increased areas from the background area.

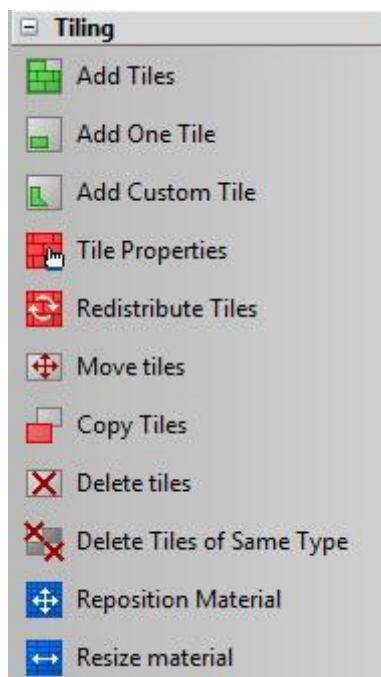
15.1.10. Subtract Other Area

Similar to subtracting tiles, you can subtract other background areas from an area, too.

15.1.11. Tiling

You can create the arrangement of tiles on the previously defined background area - on the surfaces of architectural objects. The material, type, size of tiles and gaps between them can be defined precisely here.

Select from the following options:



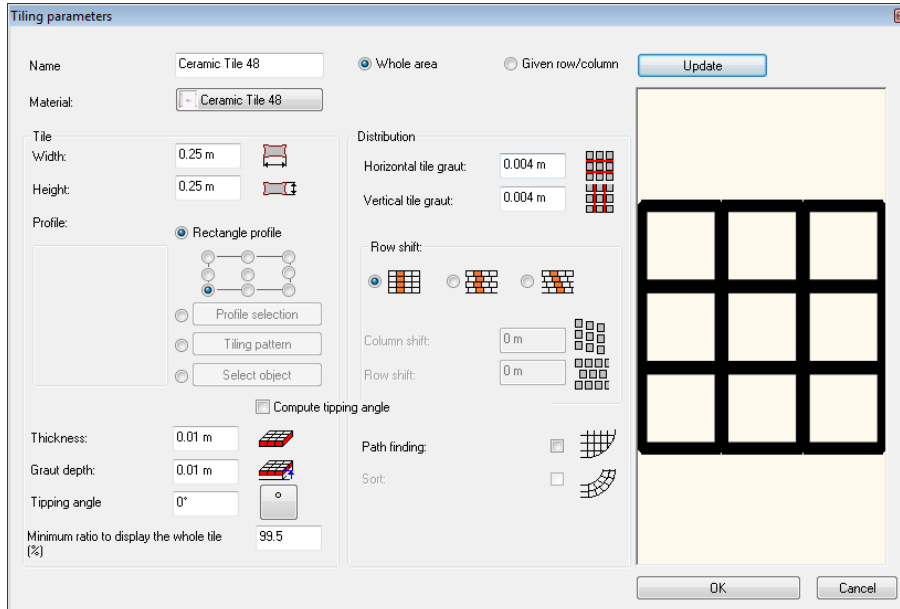
For the last two commands see the details in chapter 15.1.22. *Modify Material*

15.1.12. Add Tiles

With the help of this command you can define the regular arrangement of tiles on the selected background areas.

- Select the **Add Tiles command** in the Toolbox.
- Select a background area to define the tile arrangement on it or click on the *Full* option to place tiles on the whole surface of the architectural object.

The following dialog appears:



Name

Give the name of tile of the selected background area.

Material

- Define the material of the tiles by clicking on the button, select from the material library of the program.

Given row/column

- If you wish to cover only a part of selected area with tiles, type the number of rows and columns. If you want to cover the entire area, click on Whole area.

Whole area

- If you wish to cover the entire area, activate this button.

Width / Height

In the fields define the box size that surrounds the tile. Give the size of the tiles: type the width and height values. You can resize tiles with custom profile or complex tiling patterns by changing these values, too.

Profile

The default shape of tile is rectangular, but any other profiles from the program profile library can be used or you can cover the selected area with a complex Tiling pattern previously created of several unique tiles.

Define the type of the profile of the tile:

- ❖ Rectangle profile – If you select Rectangle profile, define the reference point of placement of the rectangle tile.
- ❖ Profile selection – Click on the *Profile selection* button and select the adequate profile from the Profile library if the profile is not rectangle.
- ❖ Tiling pattern – Click on the *Tiling pattern* button and select a complex pattern from the library.
- ❖ Select Object – Click on the *Select Object* button and select an object from the library for tiling.



See the details of creating a *Tile pattern* in chapter 15.1.29.

Thickness

Define the needed width of tiles.

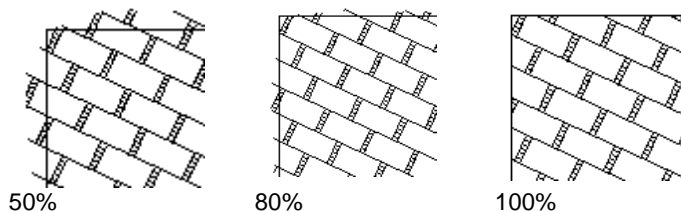
Raising from selected surface

- Define the raising value of tiles measured from the background area. If 0 is defined, the tiles will be placed exactly on the surface.

Represent whole-size tiles (minimum ratio to display the whole size of the tile)

If the size of the cut tile is above a certain % of the original tile size, the program counts it as an entire one. The aim of this option is the practical approach when we represent nearly whole tiles as a whole one in the list of tile calculation.

In these examples we intentionally used extreme values for better illustration.



Horizontal / Vertical gap

- Define the distance between the tiles in horizontal and vertical directions. The gap will be presented with the material of the background area.

Row shift

Select from the three graphical options:



There is no shifting between rows; the tiles are matched to each other by their corners precisely.



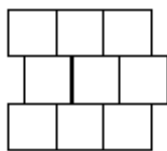
If the button is switched on you can define the value of horizontal row shift. Every second row will be shifted with this value from the first one.



If this option is selected, you can define horizontal and vertical shift values in the *Row shift / Column shift* fields.

Row/column shift

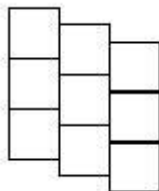
- Define the horizontal and vertical shift values of the tiles. The fields become active if the relevant options had been selected first



Example 1: (tiles: 0,3x0,3)



, Row shift: 0,1



Example 2: (tiles: 0,3x0,3)

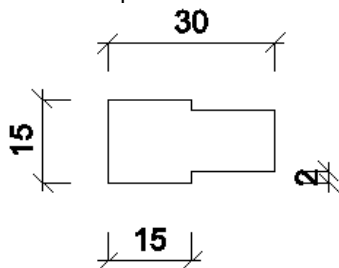


, Column shift: 0,1

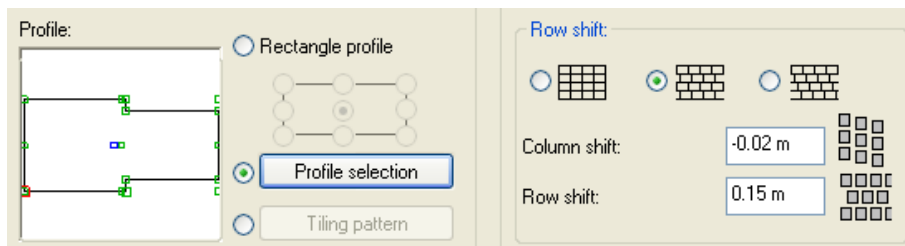
Row and column shifting Example

There is a possibility to remove every second line X and Y direction in the Single piece parameters window. You can use well this command at for example: placing Viacolor cover.

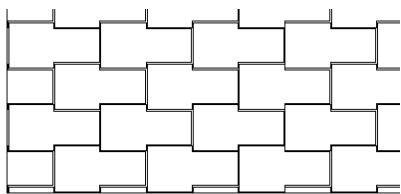
In our example we use the following profile:



- Choose the proper profile in Single piece parameters dialog box.
- From the Row Shift options select the second one.
- Enter -0, 02 in the Column shift field, and 0.15 in the Row shift according to the profile.



The program will move exactly the tiling considering the gap thickness.



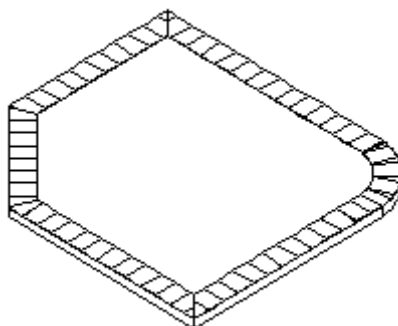
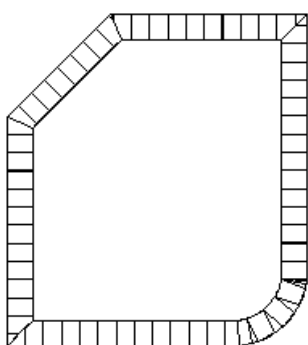
Path finding

If this option is switched off, the program will not take the contour of the area into consideration so the tiles will be arranged in a homogeneous pattern along the path.

If this option was activated there is possibility to place tiles along a path. This function is important because by this you are not restricted to align subsequent tiles only to the vertical edges of the tiles but even to a curved path.

At placing you have to define the start point and the end point of the path to which the path finding applied. In case of closed path like on the figure below the start point and the end point can be the same so the path finding will be applied along the whole contour. In case of path finding the number of rows has to be defined. Opposed to the default case when zero row and column numbers mean full coverage, row number of zero means one row here. The number of columns depends on the path.

For example:



| | | | | |
|-----------------|--------------------------------|---------------|-------------------------------------|--|
| No. of columns: | <input type="text" value="0"/> | Path finding: | <input checked="" type="checkbox"/> | |
| No. of rows: | <input type="text" value="1"/> | Sort: | <input type="checkbox"/> | |

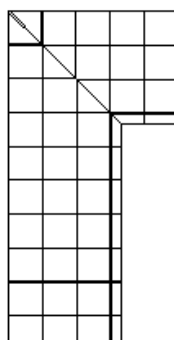
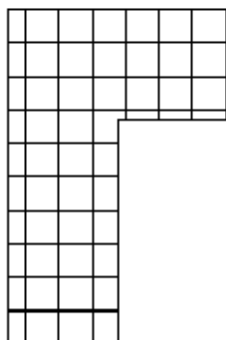
Cutting the tiles in corners

It is also possible to cut the tiles in corner according to the figure above. If the Path finding option is switched on the Minimum angle in corner to cut tiles with the half angle option will appear. You have to specify an angle here. If the angles of connected edges at path breakpoints exceed the specified angle the program will cut the tiles in half angle.

Let's see an example:

The edges meet in the corner in right angle and the specified minimum angle is 90°. In this case half angle cutting rule won't be applied therefore the tiles in the corner go to the edge without cutting.

If the edges meet in the corner in right angle and the specified minimum angle is less than 90° (for example 45°), the program will cut the tile in half angle of the corner.

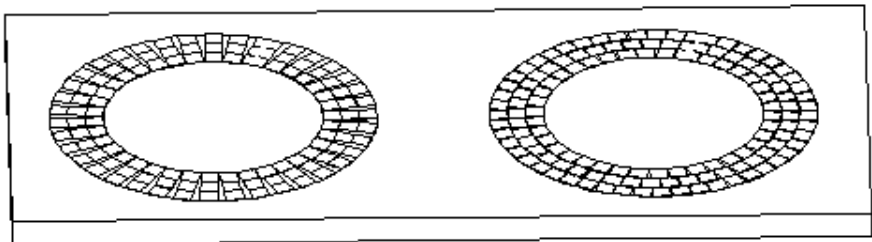


Minimum angle in corner to cut tiles with the halfangle

Minimum angle in corner to cut tiles with the halfangle

Sort

If the Path finding option is active, by switching on the Sort option you can precisely adjust the tiles to each other within the path. In the figure below on the left side the decoration tiles are sorted so they are adjusted to each other. On the left side the tiles are not sorted along the path.



OK to close the Single piece parameters dialog box.

- To place the decoration, please define the start and end point of the path if the Path finding option is activated.
- Place the pavement on the background area with its reference point.
- Define the direction of it by the cursor, or select from the options :

| | |
|------------------|--|
| XANGLE | Define an angle for the rotation. |
| GRAPHICAL | Define the angle by the endpoints of the sides of angle. |

- Define a new material for pavement in the reappearing *Single piece parameters* dialog, or

Cancel terminates the command.

15.1.13. Add One Tile

This command is the simplified version of *Add Tiles* command. With the help of this one piece of tile can be placed easily. It doesn't need any background area.

- Select the Add One Tile command in the Toolbox.
- The Single piece parameters dialog appears.



See the details in chapter 15.1.13. Add Tiles.

15.1.14. Add Custom Tile

With the help of this command you can place custom tiles on the selected background areas.

- Select the Add Custom Tile command in the Toolbox.
- Define the profile of the tile using any option in the *Toolbox – Profile definition tool*.



See the details of *Profile definition* in chapter 8.9. *Specifying profile* (in manual).

The following dialog appears:

| Name | Property | Modify |
|---------------|------------------|-------------------------------------|
| Name | Creamy - Mustard | <input checked="" type="checkbox"/> |
| Tile material | Creamy - Mustard | <input checked="" type="checkbox"/> |
| Tile width | 0.500 | <input type="checkbox"/> |
| Tile height | 0.500 | <input type="checkbox"/> |
| Thickness: | 0.005 | <input checked="" type="checkbox"/> |
| Grout depth: | 0.005 | <input checked="" type="checkbox"/> |
| Direction | 0.000 | <input type="checkbox"/> |

Image

| | | |
|--|-------------------------------------|--------------------------|
| Image rotation relative to tile | 0.000 | <input type="checkbox"/> |
| Image width | 0.000 | <input type="checkbox"/> |
| Image height | 0.000 | <input type="checkbox"/> |
| Image rotation equal to tile direction | <input type="checkbox"/> | |
| Image width equal to tile width | <input checked="" type="checkbox"/> | |
| Image height equal to tile height | <input checked="" type="checkbox"/> | |

☒ Modify only the selected piece
☐ Modify all pieces with that type in this tiling
☐ Modify all pieces with that type in all tiling

Clipping border

☐ No
☐ Total clip
☐ User profile

Profile selection

OK Cancel

- Similarly to the *Create single pieces* function, you can give the names of tiles in this dialog; you can assign material to them from the program material library.
- Besides you can define the thickness of tiles and their raising from the background.
- Finally you have to define the *Clipping* border. Choose from the following options:

| | |
|---------------------|---|
| No | The whole selected area is going to be used. |
| User profile | The new pavement can be defined by an individual profile. By this you can cut the tiles by the defined profile. |
| Total clip | With the help of Toolbox Profile options you can design a profile on the background area to place the tiles on. The tiles can also be cut in this case. |

15.1.15. Tile Properties

Decoration tiles can be modified by each or at once.

- Select the Tile Properties command in the Toolbox.
- Select the tile or tiles you wish to modify.

Enter to accept the selection.

The *Modify the tiling* dialog appears.

- - ☐ Modify only the selected piece
 - ☒ Modify all pieces with that type in this tiling
 - ☐ Modify all pieces with that type in all tiling

- You can modify the following parameters by clicking on the values in the *Property* column:

- ❖ name of tiles,
- ❖ material and its properties,
- ❖ size,
- ❖ thickness,

- ❖ raising,
- ❖ Direction of tiles.
- ❖ Profile: Switch on the Modify profile option so you can click on the *Profile selection* button to define a new profile for the tiles from the profile library. Profile modification is possible only for non-rectangular tiles with free contour profile definition.
- ❖ The image properties of the material.

These include the settings of the material assigned to the tiles. Setting possibilities are as follows:

- ❖ *Image rotation relative to tile*: Opposed to the direction definition where the tiles are rotated the program rotates the material of the tile with the given angle.
- ❖ Image width, image height.
 - You can make the rotation angle, the width and height of the image equal to the rotation angle, the width and height of the tile, respectively.
 - You can also define the origin of the image.
 - To validate the modifications, switch on the necessary options in the *Modify* column.



In case of individual tiling the program use by appearing the material ordered to the hatching in decoration group. It could be more materials in one group. You can also modify the material of individual tiling. In this case the program modifies all material, which has the same material as the selected in the decoration.

15.1.16. Redistribute Tiles

- Select the Redistribute Tiles command in the Toolbox if you wish to redesign the entire tiling area.
- Select a tile that belongs to the area you wish to redistribute.
- The Modify the tiling dialog appears.
- You can select the new tile or the new rules to place the tiles:
- Close the dialog and place the tiles with a new reference point. The program deletes the old tile pattern and replaces with the new one.

15.1.17. Move Tiles

- Select the Move Tiles command in the Toolbox
- Select the tiles to be moved.

Enter to close the selection.

- Give the reference point of the contour and move it to its right place.

15.1.18. Copy Tiles

- Select the Copy Tiles command in the Toolbox
- Select the tiles to be copied.
- **Enter** to close the selection.
- Give the reference point of the contour and move it to its new place.

15.1.19. Delete Tiles

- Select the Delete Tiles command in the Toolbox
- Select the tiles to be deleted.
- **Enter** to close the selection.

15.1.20. Delete Tiles of Same Type

You can delete in one step all of the tiles which have a same name.

- Select the Delete Tiles command in the Toolbox
- Select the tiles to be deleted.
- **Enter** to close the selection.

15.1.21. Modify material of background areas and tiles

By means of these commands you can modify the material of a background area or tile.

15.1.22. Modify Material

You can change the material of a background area.

- Select the Modify Material command in the Toolbox
- Select the contour whose material has to be changed.
- **Enter** closes selection.

- Select a different material from the appearing *Material* dialog. **OK**.



To change the material of a tile see the chapter 15.1.15. *Tile properties*.

15.1.23. Reposition Material

This command is used to modify the origin and the direction of texture pattern. It is useful when placing an image on a wall surface.

- Select the Reposition Material command in the Toolbox
- Select an area.
Enter to close the selection.
- Define the start point of the pattern.
- Define the direction of the material pattern relative to the start point.
Enter direction of the pattern is horizontal.

15.1.24. Resize material

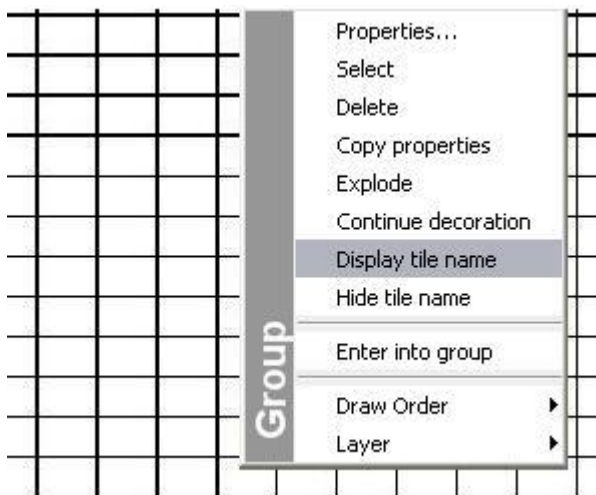
By means of this command you can modify the sizes of the texture of the selected background area or tile.

- Select the Resize Material command in the Toolbox
- Select the decoration to modify its size.
Enter to close the selection.
- Define the new width of the texture, or
Enter accepts the original value.
- Define the height of the texture, or
Enter keeps the original ratio of height and width.

15.1.25. Tiling - Show tile name on tiles

To make the tile identification easier, it is possible to show the tile names on the decoration layout on the floor plan. For this you only have to do the followings:

- Click on the tiled decoration layout with your right mouse button.
- Select the *Display tile name* command.



- The program will place the tile name on each tile, using the actual text properties:

| | |
|-------------|-------------|
| Brown tiles | Green tiles |
| Brown tiles | Green tiles |

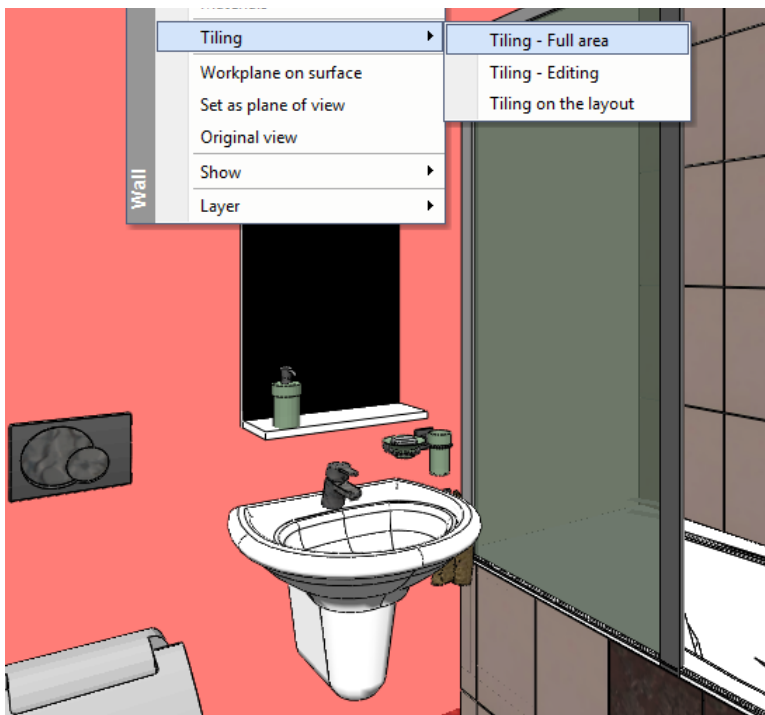
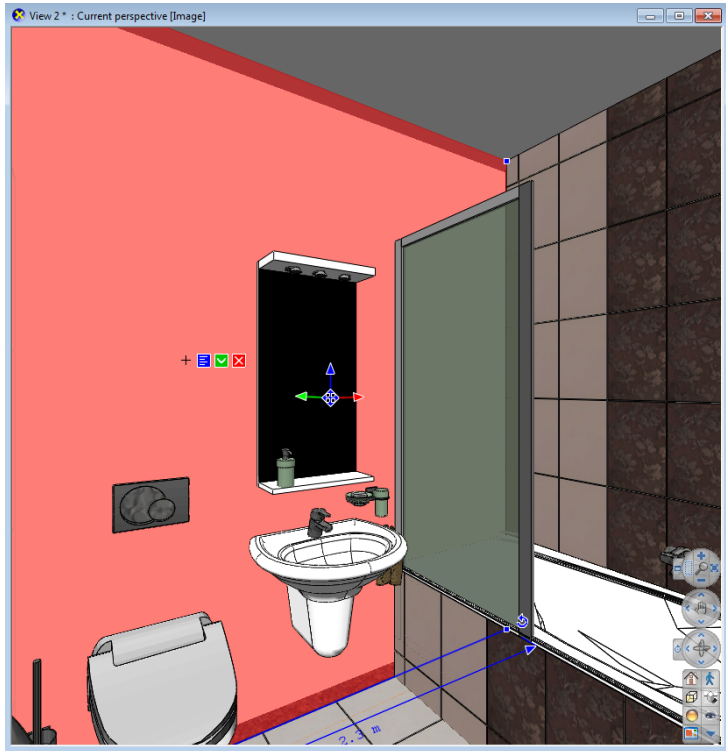


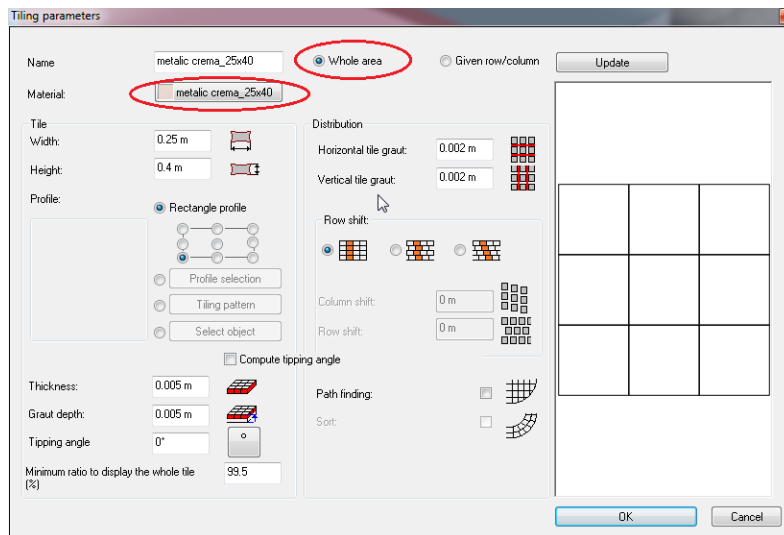
The program lists the name of the tile, not the name of the material!

Pay attention, when you use long tile name!

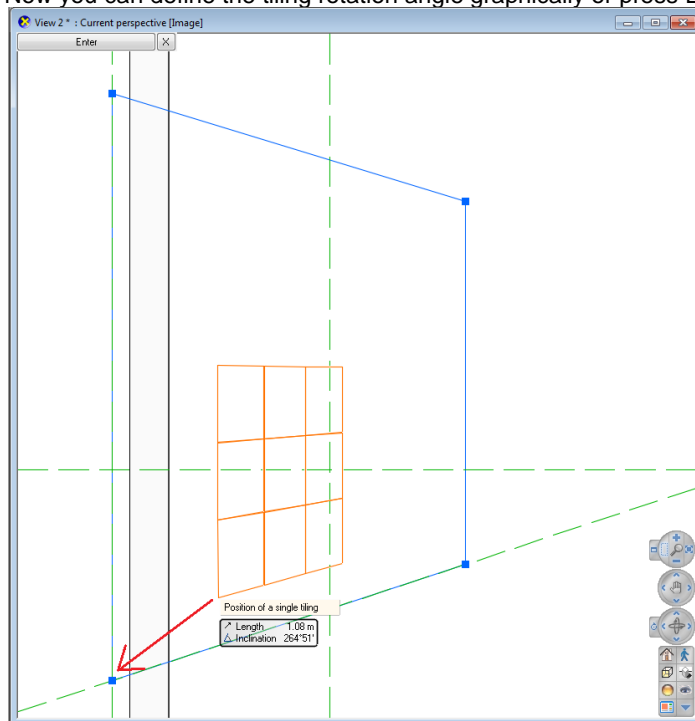
15.1.26. Tiling on any 3D surfaces

Activate the 3D window and click on a surface. The selected surface is displayed with red colour. Click on the upcoming Green Tick icon. Choose for the command list the Tiling – Tiling Full Area. The tiling dialog will be displayed. Choose here a texture for the tile and select the Whole area button.





Place the cursor reference point to the required tiling reference point on the selected surface.
Now you can define the tiling rotation angle graphically or press ENTER to place it horizontally.



You will receive the full tiling similar like that:



15.1.27. Copy tiling between surfaces

You can copy an existing tiling to another surface with the Copy tiling commands. It makes quicker to make the tiling layout in a room, e.g. bathroom, where the tiles are frequently the same on more walls.

Activate the 3D window and click on a surface. The selected surface is displayed with red colour. Click on the upcoming Green Tick icon.

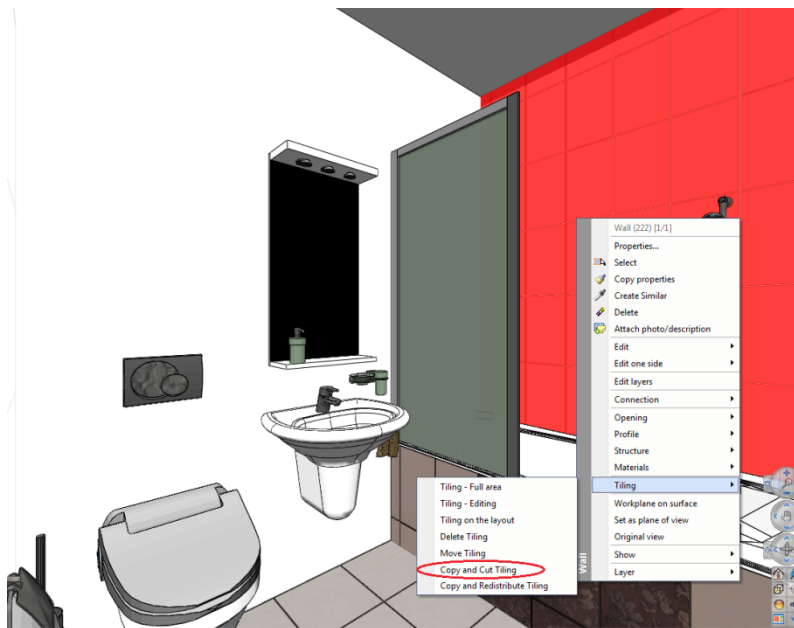
You can choose either the *Tiling – Copy and Cut Tiling* or the *Tiling – Copy or Redistribute Tiling* commands.

Difference between the two commands:

- Tiling – Copy and Cut Tiling* copies the exactly same size of tiling to the new surface.
- Tiling – Copy or Redistribute Tiling* copies and fills with tiling the whole surface

Now select the surface to copy the tiling on it. You will receive the tiling similar like this example:

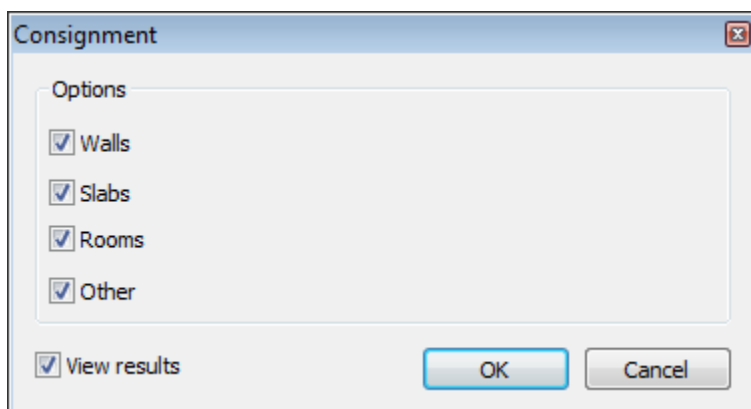




15.1.28. Listing tiles

The tiling quantity take-off results an Excel list and displays the quantity of tile needed for the project.

- Select the Add-On menu – Tiling – Quantity Take-Off command; switch on the Walls, Slabs, Rooms and Other checkboxes and the View results options.



| | A | B | C | D | E | F | G | H |
|----|------------------------------|------------|-------------|-----------|------------|--------------------|-------|-------|
| 1 | Tiling consignation | | | | | | | |
| 2 | metallic crema_25x40 | | | | | | | |
| 3 | | Width (mm) | Height (mm) | Area (m2) | Total (pc) | Full/Part/Fragment | Price | Value |
| 4 | | 250 | 400 | 19.37 | 262 | (150/23/89) | 0 | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |
| 7 | | | | | | | | |
| 8 | | | | | | | | |
| 9 | metallic crema_33x33 | | | | | | | |
| 10 | | Width (mm) | Height (mm) | Area (m2) | Total (pc) | Full/Part/Fragment | Price | Value |
| 11 | | 333 | 333 | 2.86 | 35 | (15/9/11) | 0 | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | metallic flower_25x40 | | | | | | | |
| 17 | | Width (mm) | Height (mm) | Area (m2) | Total (pc) | Full/Part/Fragment | Price | Value |
| 18 | | 250 | 400 | 2.4 | 30 | (18/3/9) | 0 | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |

15.1.29. Tile Patterns

You can cover a surface of an architectural object not only with a rectangular or custom profiled tile but with a complex pattern as well. A tile pattern consists of separate tiles.



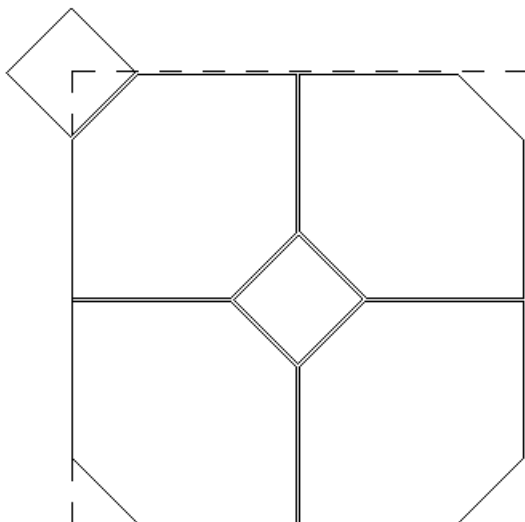
Once you have a tile pattern, you can distribute it on a background area like distributing a single tile.

Tile patterns are stored in an object library as a special group. You can find some predefined patterns in *the Groups/Tiling patterns* folder of the Design Centre

Creating tile pattern

This command is used to create a new tile pattern.

In case of complex patterns, first draw the pattern precisely by means of drafting tools like lines or arcs.



- Select *Tiling/Create tile pattern* in the Add-On menu.
- Define the profile of the tile pattern unit using any option in the *Toolbox – Profile definition tool*. (On the figure above, the profile of the tile pattern unit is the square drawn by dashed line)



Define a simple rectangle here: the program will use the height and width of the profile as a shift distance to multiply the tiles of the pattern, the exact shape of the profile won't be taken into consideration.



See the details of *Profile definition* in chapter 8.9. *Specifying profile*.

- Select the *Add One Tile* or *Add Custom Tile* command in the Toolbox and create tiles on the pattern area.

The tiles can overhang the profile of the tile pattern unit. Pay attention to define a pattern that can be distributed continuously on a surface.



You cannot change the gaps between two tiles of the same tile pattern unit in the dialog later; you should draw here the exact pattern including gaps.



See the details of adding tiles in chapter 15.1.13. *Add One Tile* and 15.1.14. *Add Custom Tile*.

- Select the *Close* or *Close and Remove Layout* command in the Toolbox.
- As the last step you have to name the tiling pattern and save it in a user defined object library.



You can use your new tile pattern by means of the commands *Add Tiles* or *Add One Tile*. See the details of adding tiles in chapter 15.1.2. *Tiling*

Modifying a tile pattern

This command is used to modify a tile pattern previously created.

- Select *Tiling/Create tile pattern – continue* in the Add-On menu and select a tile pattern layout on the drawing. You can also click on the tile pattern layout with right mouse button and select *Continue decoration* from the menu.



If you would like to modify a pattern in the object library which is not present in any drawing window, first place it on a drawing.

- Select a command in the Toolbox. You can add, edit and remove tiles here.

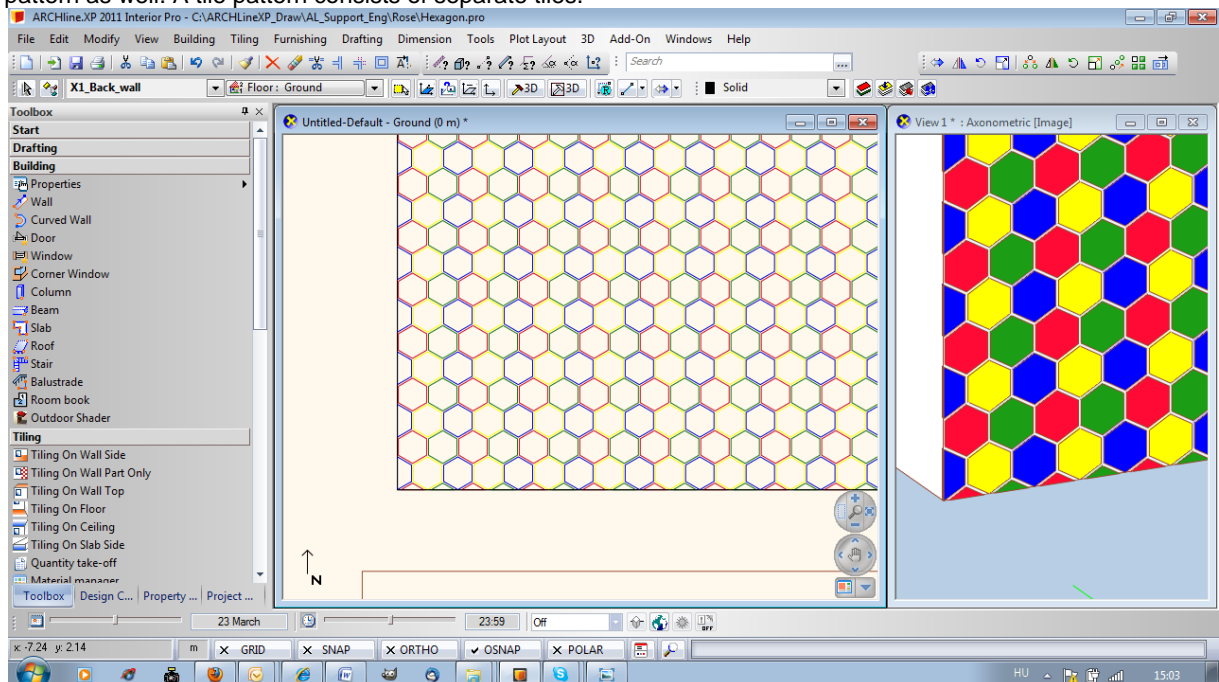


See the details of adding, editing and removing tiles in chapter 15.1. *Tiling*

- As the last step you give a different name to the tile pattern and save it in a user defined object library.

15.1.29.1. Example: Hexagonal Tiles with different colours

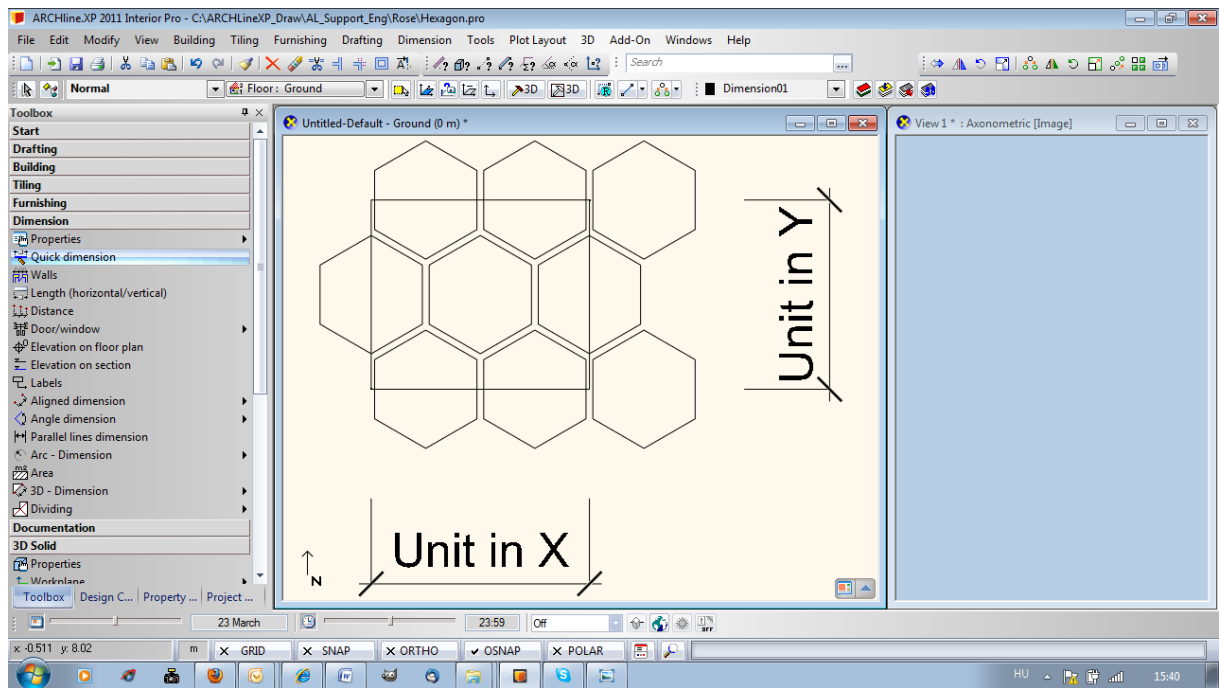
You can cover a surface of a wall, slab or ceiling not only with a rectangular or custom profiled tile but with a complex pattern as well. A tile pattern consists of separate tiles.



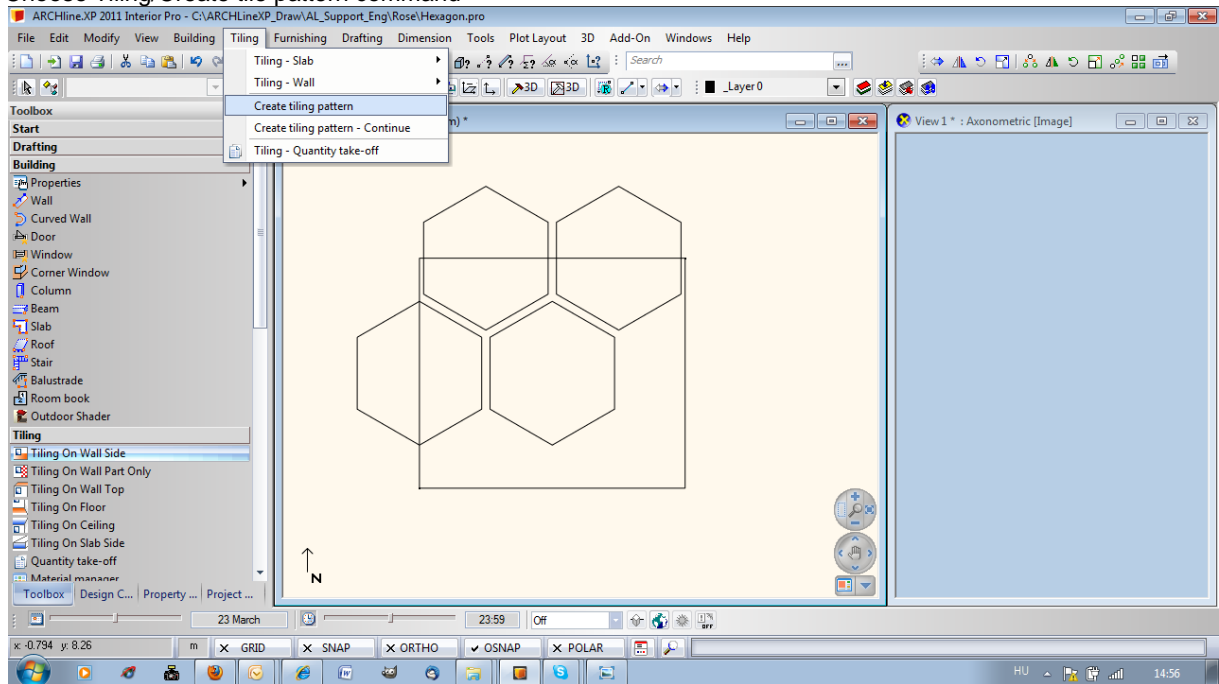
Create the tile pattern for Hexagonal Tiles

In case of complex patterns, first draw the pattern precisely by means of drafting tools like lines or arcs. Strongly recommended to draw a rectangle here that represents the repeat distance in X and Y.

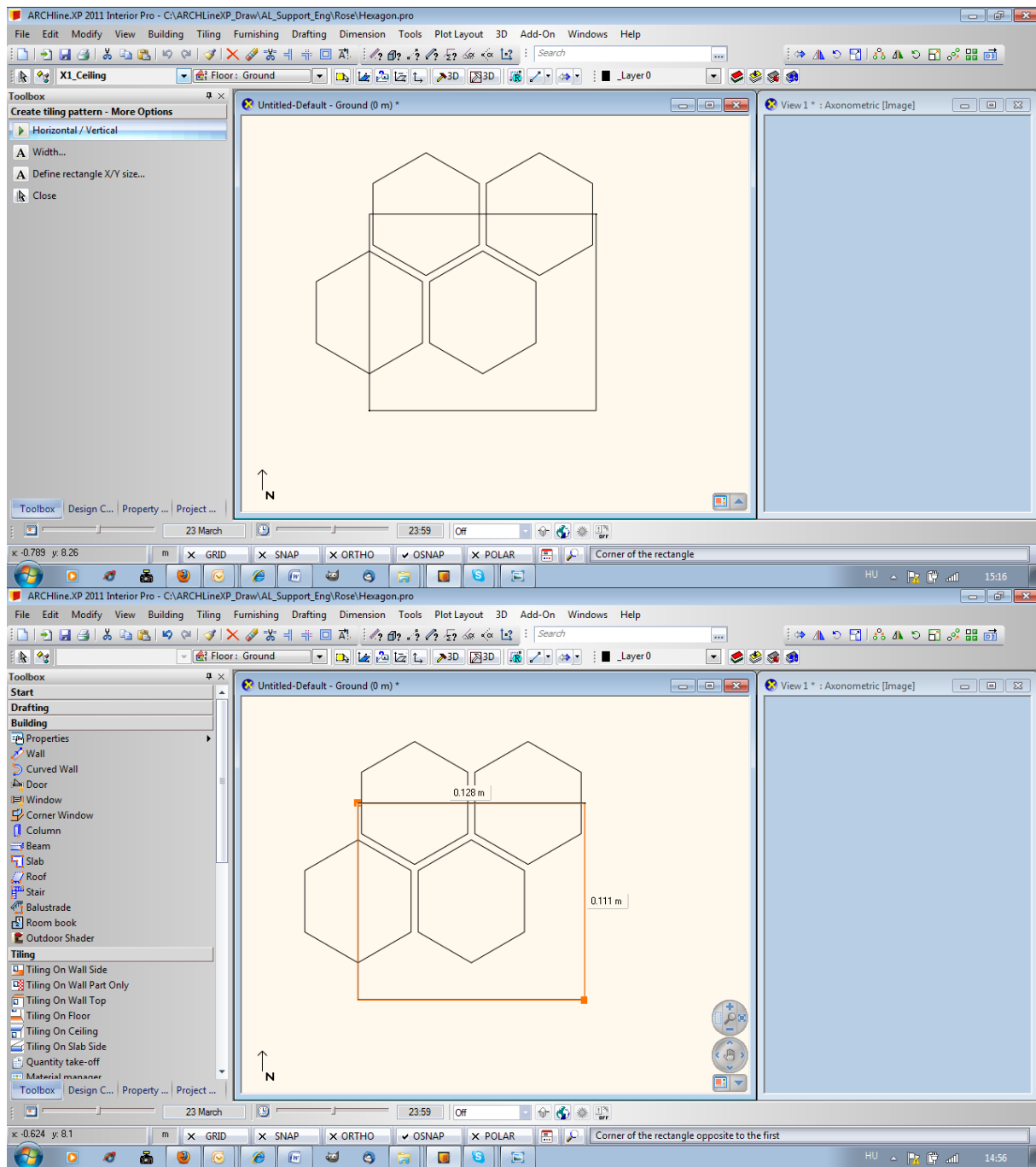
You cannot change the gaps between two tiles of the same tile pattern unit in the dialog later; you should draw here the exact pattern including gaps.



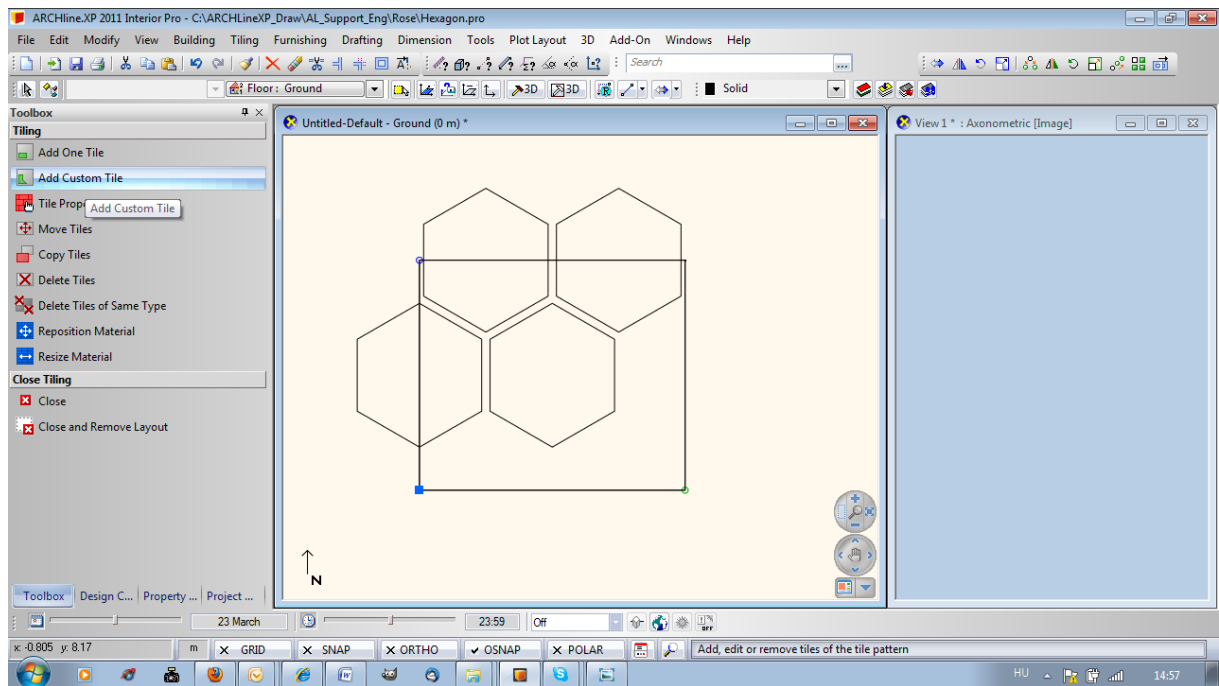
Choose Tiling/Create tile pattern command



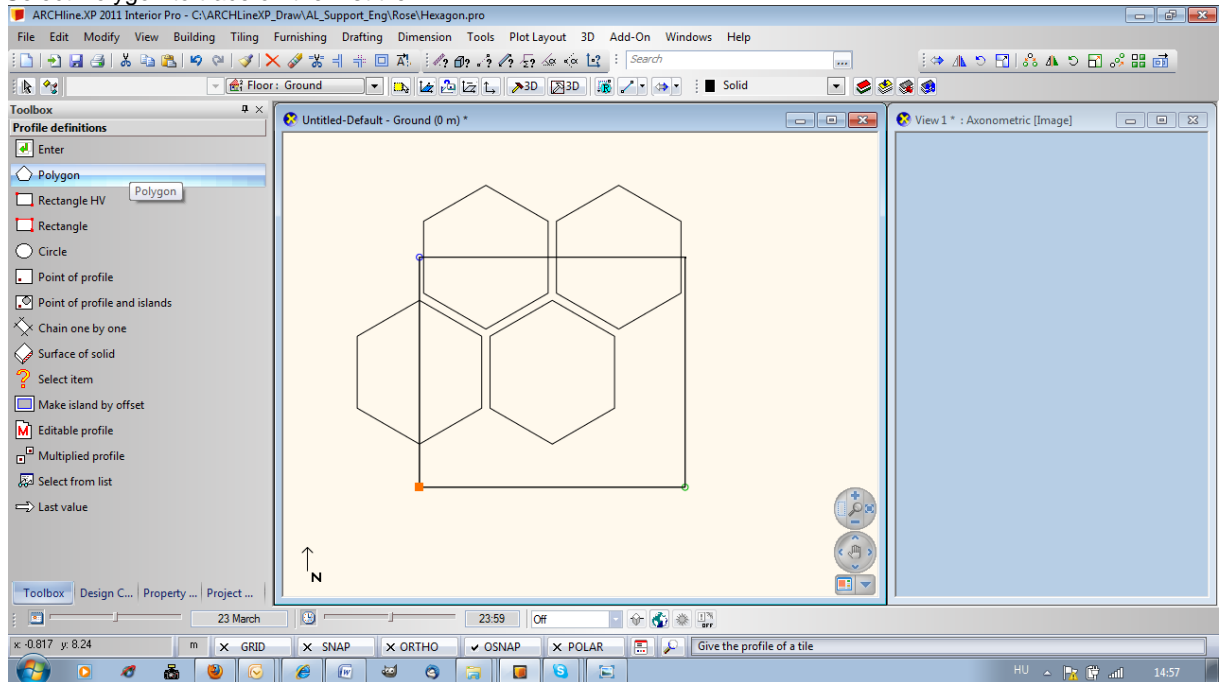
First define a rectangle here: the program will use the height and width of the rectangle as a shift distance to multiply the tiles of the pattern.



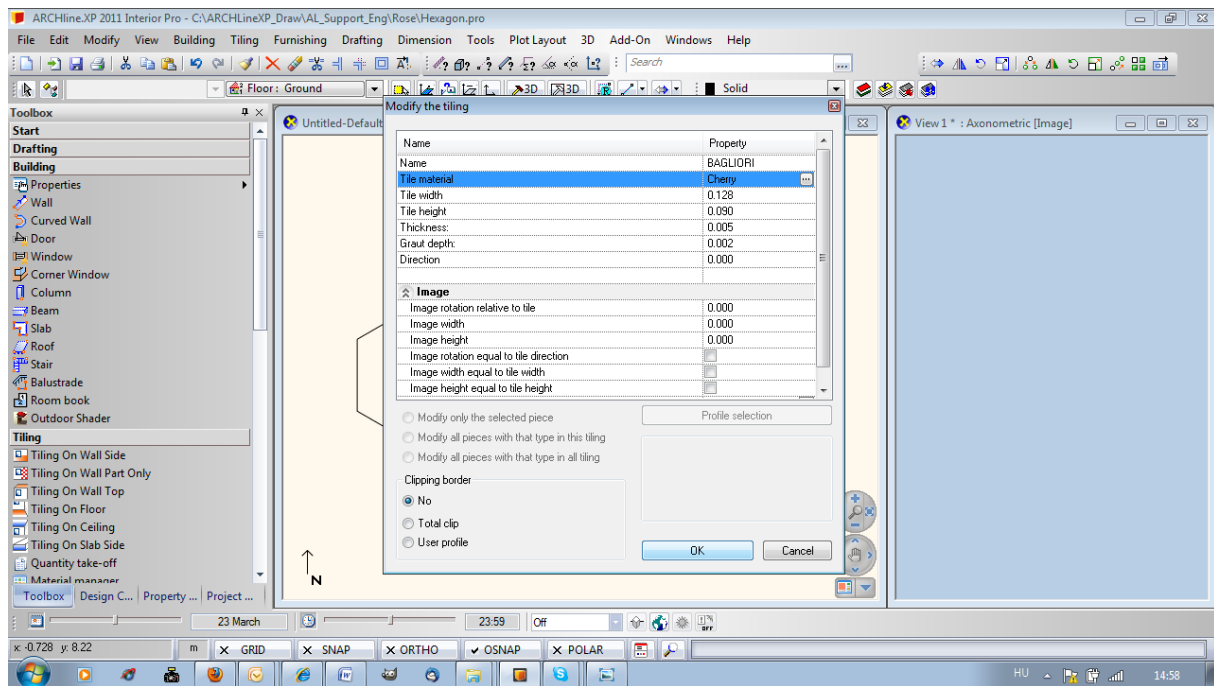
Select the Add Custom Tile command in the Toolbox



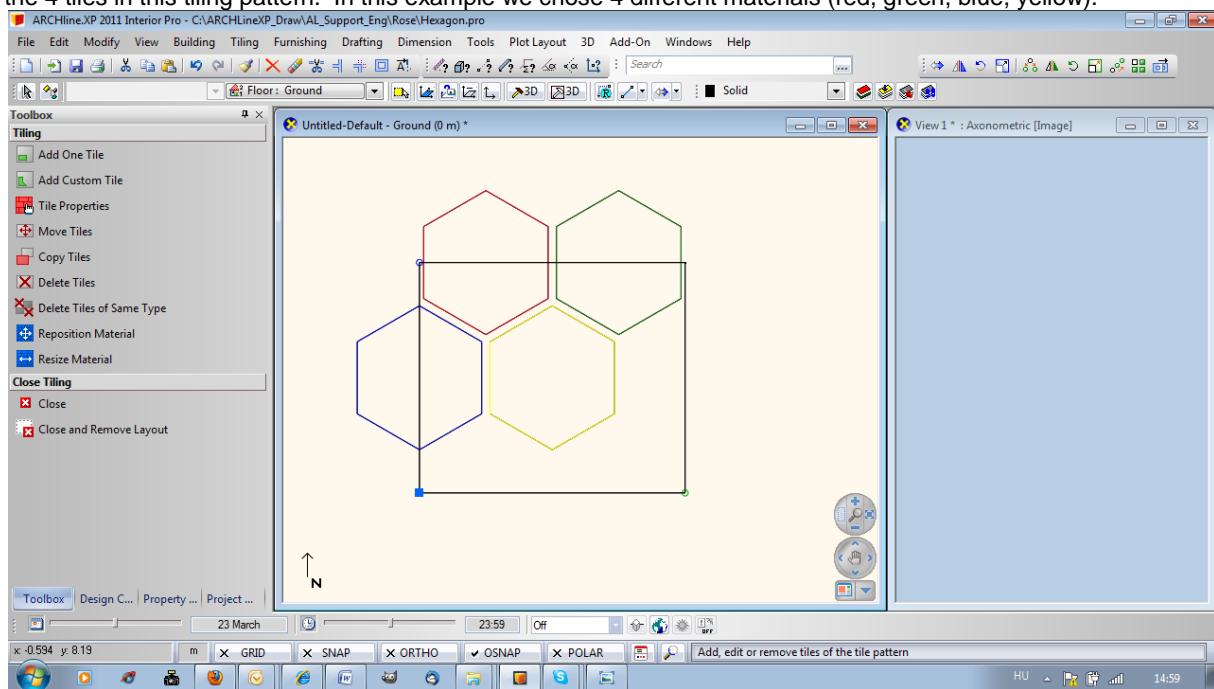
Select Polygon to trace on the first tile.



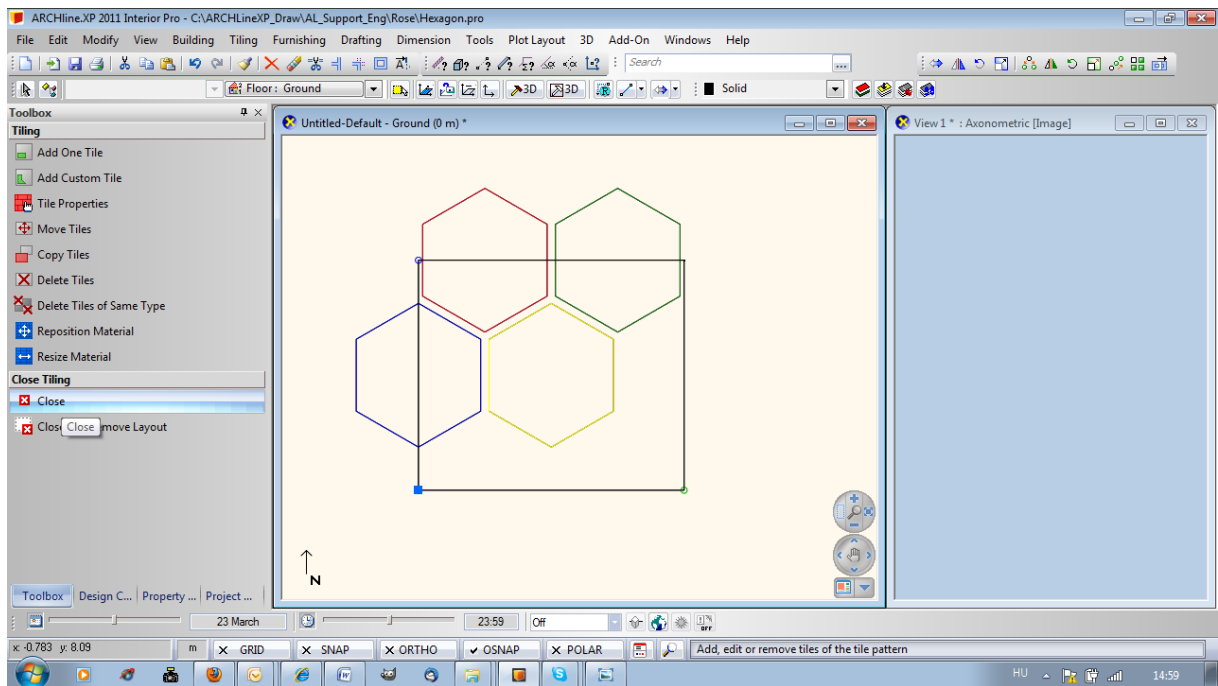
In the upcoming dialog choose the material that will be assigned to the tile.



Repeat the Add Custom Tile command as many times as you need. In this case you have to repeat 3 times more to define the 4 tiles in this tiling pattern. In this example we chose 4 different materials (red, green, blue, yellow).



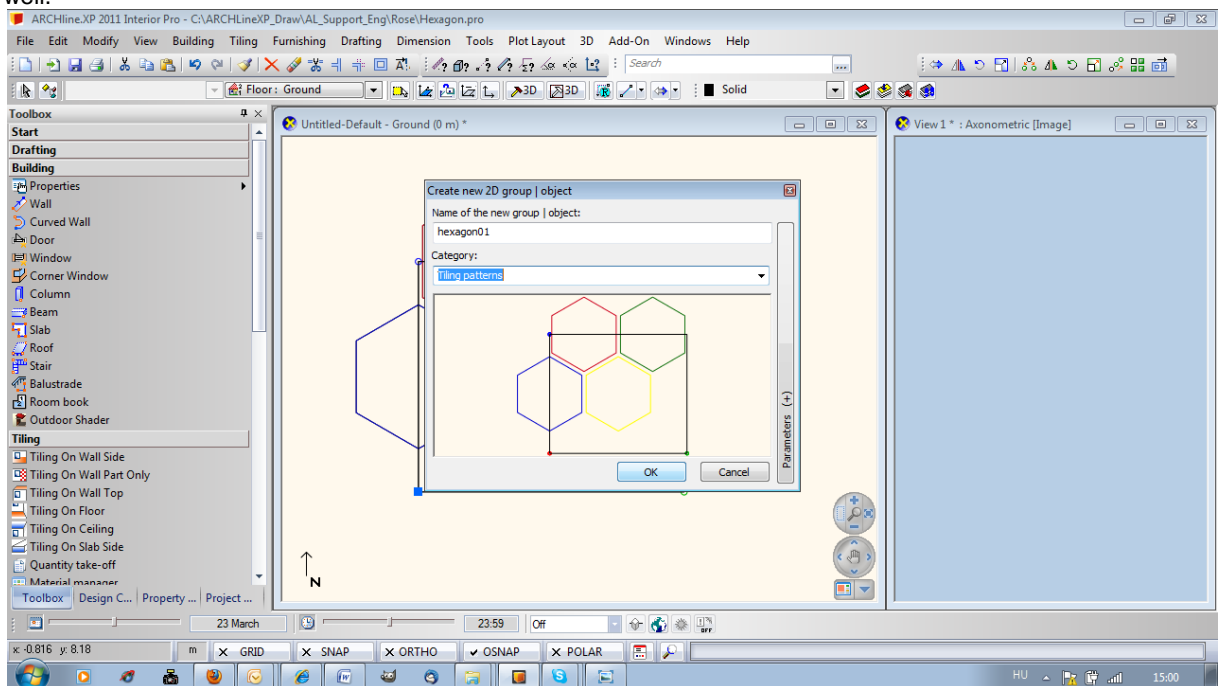
Click on Close command to finish the Add Custom Tile definition.



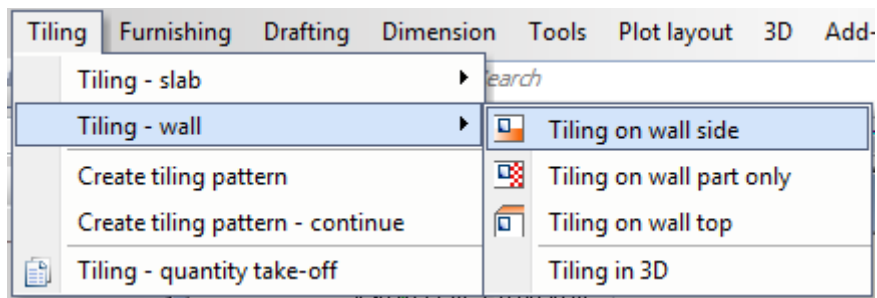
Create the group that represents the tile pattern. In this last step you have to name the tiling pattern and save it in a category.

□ Tip: Select the Tiling patterns category.

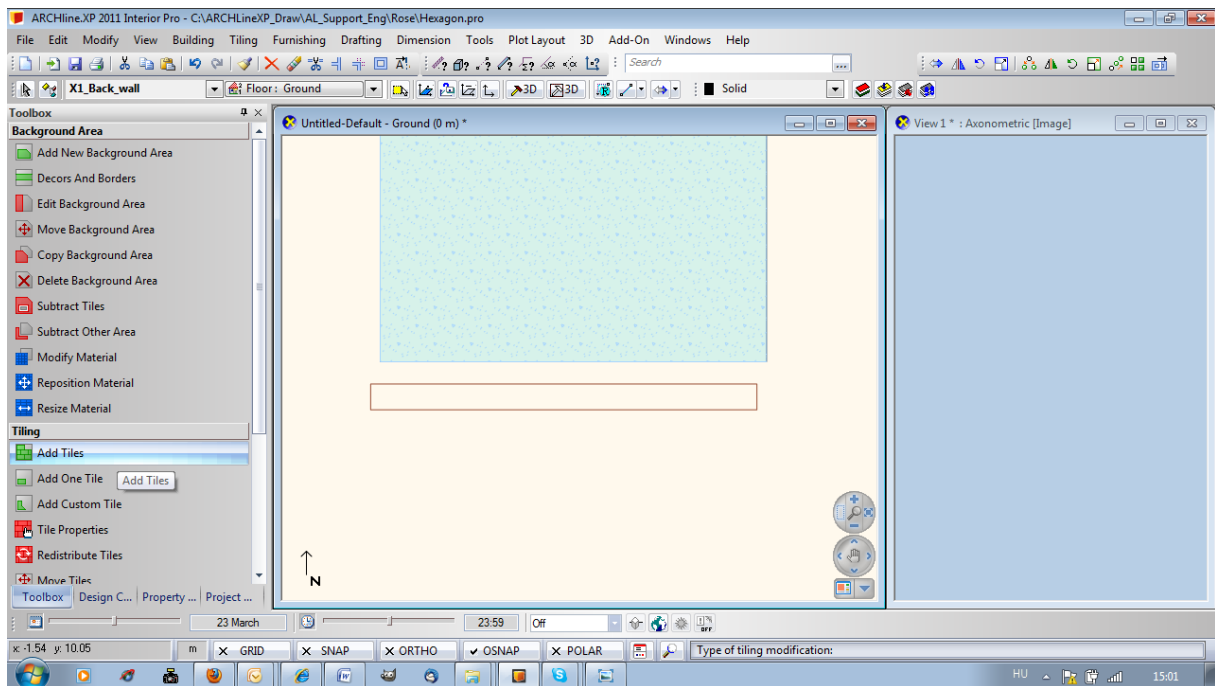
When you press Ok your new Tile Pattern is saved into a public object library, so you can use it later with other projects as well.



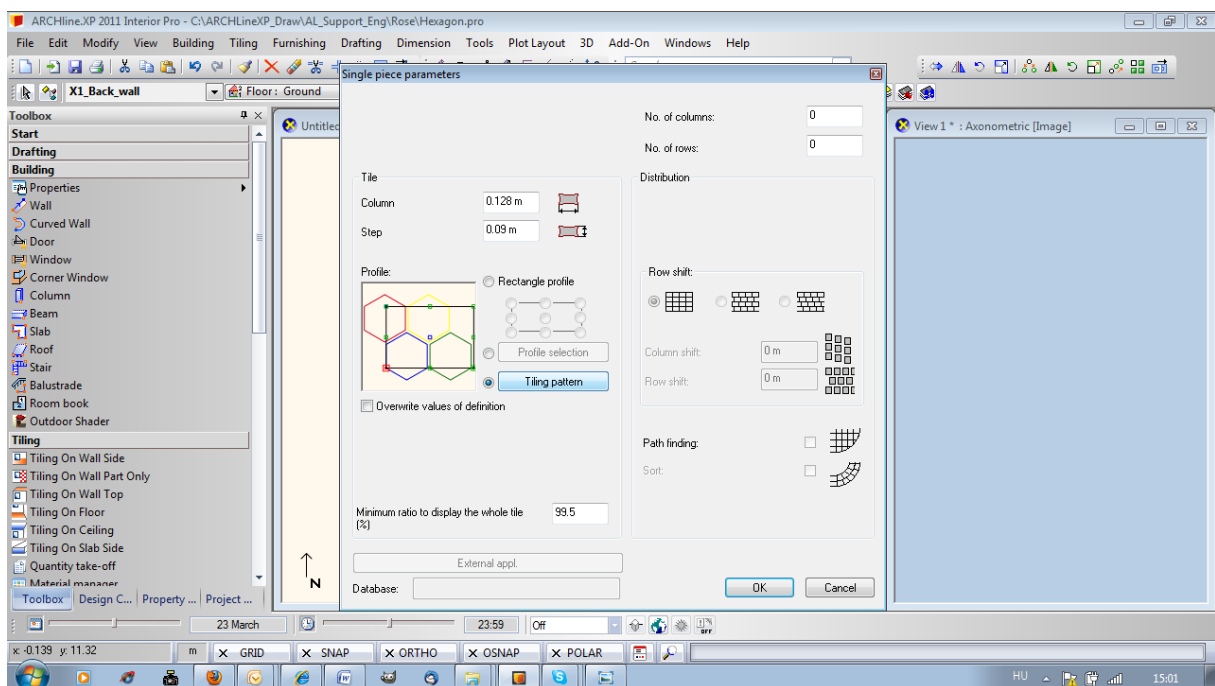
How to use the new Hexagonal Tiles with different colours?
Select the Tiling on wall side command

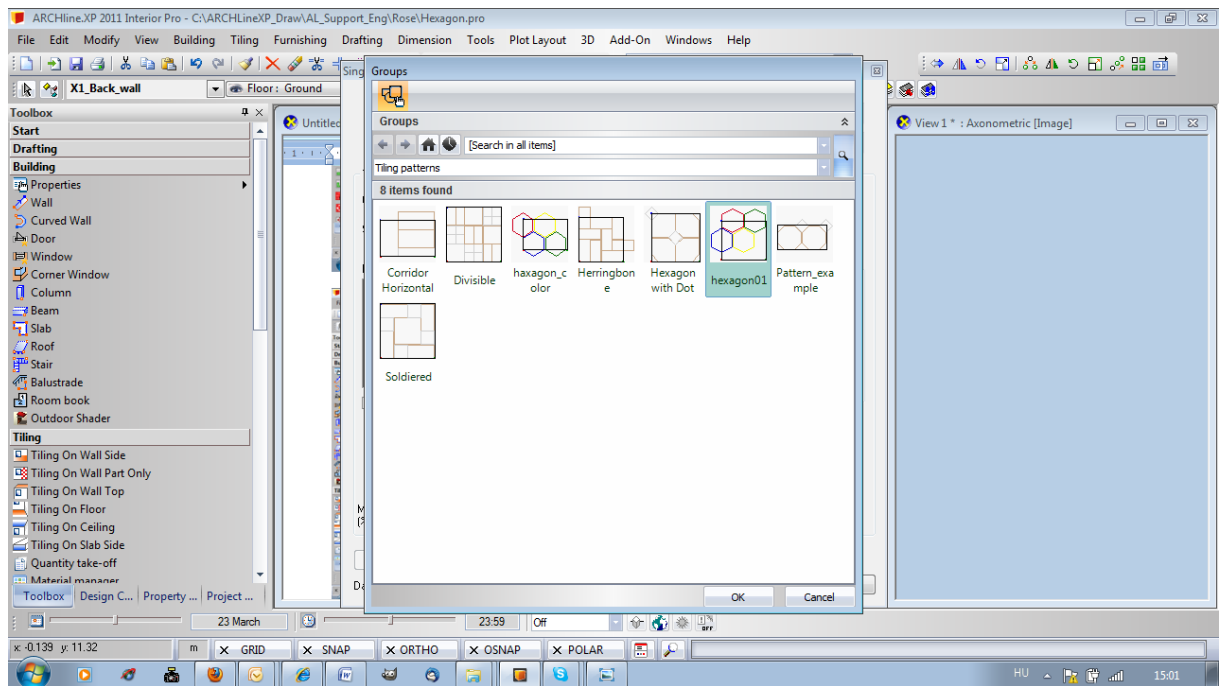


Define the background area
Choose Toolbox / Add Tiles command

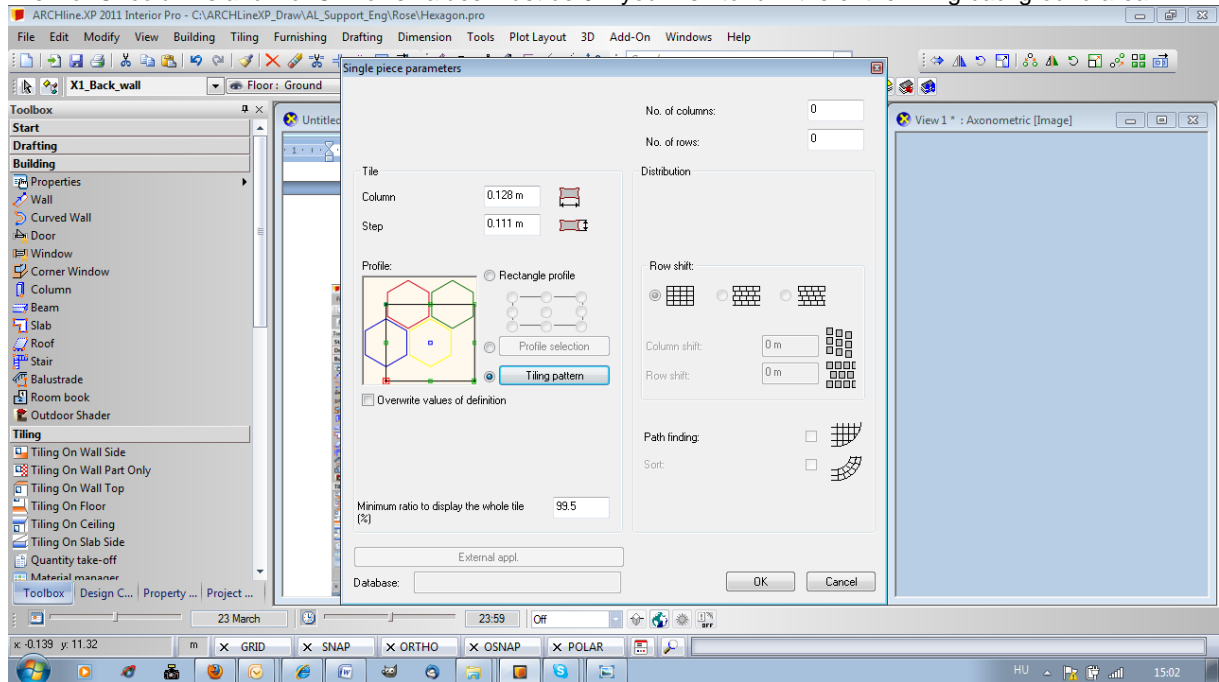


Click on the Tiling pattern button in the dialog and select the new hexagon01 tiling group

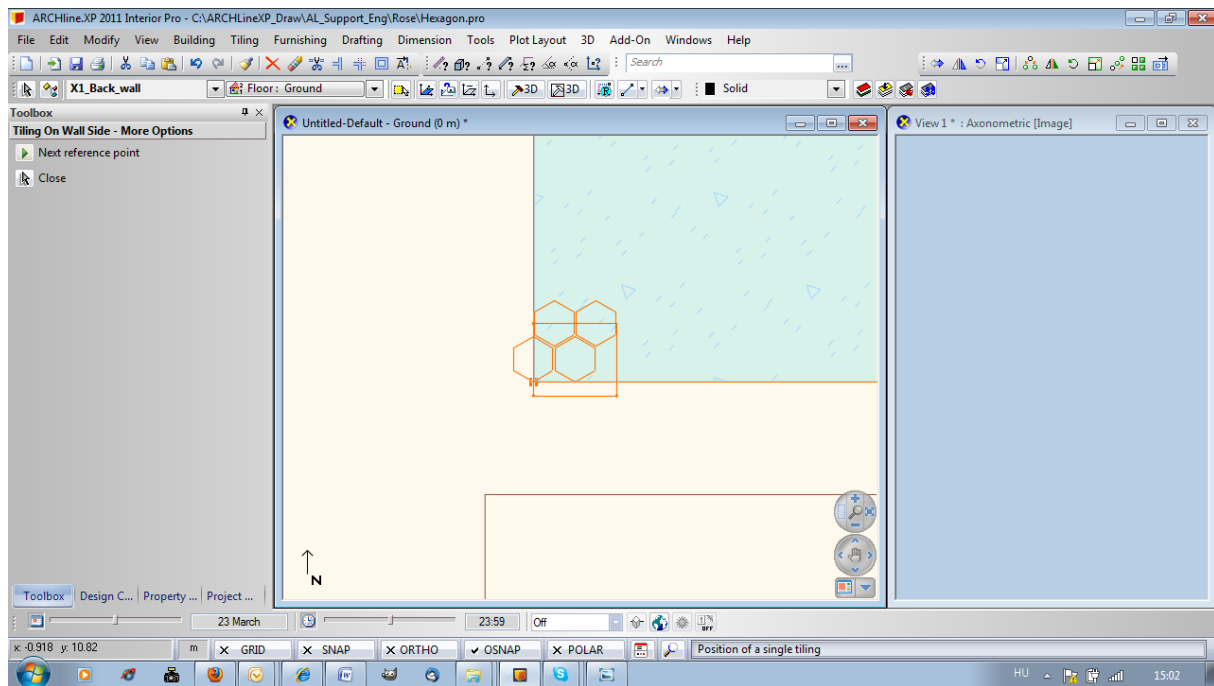




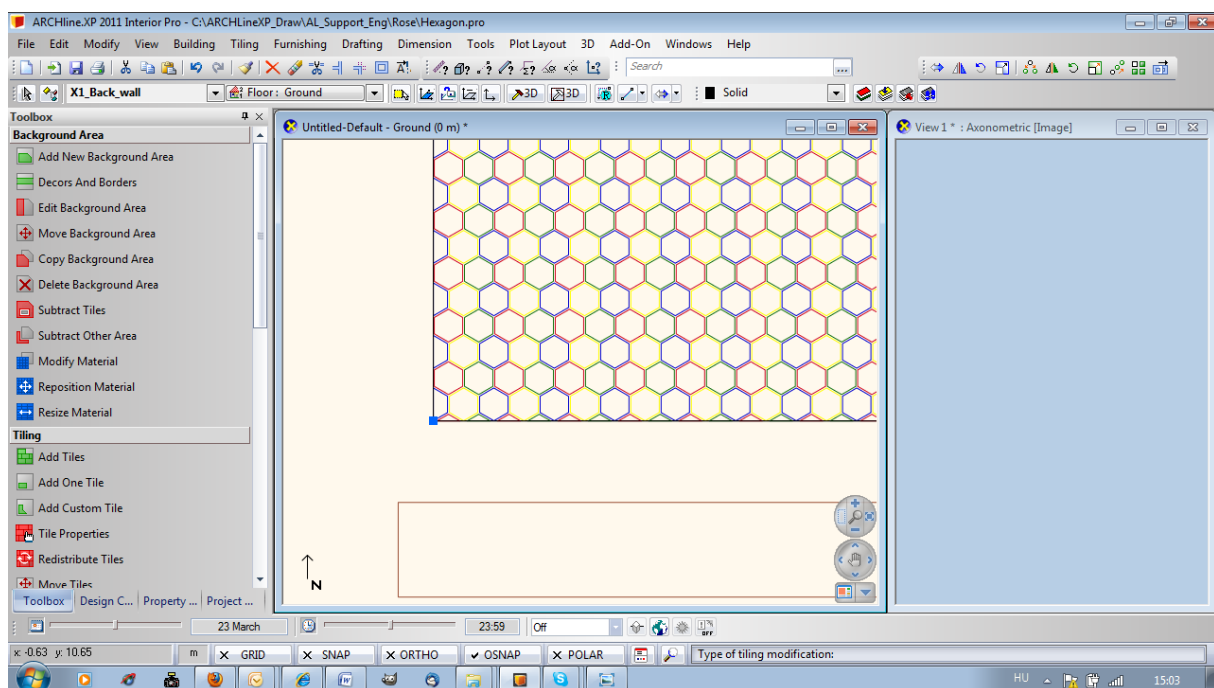
The No. Of columns and No. Of Rows values must be 0 if you wish to fulfil the entire Tiling background area.



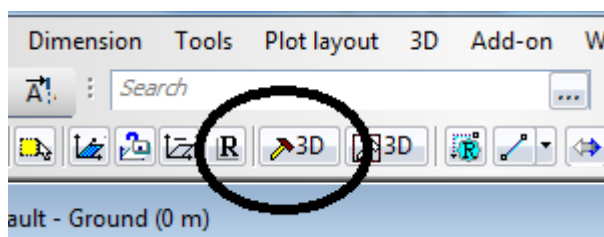
Press Ok, and place the group on the wall frontal layout.

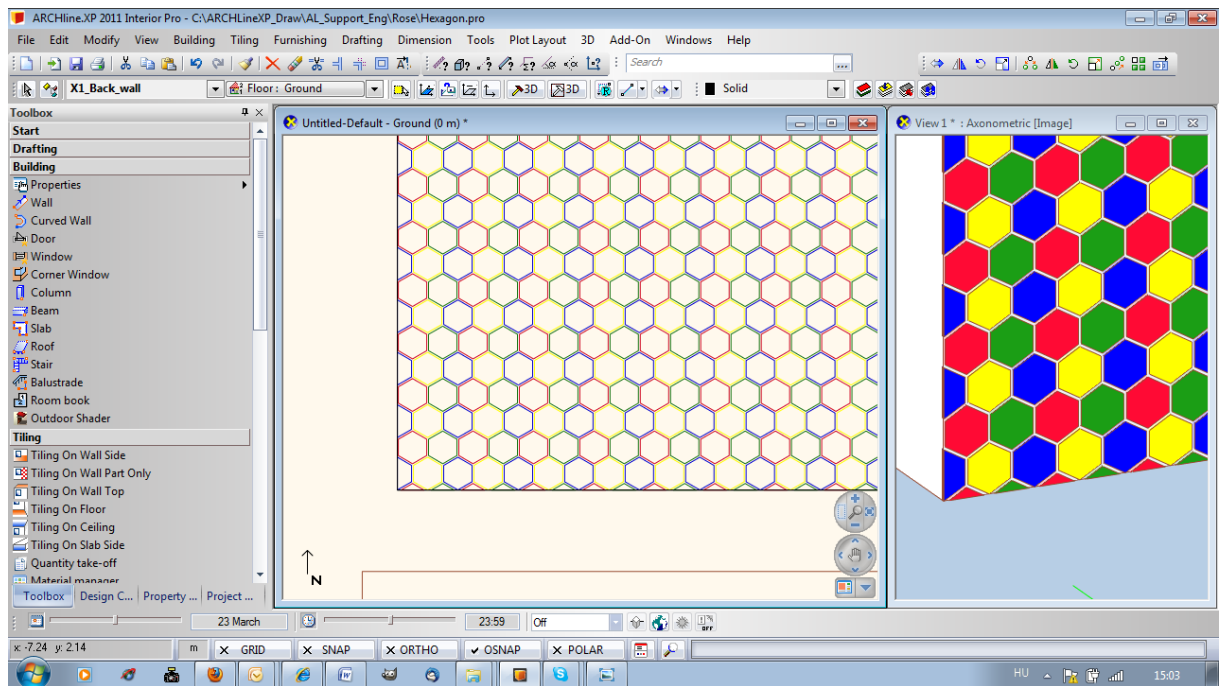


The software distributes the hexagon01 tile pattern and fills the entire tile background area.



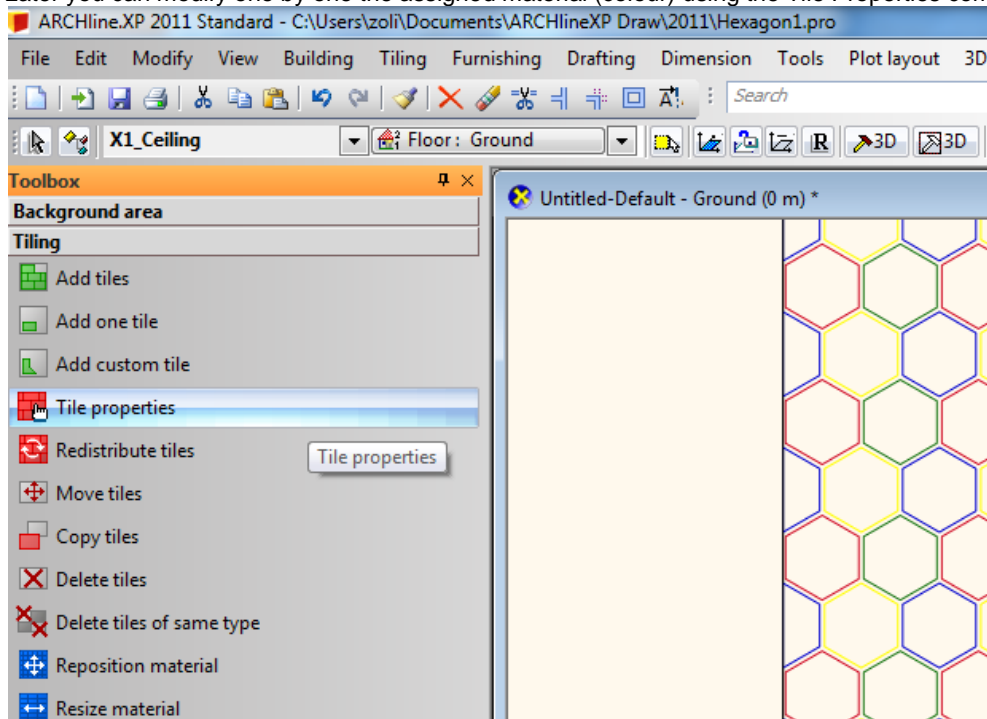
Create the 3D model with the 3D Hammer button.

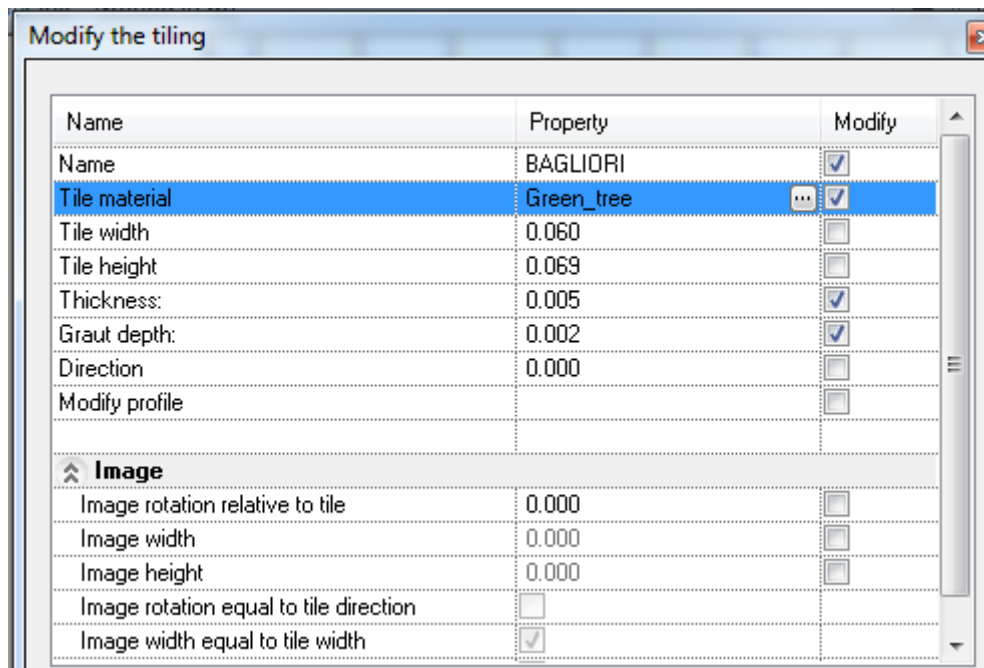




How to modify the tiling to make it less regular?

Later you can modify one by one the assigned material (colour) using the Tile Properties command.





15.2. Drawing comparison

Introduction

In the design process, mainly in the case of building reconstruction plans, it is often required to show both the current state and the future plan on the same drawing. Sometimes we need to compare the previous state of our drawing with the current state, highlighting the differences.

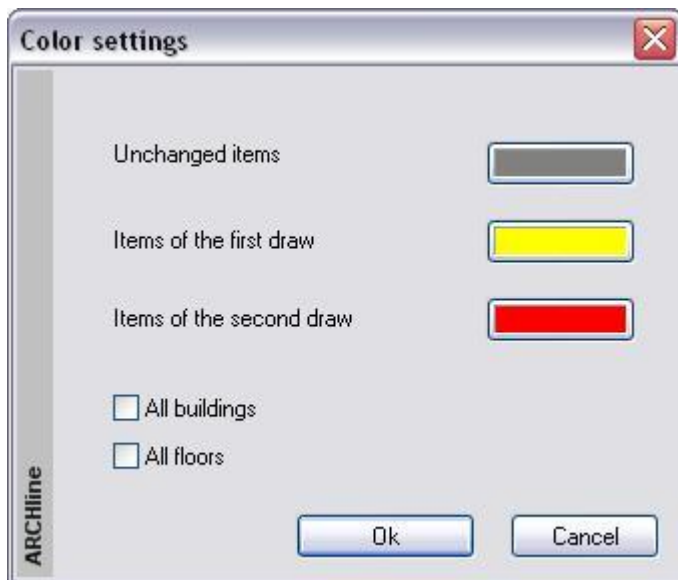
The program is suitable for representing the objects of the original drawing and the new objects with different colours, so you can easily follow the changes like demolished walls or relocated windows, by colours.

Comparison can be made between two floor plans or two 3D views. Of course, any other 2D drawings can be compared. It is important to note that the comparison is made only on the level of drawing objects. This means, for example, that a change made in the parapet height will not occur in the comparison of floor plans. This will occur only in the comparison of facade drawings.

The comparative drawing, which is always 2D vector graphics drawing, will come up in a new window, so it does not affect the existing drawings.

15.2.1. Comparison of two floor plans

- Open your project and activate the window that includes the original floor plan. The content of this drawing will be compared to the appropriate floor plan in your new project.
- Select the Add-On menu – Drawing Comparison - Create Comparative Table command.
- Choose the drawing including your new floor plan or choose the new floor plan from a project.
- In the appearing dialog specify different colours for unchanged objects, objects of the first (original) drawing, and objects of the second (new) drawing.



By default, the active floors of the selected floor plans will be compared to each other.

All floors

- With this option the comparisons will be made for all floors, one by one.

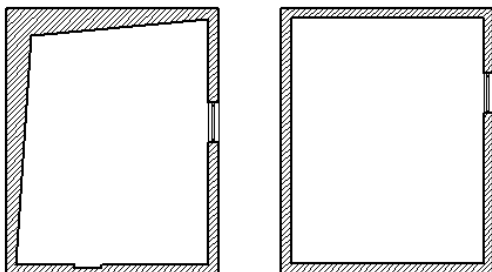
All buildings

- With this option, if there are more buildings on the floor plan, all buildings will be compared by the program.

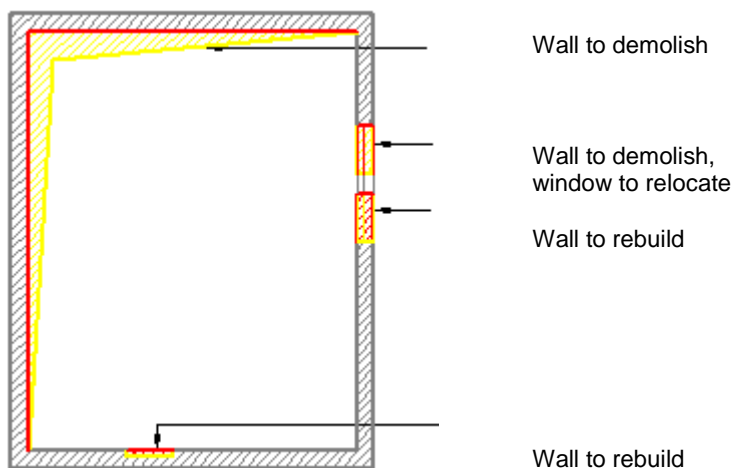
By clicking on the **Ok** button the comparison will start and the result will appear in a new window. The content of this window is a vector graphics 2D drawing (without any 3D content), where the changed and unchanged objects are shown by different colours. You can switch between floors with the Page Down and Page Up buttons.

Original state

Future plan



Comparative drawing



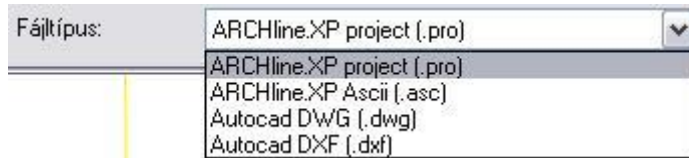
15.2.2. Comparison of two 2D/3D drawings

Comparative drawings can be made not only for floor plans but for any other drawings.

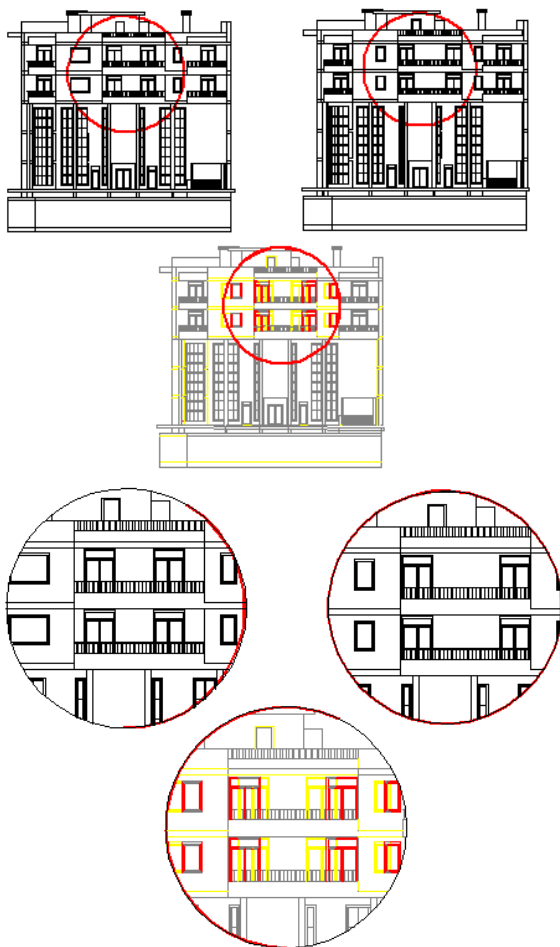
For example:

- ❖ A floor plan can be compared to the appropriate 2D DXF or DWG drawing.
- ❖ Similar 2D drawings can be compared.
- ❖ Different 3D window contents like main views, sectional views, or even two axonometric views with similar settings, can be compared.

In these cases all go the same way as for floor plans. At the file selection you have to specify the appropriate file type.



Using the all floors switch can make sense in these cases, too: for example you can place the copies 3D views onto different floors of a floor plan window, which means that you are working with 2D drawings. Then you can make the comparison of these drawings, floor by floor.



15.3. Calibration and vectorization

Introduction

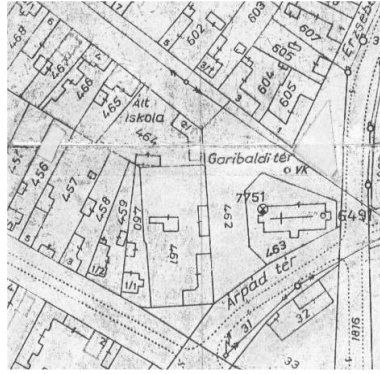
Drawing often requires raster images. You can create a raster image by using a general plan, a handmade plan, a contour map, etc.

Raster images are either supplied in a digitalized form or available after scanning. Raster images can be imported into the drawing to create a background.

Raster image

The raster image created this way contains background points (pixels). The number of pixels defines the display resolution of the raster image and so its quality, however it represents no other specific value. Accordingly, the raster image cannot be considered particularly useful with respect to the actual drawing.

The image imported into the background unquestionably increases the aesthetic value of the drawing but is only relevant if its scale aligns with the corresponding scale of the drawing area. Thus the scale of the raster image has to be changeable.



To insert a raster image into the drawing area use *Drafting menu- Insert raster image* command to read the image into the drawing area.



See description in 11.8. Raster images chapter.

Calibration

Calibration is a special method that coordinates the imported raster image with the vector drawing thus ensuring the possibility of specifying real distances, areas or angles in the raster image.

When an imported raster image can be coordinated with the drawing (e.g. a general map), the true-to-scale size of the drawing can be configured by **linear calibration**. Linear calibration enables the setting of a certain scale to establish a proportional relationship between the pixels of the raster image and the drawing area (and its coordinates) of ARCHLine.XP. When the scale set for calibration matches the true scale, you can work in true scale (1:1) in the raster image as well. It means that each vector graphics operation, editing or query is performed by the program in true scale from the user's point of view; however the configuration of the size depends on the background.

You find calibration in the Add-On menu - Raster Image Calibration.

Depending on the available information calibration can be performed in different ways:

Calibrate Raster - Fast

Calibrate Raster - New

Calibrate Raster - Contin

Raster to vector

- ❖ *matching 2 points with 2 other points*
- ❖ *with distances*
- ❖ *with coordinates*

In the first case use the *Calibrate raster- Fast* command, while in the second and third cases use *Calibrate raster*. Start the operation with the *New* option and use the *Continue* option for more accuracy.

Vectorization

The calibrated image still contains pixels, meaning that during drawing the program does not recognize the content of the image, e.g. the lines of the handmade plan. That is why vectorization is needed.

ARCHLine.XP enables the vectorization of an imported image (a general plan, a contour map, a handmade plan). It means that the program recognizes the contours in the scanned image and generates lines on top of them. The result is a lined drawing. Using the command allows for the recognition of not only lines but of open and closed line chains. This method significantly decreases the time of planning by eliminating the time-consuming tracing of scanned general plans or models.

After vectorization you can turn off the image file and edit the already lined drawing further.

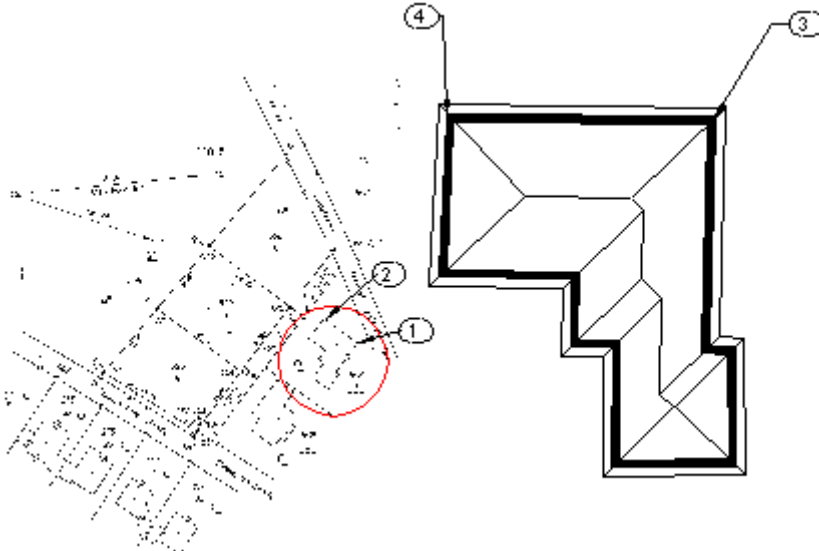


You can reach the command via the *Add-On menu – Raster Image Calibration- Raster to vector*.

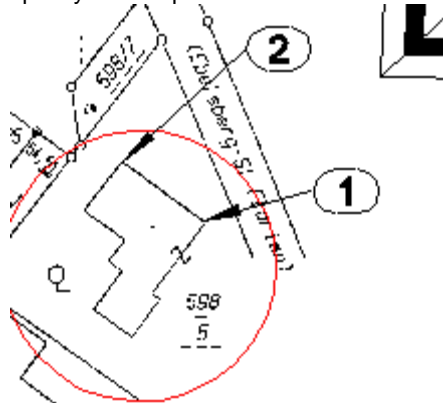
15.3.1. Calibrate Raster - Fast

You can use the *Add-On menu - Raster Image Calibration- Calibrate raster- Fast* command when you have two coordinating reference points on both the general plan and the plan. The command renders the two original points selected first to the two other points. By specifying rototranslation the program configures the general map to the scale matching with that of the plan and rotates it in the right direction. This way calibration and matching are performed in one step.

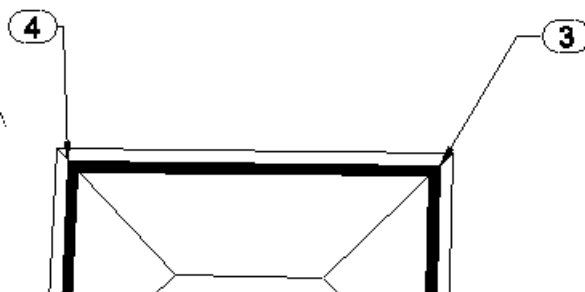
E.g.: One building on the general plan is also there on the plan. Here you can use the two endpoints of one of the building walls as reference points on both the general plan and the plan.



- Specify the start point of rotation and movement transformation: 1st point.
- Specify the endpoint of rotation and movement transformation: 2nd point.



- Specify the new location of the start point: 3rd point.
- Specify the new location of the endpoint: 4th point.



The program matches the general plan and the plan:

The program asks in both cases if you really want to finish calibration.

If the answer is yes, the *Calibration dialog box* appears and indicates the average quadratic error in case of all the distances used.

The error equals the difference between the expected and the specified values and is indicated next to each distance. The maximum number of distances you can calibrate in the raster image is 100. You can exclude some of the distances by using the dialog box. You are suggested to exclude distances with larger values of error. Thus you can decrease the value of the average quadratic error. The more distances you specify the more accurate your calibration is.

| Status | Distance | Error |
|--------|------------|----------|
| Used | 200.000000 | 0.036621 |
| Used | 200.000000 | 0.004248 |
| Used | 66.500000 | 0.983004 |
| Used | 52.300000 | 0.186519 |

Average square error for all 0.500611

Average square error for used 0.500611

E.g. exclude the 3rd value where the error of 0.9 is the largest.

| Status | Distance | Error |
|--------|------------|----------|
| Used | 200.000000 | 0.000001 |
| Used | 200.000000 | 0.003368 |
| Used | 66.500000 | 0.994534 |
| Used | 52.300000 | 0.186753 |

Average square error for all 0.505961

Average square error for used 0.107840

Thus you have decreased the value of the average quadratic error.

15.3.3. Calibrate Raster - Continue

You can use this command if you have already started calibration but you would like to specify more points in order to increase the accuracy of the calibration:

- Open the project containing the calibrated raster image.
- Specify the new points for calibration.

When you have finished calibration, the dialog box indicates the distances and the percentage of error for each calibrated point of the image (the list includes the points specified previously as well).

15.3.4. Vectorization of images

As mentioned previously, image files contain pixels. As the program does not recognize the content of the image that is why vectorization is needed.

The *Add-On menu – Raster Image Calibration – Raster to vector* command enables the transformation of the imported image file into a vector drawing. The image file can be a general plan, a contour map or a handmade plan.

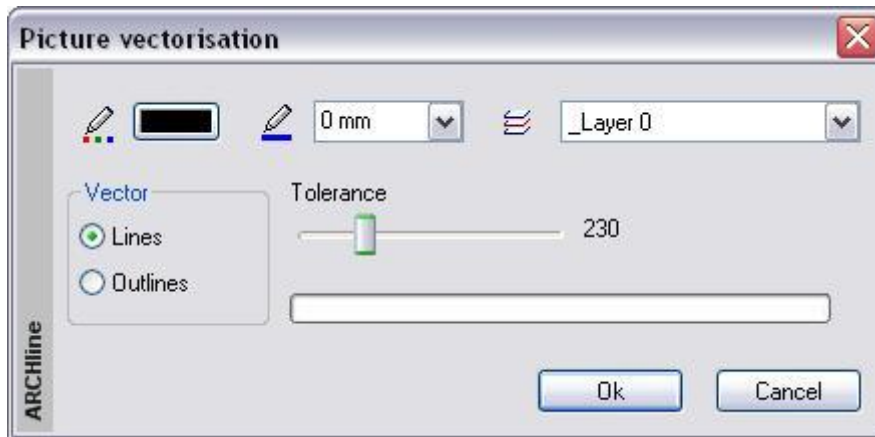
The algorithm finds the contours on the image file and generates lines on top of them. The result is a lined drawing. The algorithm allows for the recognition of not only lines but of open and closed lone chains.

You can set the following parameters in the Vectorization dialog box thus appeared:

- ❖ The properties of the generated lines: *colour, width, and layer*.
- ❖ The tolerance that influences the accuracy of vectorization.
- ❖ The type of vectorization: line or contour vectorization.

Line vectorization recognizes e.g. the boundary of a site as a line.

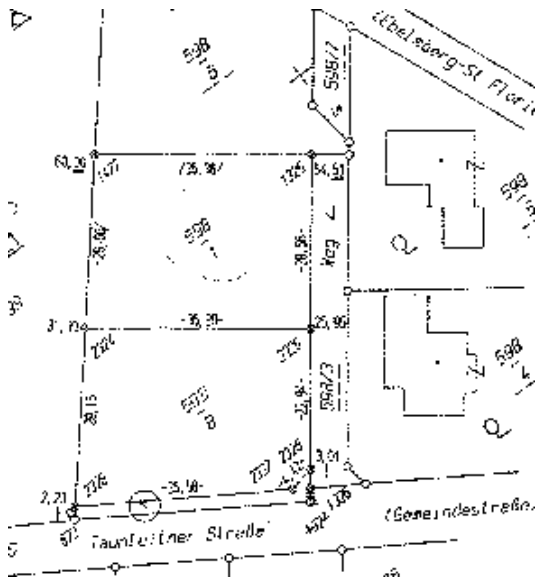
Contour vectorization generates a line on both sides of the boundary line.



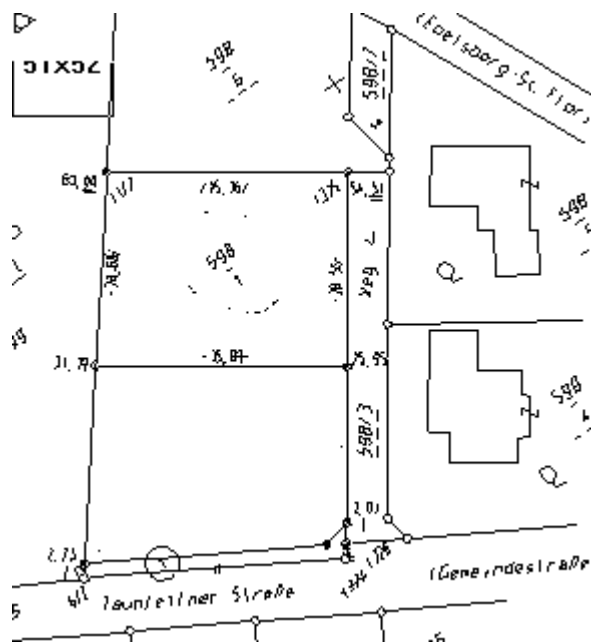
This method can be effectively applied together with the calibration function.

For example: In the case of a general plan first you have to use calibration. After calibration your general plan is true-to-scale. Now you can use vectorization. The result is a true-to-scale lined drawing. You can switch off the image file if it is no more needed. You can further edit the lined general plan.

The general plan as an image file after calibration:

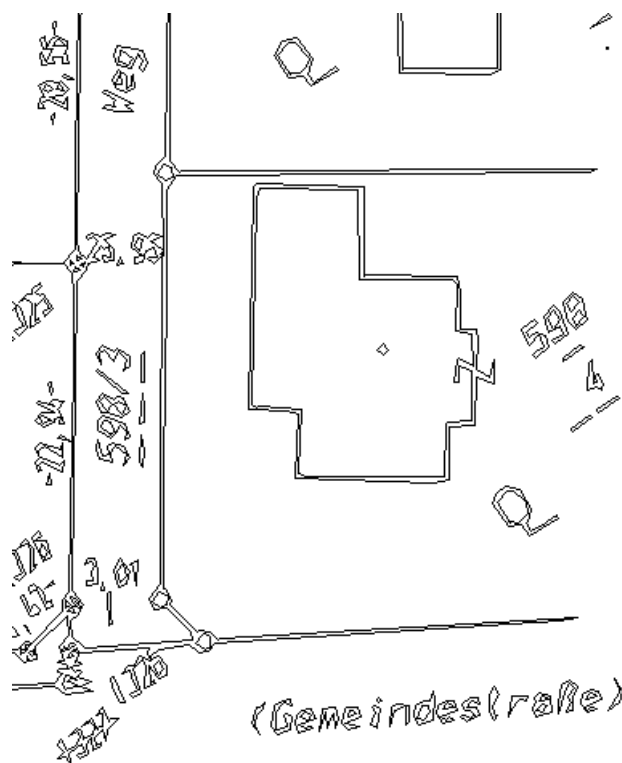


The general plan after line vectorization:



We have erased the unnecessary words (that have been generated into lines, too) of the lower site in the lined drawing.

The general plan after contour vectorization:



There is a difference between the Vectorization function and the Find edges function of photogrammetry. Find edges can be applied for *photos* and measures the difference between the grey levels of the image file pixels.

15.4. Inserting 3D model in photo's context

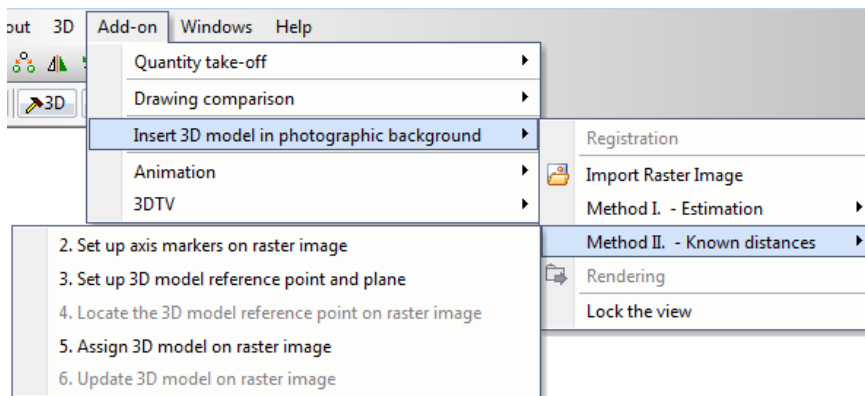
Introduction

During the design process it is frequently needed to display the 3D model into its construction environment.

ARCHLine.XP offers two methods for matching the 3D model to a photo's context.

Method I – Estimation

Method II – Known Distances



15.4.1. Method I – Estimation

The Estimation method is faster and easier to understand and no need for exact distances. See the description in the chapter 15.8.2. Setting up reference 3D model.

15.4.2. Method II. - – Known Distances

The Known Distances method requires exact distances.

You find the command in the *Add-On menu – Insert 3D Model in photo's context* menu:

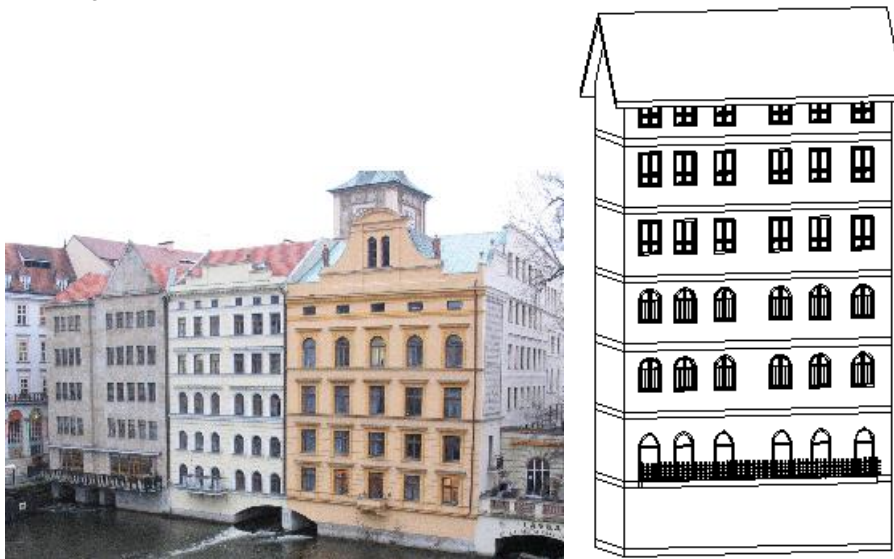
15.4.2.1. Set up view by block

Activate the 3D window.

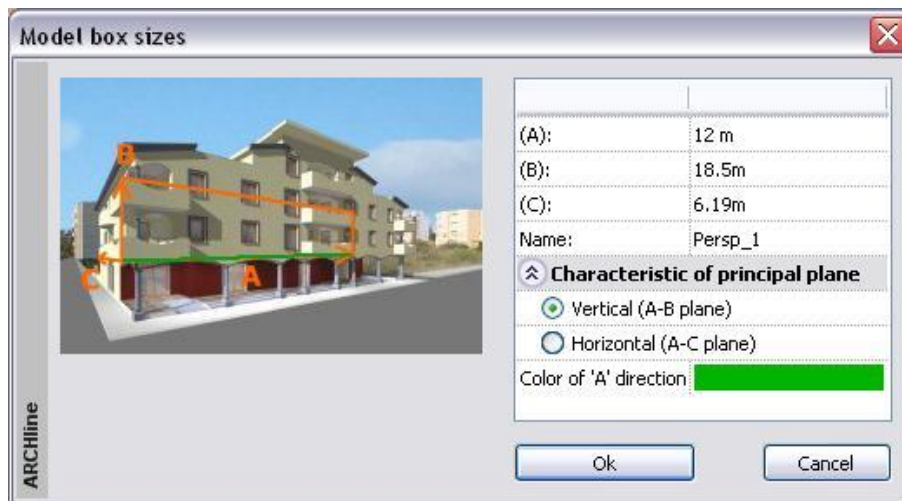
Select **Add-on/Insert 3D model in photo's context / Import Raster Image**. Select the photo in which you want to insert the model and then place it into the 3D window by giving its bottom-left and top-right corner.

You must define the perspective of the photograph. For this you have to use a reference block.

The following example will demonstrate this method. The task is to insert the model into the place of the second building on the right.



Select the **2. Set up Axis Markers on Raster Image** command to display the following dialog box:



This dialog box contains the dimensions of the model to be inserted. Of course, you can freely change the values according to your needs.

You can choose here whether you would like to use the horizontal or the vertical plane for the perspective plane. In this example we use the vertical plane.

- Specify the dimensions of the enclosing rectangle with the help of the distances measured on the photograph:

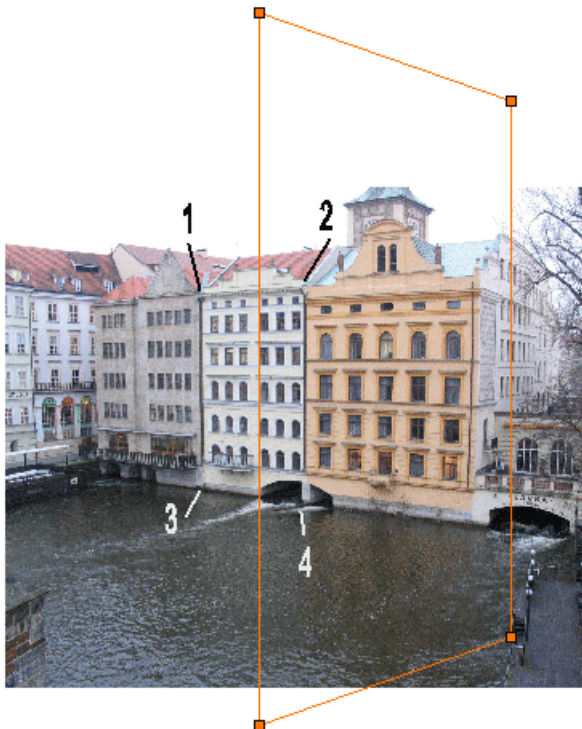
Width: 12 m, the distance between the two neighbouring houses, this equals the width of the model.

Height: 18.5 m, the height of the building shown in the photograph, up to the cornice.

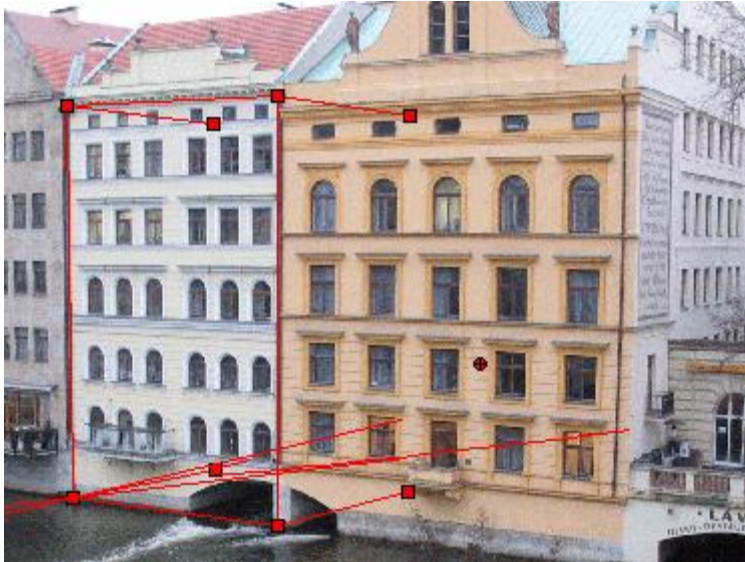
Depth: 6.19 m

- Define the name of the perspective transformation: Persp_1

The program inserts the reference block according to the dimensions that you have defined.



- Define the perspective of the photograph in a way that you move the nodes of the block to the appropriate places on the photograph that is in points 1, 2, 3 and 4.



- Press **Enter** to display the result on the screen.
- Move the edge of the block representing its depth along the hyperbole, taking account of the edges representing the depth of the building.
- If you are satisfied with the perspective you have created, press **Enter**, and the program completes the definition of the perspective.

15.4.2.2. Update 3D model on Raster Image

If you are dissatisfied with the perspective formerly defined, you have the possibility to modify the perspective definition later.

By applying the *Update 3D model on Raster Image* command you can adjust the position of the nodes of the previously defined perspective block.

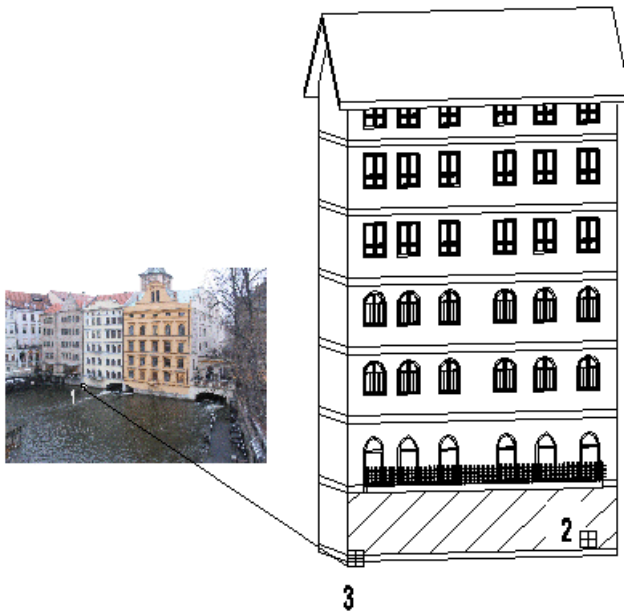
- Select the point of the perspective plane you wish to move.
- Specify the location of the new point.

15.4.2.3. Assign 3D model on Raster Image

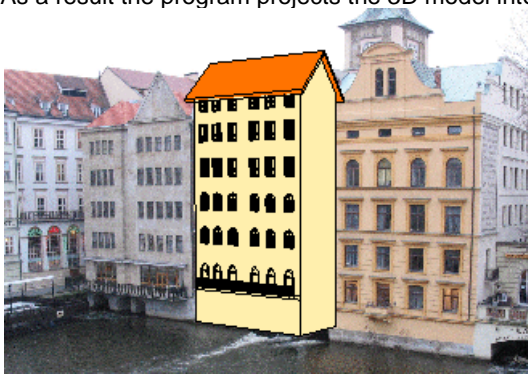
With this command you can insert the object into the perspective of the photograph in a way that you assign a point of the perspective plane to the corresponding point of the 3D model (see the previous figure).

The program fits the 3D model into the original viewpoint of the photograph. If you apply precise values the program performs the command with high accuracy.

- Define a point on the perspective photograph: *point 1*.
- Define the appropriate 3D plane on the object: *point 2*, or choose from the options of **SSOLID MENU**.
- **ENTER** The selected plane is rotated in the appropriate direction.
- **NO** Selects another plane.



- Specify the corresponding reference point on the 3D plane: *point 3*, or select an option from *3D point definition*. As a result the program projects the 3D model into the photograph.



This way we have inserted the model into the photograph and now it is displayed in the same perspective as its surroundings.



If the perspective has not been defined precisely, the result can be imprecise. In this case modify the definition of the perspective by applying the *Modify definition* command.

There are two more tasks to be completed:

- ❖ to create the photorealistic display of the model, and
- ❖ to edit the ready image in a way that the sides of the building does not hide the parts of the photograph.

If you are satisfied with the result of the previous perspective transformation, select *insert 3D model into perspective in Render window* command.

15.4.3. Create photorealistic image

The accurate matching of the model's photorealistic image and the photo of its real life surroundings is done automatically in ARCHLine.XP.

- ❖ Use the *Insert 3D model / photographic background / Rendering* to create the photorealistic image of the model already inserted in the photo. Enter the name and extension (bmp, jpg, etc.) of the image.

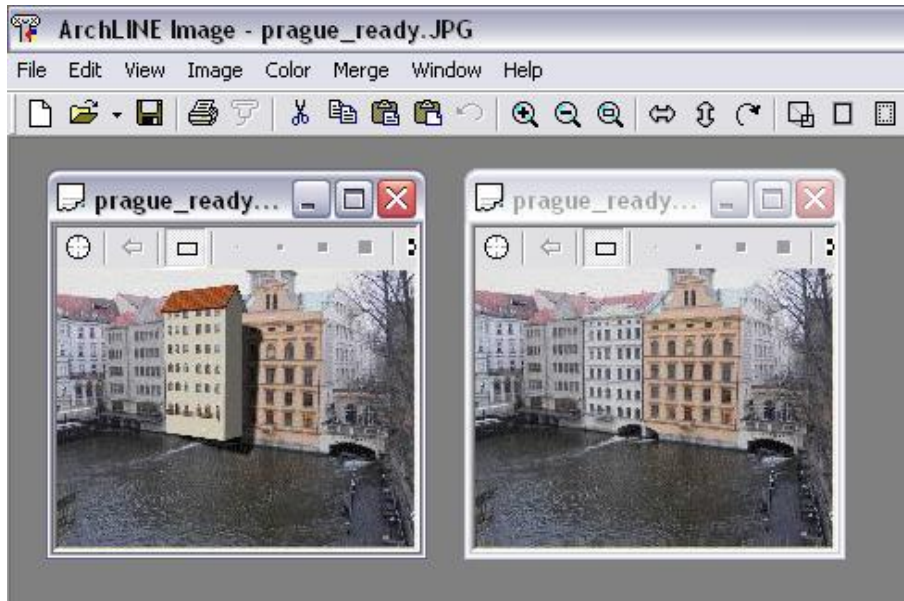
Now you have two images in two separate (name.bmp and name_back.bmp) files. The first file contains the photo with the model in it and the second one contains only the photo. The size and the colour of the second image correspond to those of the first one.




The command applies the light conditions set in the *3D view toolbar – Rendering* dialog box. So, before activating the command set the desired light conditions in the *3D view toolbar – Rendering* dialog.



You can often face typical problems such as for example when the side of the building covers the adjacent building in the photo. To overcome these obstacles, you need to edit the images:

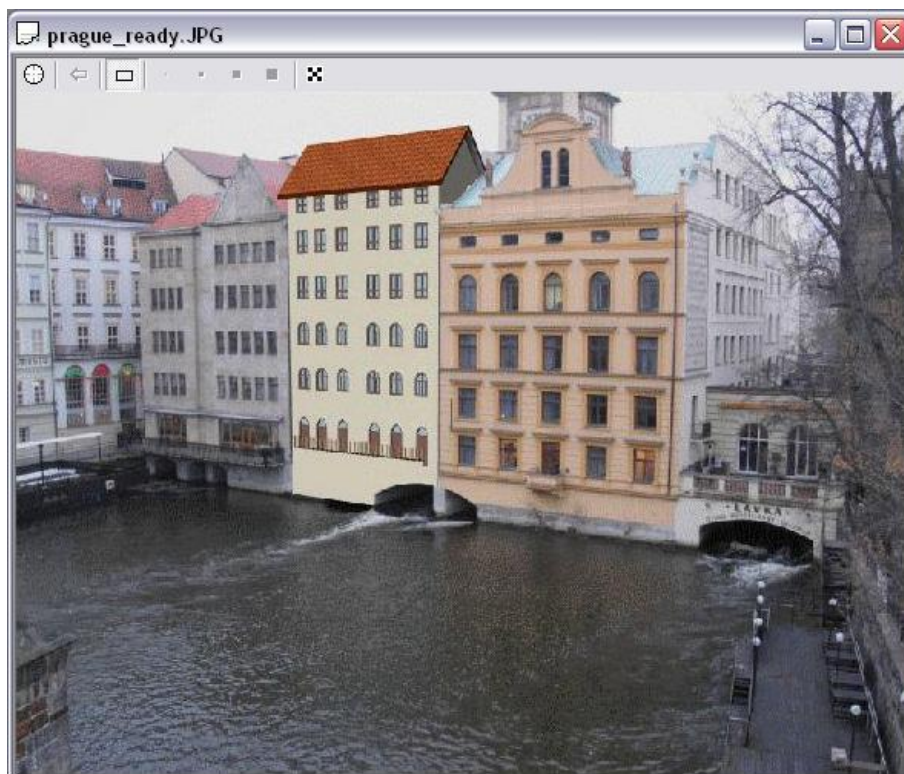
- ❖ After creating the images the program automatically displays the image editor of ARCHLine.XP with the two images:



- Activate the image containing the picture of the model (*name.bmp*), then use the  *Destination document* command to specify it as a destination document.

Make the necessary correction by using the pixel brushes or the selection rectangle. Copy the desired parts of the *name_back.bmp* image onto the *name.bmp* image:

- With the help of the  Rectangle selection icon select the area of the *name_back.bmp* image to be copied. Click on the  *Copy to destination* icon and the desired part appears in the *name.bmp* image.
- Use the pixel brushes to copy smaller details. Select the type of the pixel brush you want to use, and overdraw the desired parts in the *name_back.bmp* image. While doing so you can see the cursor in the *name.bmp* image, copying the pixels.





For the detailed description of the Image editor see Chapter 11.8.5. *Image editor*.

15.5. Reconstruction – Survey

Introduction

You can use the survey function of ARCHLine.XP to draw up the reconstruction drawings of old buildings.

You can start the planning with a traditional on-the-spot survey. It is difficult to measure the angle of the walls so you have to measure the length of the sides and diagonals in the room to be reconstructed instead. You can easily draw the accurate geometry of the rooms using these parameters with the help of the program. In this function of ARCHLine.XP a room refers to an architectural unit and the walls are actually the areas between the different rooms. You can use the building surveyed as freely as any other architectural object in the program.

You can also use the survey function for the conversion of old hand made plans. You do not have to do the on-the-spot survey in an already existing building if you have a handmade plan with recesses and walls of special structure or different width available as a raster image.

After the calibration (true-to-scale conversion) of the drawing you can redraw each room. In this case you do not need to use diagonal measuring, the true-to-scale plan is sufficient for the editing. You have to define the rooms as well as the outer wall, as the rooms and the areas between the rooms create the walls of the building.

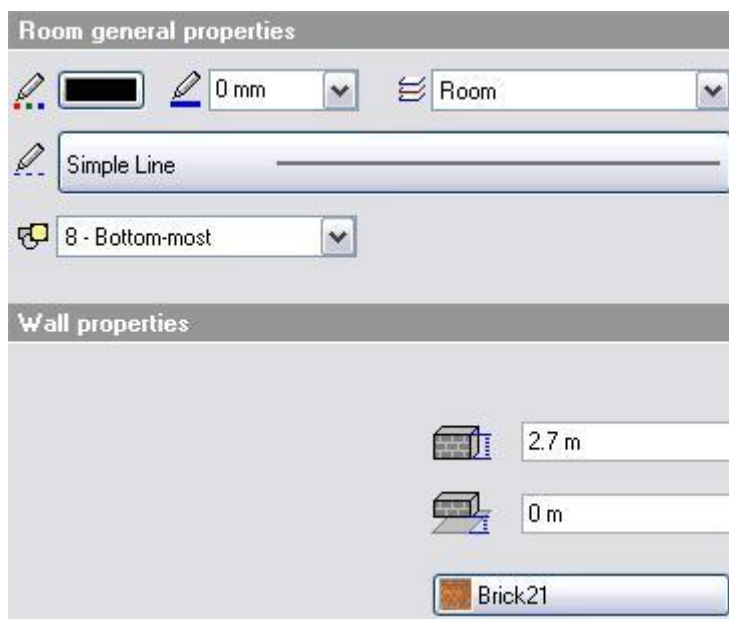
15.5.1. Specifying room properties

The wall structure of the room surveyed is different from that of the real walls.

You cannot create a layered structure or cannot set the reference line of the wall. The *Room properties* dialog box contains significantly less number of properties than the *Wall properties* dialog box.

Besides, you cannot apply special wall editing functions such as the creation of front view or section profiles. That is why you are recommended to change the surveyed walls into real walls after finishing the survey.

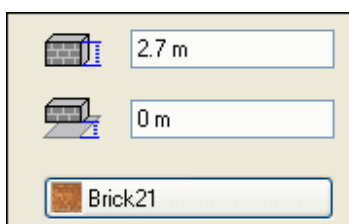
You can set the general properties of the room and its walls with this command. The following dialog box appears:



Rooms - like any other objects of ARCHLine.XP - have general properties such as colour, layer, and line type and line width.



See 3.2.1 *Specifying general properties*.

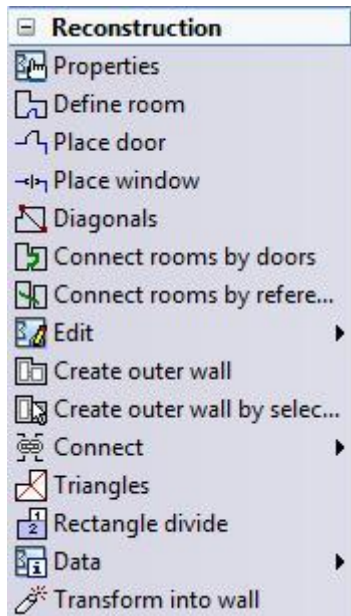


Further room properties:

- room height
- room level related to actual level
- wall material

15.5.2. Survey

The *Reconstruction toolbox – Survey commands* and the *Building menu - Survey commands* contain the methods used for the on-the-sport survey. The commands follow each other in the usual order of the real surveys.



- ❖ First you can create a new room and draw up its sketch.
- ❖ After drawing up the sketch you can increase the accuracy of the room structure with using diagonal measuring. Drawing the rooms is based on the triangle method. The three sides of the triangle clearly define its real angles and its geometrical shape.
- ❖ You can further modify your sketch by editing the nodes.
- ❖ You can connect the rooms with windows or reference points.
- ❖ You can create outer walls that can be further edited based on the survey data.
- ❖ The walls surveyed can be transformed to real walls after finishing the survey.

Both 2D drawing and 3D modelling are completely integrated in the program.
When drawing, the program will automatically generate the 3D model of the building.



Room walls are not the same as real Walls.
Room is a logical unit and room walls exclusively exist in the room itself.
A real wall is an independent object not related to any room.

15.5.2.1. Creating or selecting a room

This dialog box helps you to create a new room or select one from the already existing rooms.

You can choose between two methods when creating a room:

- ❖ you can select an already existing contour, or
- ❖ you can draw the contour of the room yourself.

Creating a room with the selection of an already existing contour

- **Click on** the *Select contour* option in the dialog box.
- Specify the name of the room and close the dialog box by clicking on the *OK* button.
- Select the objects of the contour made previously to create a room. When choosing the **CLOSE** option the program will select the polygon closest to the location of where you have clicked on and will use it as a contour.
- You can finish selecting the room wall by pressing the Enter button.



If the contour you have specified is not closed or its objects do not intersect each other, the program sends you an error message and will not generate the transformation.


Specifying a room by editing the contour

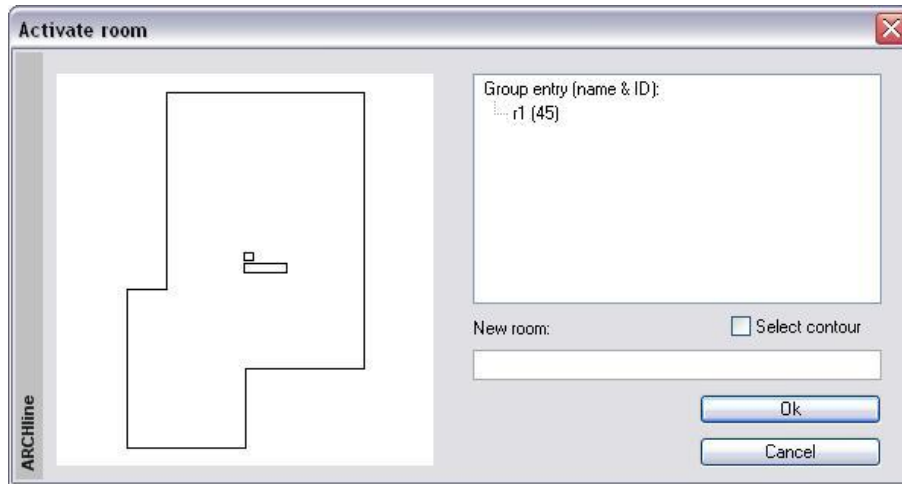
- **Turn off** the *Select contour* option.

- Enter the name of the room and close the dialog box by clicking on the *OK* button.
- Draw the contour defining the walls of the new room. The contour can consist of lines and arcs.




For more details see: 8.9. Specifying profile *-polyline* chapter.

- When pressing the Enter button the program will automatically close the line chain of the walls, however, the walls cannot intersect each other.
- After created the room, click on the  Select/deselect room icon. The dialog box list the rooms:



Room name and area

After the specification of the contour the program will automatically indicate the name of the room and its area in the geometrical centre of the room.

If you do not need the indication of the name of the room and its area, click on the  *Undo* button in the *Reference* toolbar.

The area measuring is associative; consequently, if you change the contour of the room the number indicating the area will be automatically changed.

You can modify the room name by the *Shortcut menu - Edit - Rename* command.

Selecting or activating a room

If you want to modify the text (name, area) indicated in the existing room you have to activate the room.

Select the room name from the list in the dialog box. The New room field remains empty. When closing the dialog box by clicking on the **OK** button the selected room is activated. Now you can modify the text and its position.



You can use the combination of **Ctrl+T** buttons for the same purpose. Press the buttons to select a new active room.

Deactivating a room

If you have an active room you cannot access the other rooms. After you have completed modifying the text of the room, you have to return to the level of the other rooms:

- Use the combination of the **Ctrl+T** buttons.
- Select the **TOP** option

Options:

| | |
|-------------|--|
| TOP | Closes the activated group and returns to the top level. |
| BACK | Closes the activated group and moves one level back. |



You can also use *Tools - Deactivate* command to deactivate a room.

15.5.2.2. Diagonal measuring

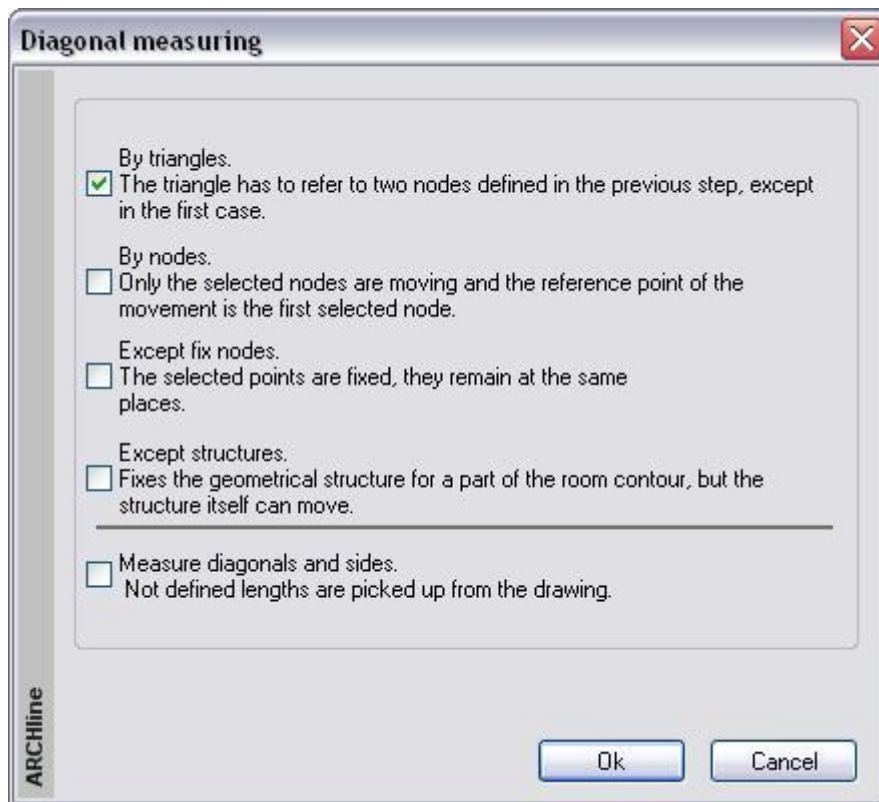
After drawing the sketch of the room you can measure the room diagonals to finalize the shape of the room.

You have several methods available in ARCHLine.XP to define the appropriate angles of the room. You can apply more than one method in the same room.



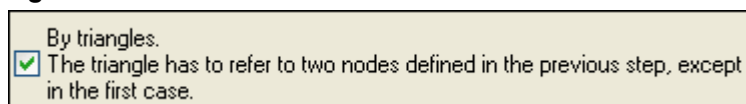
You have to specify the basic shape of the room and the minimum number of diagonals - usually $n-3$, n referring to the number of the sides of the room - to draw a room. If the number of diagonals exceeds $n-3$, the room will be „over defined“.

When you select the command, the following dialog box appears:



- Select the most suitable method.
You can select from the following methods:

By triangles



If you want to specify the length of the sides and the diagonals in succession, you have to divide the room into triangles. This single method will enable you to modify the shape of the room step by step. In other words, this method will use triangles for the measuring, so you have to fix two vertices of the triangle previously. (The level of freedom of the succeeding triangle can be only one.) In the case of the first triangle, however, you do not need to fix the vertices in advance.

- Define the contour of the room to be modified.

Fixing the first side or diagonal:

- Define a wall node to be the basis point. The basis point keeps its position and the next point is measured from it. (*point 1*)

Options:

| | |
|-----------------|---|
| MOVENODE | Replaces the wall node defined by clicking on it to the preferred position. The basis point and the newly defined wall node create a wall section. This is the only way to define the position of the second wall node. |
| ENTER | <ul style="list-style-type: none"> • You can select another basis point instead of the previous one. |

- Define the opposite point of the diagonal, which can be the wall node next to the basis point as well (*point 2*). This point can change its position. The program displays the diagonal between the two wall nodes. The dialog box displays the actual length of the diagonal:

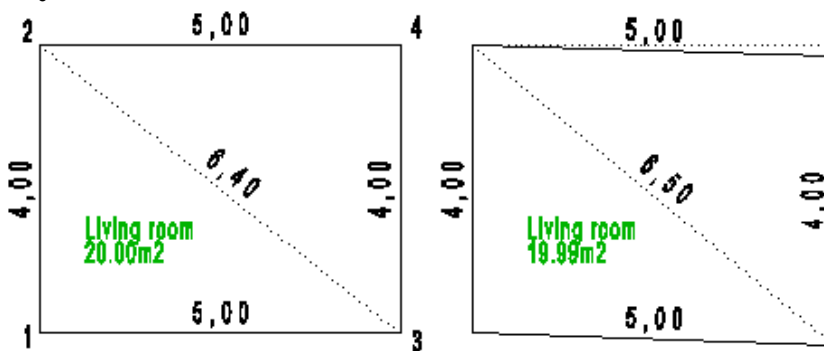
- Select either of the following two options:

| | |
|-----------------|---|
| Absolute | The new length refers to the full length. |
| Relative | <ul style="list-style-type: none"> • The new length refers to the relative value related to the original length. |

- Enter the new length of the diagonal. Click **OK**
If you have modified the actual length it means that the point defined for the second time can change its position. You have fixed the basis of the first triangle (by *points 1 and 2*). The program displays the new shape of the room.

Fixing the first triangle:

- Specify an undefined point to fix the first vertex of the triangle. This vertex can change its position (*point 3*).
- Define the second vertex of the triangle (select either of the already defined vertices, *point 1*).
- The dialog box appears and displays the actual length of the diagonal. Enter the new length. Click **OK**. This way you have defined the first side of the triangle (by *points 3 and 1*).
- Define the third vertex of the triangle by selecting one of the already defined points (*point 2*).
- The dialog box appears and displays the actual length of the diagonal. Enter the new length. This way you have defined the second side of the triangle (by *points 3 and 2*).



Option:

| | |
|--------------|--|
| ANGLE | You can modify the shape of the triangle by defining the angle. Select the third vertex of the triangle. The program hatches the defined triangle. Select one of the vertices of the triangle and enter its angle. |
|--------------|--|

The program displays the new shape of the room.

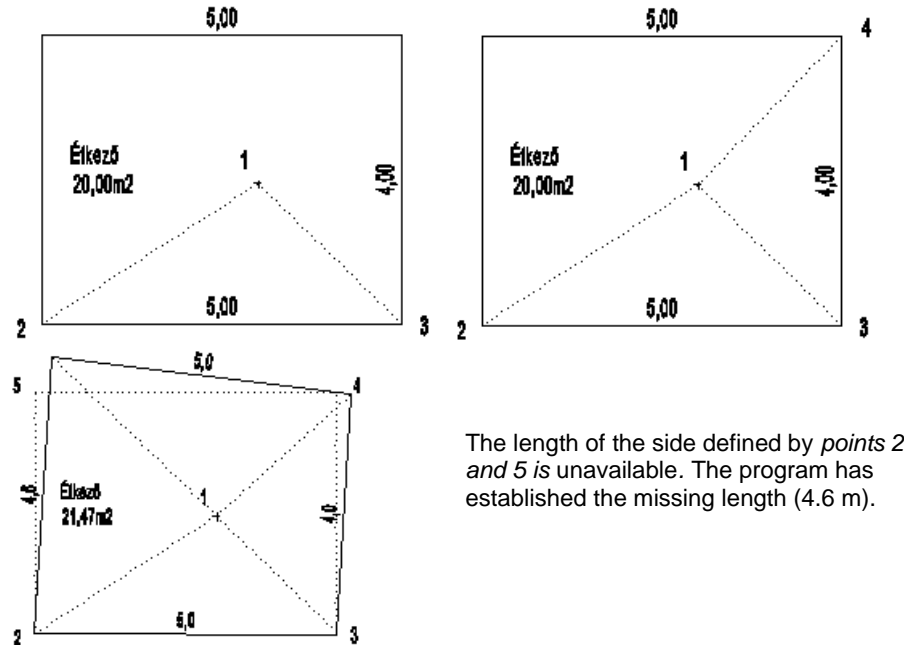
- Define further undefined points to create other triangles:
The basis of the triangle given in the example is the diagonal defined by *points 2 and 3*. The next (and last) undefined point is point 4. The first side of the second triangle is defined by *points 4 and 3* and its second side is defined by *points 4 and 2*.

Options:

| | |
|-----------------|--|
| BACKWARD | You can undo your previous modifications by the <i>BACWARD</i> option during the algorithm. |
| FORWARD | <ul style="list-style-type: none"> • You can move forward again by the <i>FORWARD</i> option. |

- Press **Enter** to complete the command.
The **Diagonal measuring** dialog box reappears.
- You can select another method for the reconstruction of the geometry of another room, or Click **Cancel** to exit the command.
- Defining the centre - Using the CPOINT option
You can use this option when you cannot survey any of the room walls (e.g. because of a furniture object objecting it). Here you have to define a reference point in the real room from where you can measure each corner of the room. From then on you will measure the distance of the corner points in relation to this reference point. You have to measure the length of the other (measurable) sides as well. You will generate triangles again without defining the unknown side. When finishing the algorithm the program will establish the length of the missing side. The method is the following:
 - Define the contour of the room to be modified.
 - Click on the **CPOINT** option and define a point to be a reference point. (*point 1*)

- Select one of the corner points of the room (*point 2*) and enter its distance from the reference point. This way you have defined the basis of the triangle (by *points 1 and 2*).
- Define another (undefined) corner point (*point 3*) next to point 2 and the previous corner point (*point 2*) as well and enter their distance. This way you have defined the first side of the triangle (by *points 2 and 3*).
- Select the reference point and enter its distance from the previous corner point. This way you have defined the second side of the triangle (by *points 3 and 1*).
- The basis of the next triangle is the second side of the first triangle (defined by *points 3 and 1*). Continue the same way and select the next undefined point (*point 4*, then *point 5*) and generate other triangles.
- When you have no more undefined points, use Enter to finish the specification of the points.



By nodes

By nodes.
☒ Only the selected nodes are moving and the reference point of the movement is the first selected node.

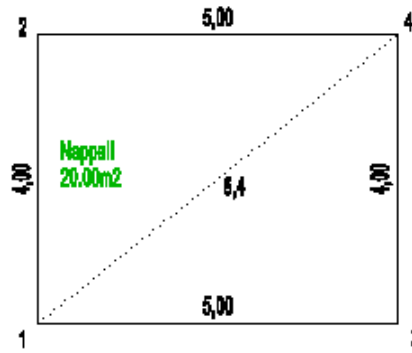
Disable the *By triangles* option in the dialog box and enable the *By nodes* option. With this method you can move only the previously defined nodes. The first defined node is the reference point of the moving. You do not generate the triangles based on each other. You can have several open triangles at the same time but will have to close them once.

- Define the contour of the room to be modified.
- Select a wall node to be the basis point. The basis point does not change its position. You can measure the sides next to it as well as the diagonals starting from it. (*point 1*)

Options:

| | |
|----------|---|
| MOVENODE | Replaces the wall node defined by clicking on it to the preferred position. The basis point and the newly defined wall node create a wall section. This is the only way to define the position of the second wall node. |
| ENTER | <ul style="list-style-type: none"> • You can select another basis point instead of the previous one. |

- Define the opposite point of the side or diagonal (*point 2*). This point can change its position. The program displays the side or diagonal between the two wall nodes (*points 1 and 2*). The dialog box displays the actual length of the side or diagonal:
- Select either of the following two options:

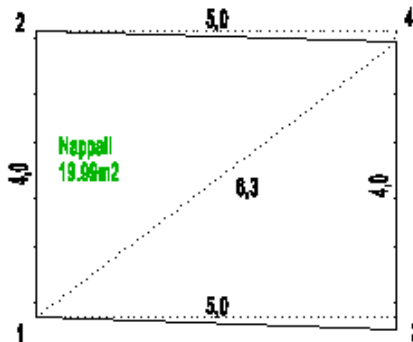


| | |
|-----------------|---|
| Absolute | The new length refers to the full length. |
| Relative | <ul style="list-style-type: none"> The new length refers to the relative value related to the original length. |

- Enter the new length of the diagonal. **OK**
- If you have modified the actual length it means that the point defined for the second time can change its position. The program displays the new shape of the room.
- Specify all the sides that can be measured from the first basis point or the diagonal and specify the lengths (points 3 and 4).
Press **Enter** to complete the specification of lengths in relation to the first basis point.

Define another basis point from where you can measure the length of sides and the diagonal.

In the example *point 4* becomes the new basis point from where you can measure the length of the sides defined by points 4 and 2 and by points 4 and 3 respectively.



By selecting a new basis point (3rd point) you can establish the length of the diagonal defined by points 3 and 2. This way you will over define the room. In the case of measuring inaccuracy the program offers to start an iteration process for the elimination of the error.



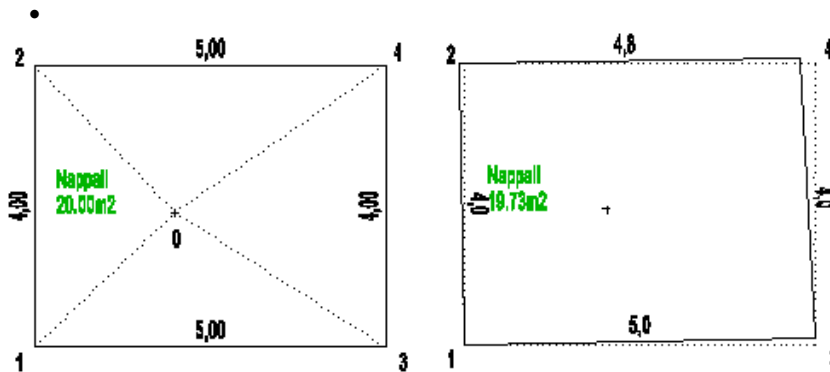
See *Eliminating measuring inaccuracy when using the By nodes method* at the end of the chapter.

The program displays the new shape of the room.

- Enter** Completes the modification of the room.
The **Diagonal Measuring** dialog box reappears.
- You can select another method for the reconstruction of the geometry of another room and then click on the **OK** option, or **Cancel** Exits the command.
- Defining the centre - Using the CPOINT option
You can use the **CPOINT** option here as well, just like in the case of the *triangle* method. Here you have to define a reference point in the real room from where you can measure each corner of the room. From then on you will measure the distance of the corner points in relation to this reference point. You have to measure the length of the other (measurable) sides as well.
First you enter the distance measured between the reference point and the corner then the lengths of the walls with the exception of the unknown side. When finishing the algorithm the program will establish the length of the missing side.
The method changes in the following way:
 - Define the contour of the room to be modified.
 - Click on the **CPOINT** option and define a point to be a reference point. (*point 0*)
 - Select one of the corner points of the room (*point 1*) and enter its distance from the reference point. (*Points 0 and 1*).
 - Select all the corner points in succession and enter their distances from the reference point, (*point 2, points 0 and 2, point 3, points 0 and 3, point 4, points 0 and 4*).
 - Use Enter to finish the specification of the distances from the reference point.

- Define a new basis point to establish the length of the sides as well. (*point 1*)
Define the vertices next to it and their distances from the basis point.
In the example given the length of the side defined by points 1 and 2, and that of the side defined by points 1 and 3 are established.
- Continue the selection of new basis points until you have defined all the measurable sides. The new basis point is *point 3* and establishes the length of the side defined by the points 3 and 4.
- Use Enter to finish the specification of the points
- Use Enter to finish the specification of the basis points

In the example given the length of the side defined by point 2 and 4 are established.



Method of Fixed nodes and method of Fix structures

The application of the following two methods are recommended when

- ❖ a certain part of the room has the required size and shape and you do not wish to modify them or
- ❖ the shape of the room is too complex with too many nodes to use diagonal measuring in one step.
- ❖ Use the following algorithm in these cases:
 - ❖ Perform diagonal measuring by nodes for the given part of the room.
 - ❖ Select the **Fixed nodes** or **Fixed structures** option in the dialog box and turn on **By triangles** or **By nodes** option at the same time.
 - ❖ Fix the already accurate nodes or structures.
 - ❖ Perform the diagonal measuring using the triangle or the nodes method for the unfixed nodes of the room.

Fixed nodes

Except fix nodes.

☒ The selected points are fixed, they remain at the same places.

You can fix points selected from among the corners of the room. These points will keep their coordinates.

- Besides enabling the Fixed nodes option enable either the **By triangles** or the **By nodes** option as well.
- Select the contour of the room to be modified.
- Select the nodes to be fixed.
Press **Enter** to complete the selection of the nodes.
- Perform the diagonal measuring with the help of the chosen method for the unfixed nodes of the room as well.

Fixed structures

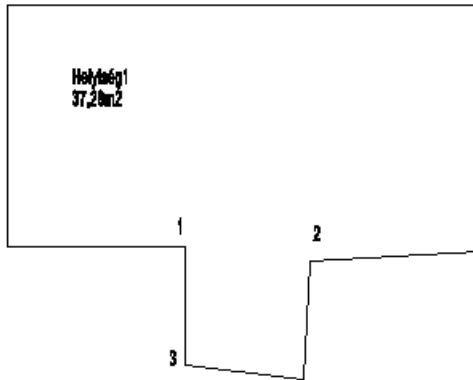
Except structures.

☒ Fixes the geometrical structure for a part of the room contour, but the structure itself can move.

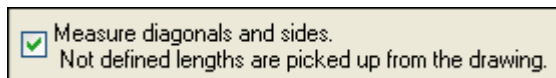
You can fix a previously selected part of the room contour so that the internal nodes of the fixed structure keep their relative position but the structure itself can be moved.

- Enable the *Fixed structures* and either the **By triangles** or the **By nodes** option.
- Select the contour of the room to be modified.
Define the structure to be fixed:
 - Select either of the endpoints of the fixed part (point 1).
 - Select the other endpoint of the part to be fixed (point 2).
 - Select an internal point of the fixed part (point 3.).
- Repeat the commands to fix further structures, or
Press **Enter** to complete the selection of fixed structures.

- Perform the diagonal measuring for the unfixed nodes of the room using the chosen method (By triangles or By nodes).



Measuring diagonals and sides

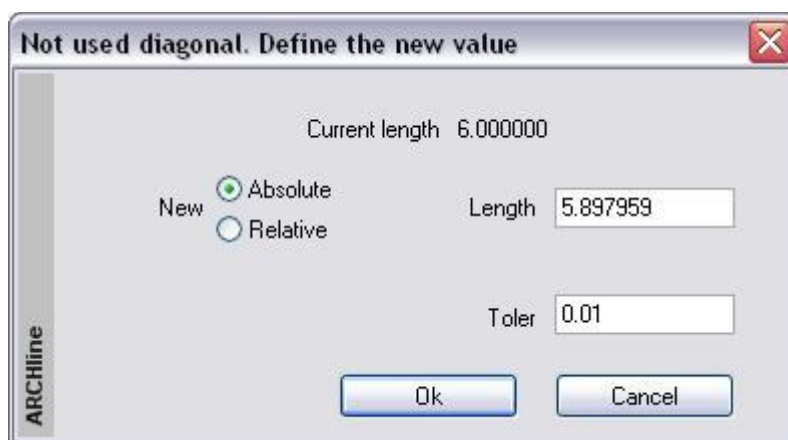


Only the reference point remains fixed. The undefined lengths are picked up from the drawing. You can measure the defined sides by the application of the **By nodes** method.

Eliminating measuring inaccuracy when using the By nodes method

On-the-spot surveys often lead to inaccuracy. The program offers an iteration method to eliminate this problem. This method is based on the over definition of the room survey. You need to specify at least a number of $n-3$ diagonals (n referring to the number of the sides of the room) to define the accurate geometry of a room. If the number of diagonals surveyed exceeds $n-3$, the room is over defined.

When applying the survey method the program will indicate the measuring inaccuracy following the specification of the diagonals.



The dialog box offers a tolerance value for acceptance. You can either accept the suggested value or continue the application of the operation for another diagonal.

If you are sure that the specified wall or diagonal length is accurate, you do not need to change it, however, for other walls or diagonals you can set the allowable tolerance value yourself. This method of approach allows for the elimination of inaccuracy with regard to the triangles. The tolerance value of measuring inaccuracy is 1 cm for the survey, so you can create the geometry of the room within the accuracy of 1 cm. In case the tolerance value of 1 cm is not sufficient and the measuring inaccuracy exceeds it, it is recommended to perform the survey of the room in question again. If you do not repeat the survey, you can increase the tolerance value, this way allowing the acceptance of less accurate survey values.

15.5.2.3. Move, add, or delete corner point

You can move, add, or delete any selected room node with the help of this icon.

Moving a corner point

You can change the position of any corner point in the active room.

Adding a corner point

You can add new corner points to the sides of the selected room.

Option:

| | |
|-----------------|--|
| POLYLINE | You can add a polyline as a new part of the room. This is a quick way to insert new wall nodes. You can either use the option or the TAB button for this end. |
|-----------------|--|

Delete a corner point

Select the **DELETENODE** option to delete a corner point.

15.5.2.4. Straight wall - Arc wall

Using this command you can do the following modifications:

Arc wall → Straight wall

- Specify a straight wall to transform it into an arc wall.

Straight wall → Arc wall

- Specify a straight wall to be transformed.
- Specify a point. The arc wall will cross this point. You can also select one of the options.
- Press **Enter** to complete the command.

Options:

| | |
|------------------|-------------------------------------|
| DIAMETER | Value of the diameter |
| RADIUS | Value of the radius |
| PERIMETER | Value of the perimeter (arc length) |
| ARC | Value of the cord height of the arc |

15.5.2.5. Placement of doors

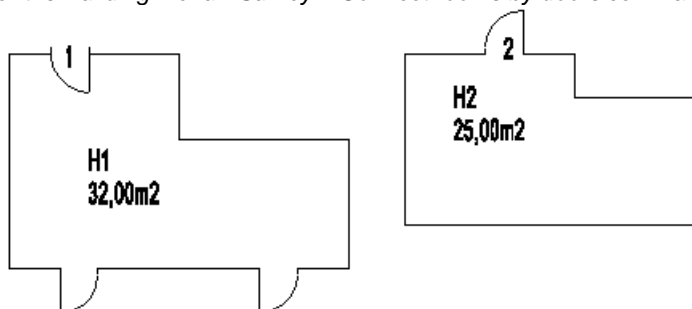
You can use this command to place openings on a point in a distance specified from the wall endpoint. To use this command first you have to specify the type of the opening and its properties.

- Specify a room wall where you wish to place a door.
- Enter the distance between the reference point of the door and the closest node. **OK**.
- Click on the door to specify the opening direction.
- Press **Enter** to complete the modification of the opening direction.
- Press **Enter** to complete the command.

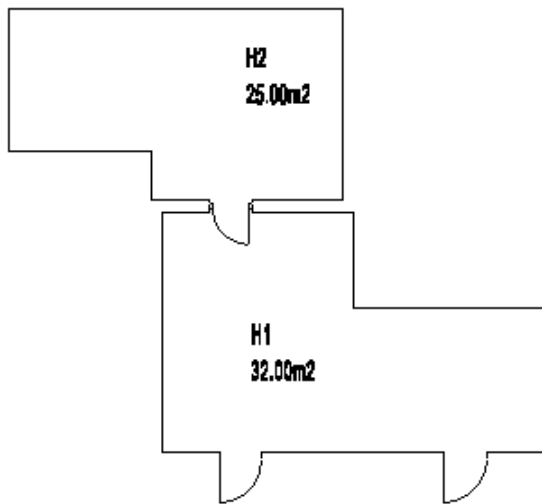
15.5.2.6. Connecting rooms by doors


You can connect two rooms by specifying a door in case the wall separating the two rooms has a constant thickness. First you have to place the door in both rooms the same way as they are in reality. You also have to specify the wall thickness. The program will connect the two rooms by the door.

You can also modify the walls separating the rooms subsequently. You can create walls of not constant thickness by moving or adding nodes. The properties of the door connecting the two rooms do not change so you can simply connect the two rooms after the modification of the wall structure. Use the *Room shortcut menu - Connect door/window* command or the *Building menu - Survey – Connect rooms by doors* command.



- Specify a door to connect the two rooms. (*door 1*)
 - Specify the identical door in the other room. (*door 2*)
- Specify wall thickness.
Press Enter to complete the command.

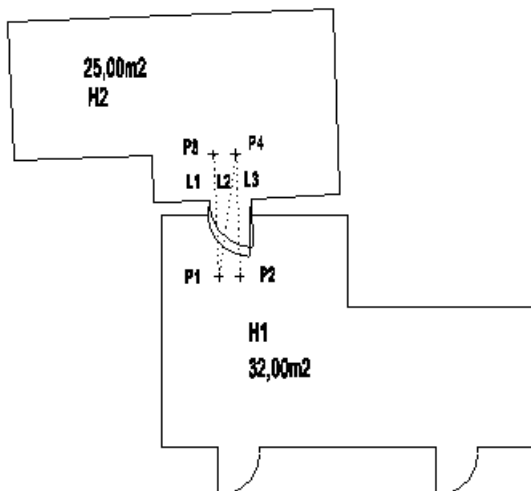


Use  the *Connect rooms by reference points* command if the thickness of the wall separating the rooms is not constant

15.5.2.7. Connecting rooms - By reference points

You can use this method of connecting rooms when the thickness of the wall separating the rooms is not constant. To apply this method you need two reference points in both rooms and the distances of the corresponding reference points. You can specify the reference points in the rooms by the *Shortcut menu - Define reference points* command. You also need a door connecting the two rooms through which you can measure the distances of the corresponding reference points.

- Specify a reference point in the room not moving. (P1)
- Specify a reference point in the room moving. (P3)
- Enter the distance of P1 and P3. (L1)
- Specify another reference point in the room moving. (P4)
- Enter the distance of P1 and P3. (L2)
- Specify another reference point in the room not moving. (P2)
- Specify another reference point in the room moving. (P4)
- Enter the distance of P4 and P3 (L3).



The program connects the two rooms.

If you are not satisfied with the result, activate the same command again and you can restart the process of connecting the two rooms.

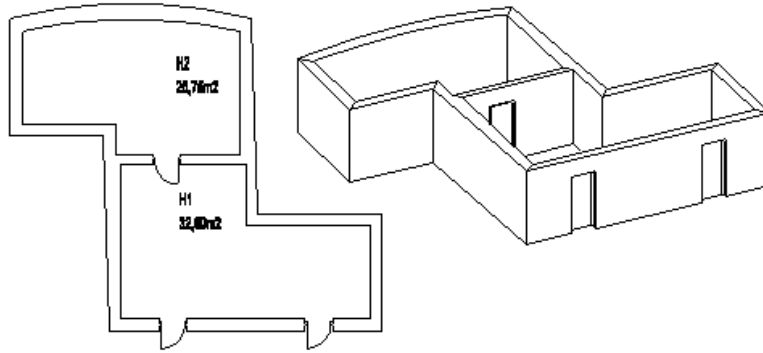
15.5.2.8. Creating an outer wall

The program creates an outer contour parallel with the walls, using the value of wall thickness. The result is a special new room called "an outer wall".

If the wall thickness between the different rooms exceeds the double of the distance between the outer contour and the wall the program draws two or more separate outer contours around the rooms. This is when actually the building is created which already has a 3D model.

- Enter wall thickness.

- Specify the room around which an outer wall is to be constructed, or Press **Enter** to specify each wall.

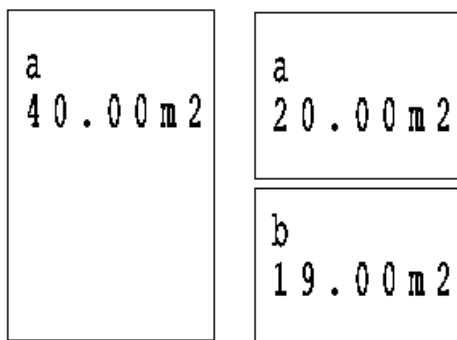


15.5.2.9. Dividing a room

You can use this command to divide an active room into two new rooms with a wall of defined thickness. You can also specify the name of the new rooms.

- Enter wall thickness.
- Specify a room.
- Specify the first point of the dividing wall.
- Specify the second point of the dividing wall.
- Enter the name of the new room. Press **Enter**.
- Specify the direction of the text or press the **Enter** button and place the text on the drawing.

Enter to complete the command.

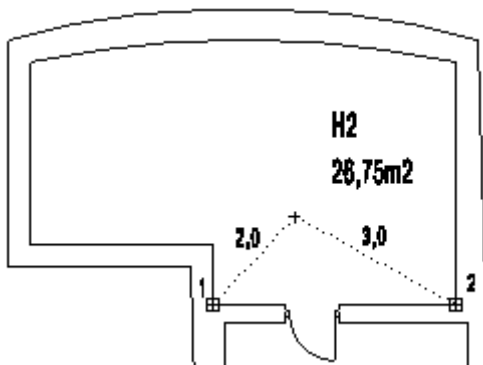


15.5.2.10. Defining reference point

When drawing a room you may need some fixed points to serve as general reference points. You can use these reference points when you connect rooms or when you transfer a straight wall into an arc wall. You need special measuring to fix these reference points.

In the case of an existing building with a fixed reference point, survey the distances of the reference point from the two corner points of the wall.

These distances and the distance between the two corner points create a triangle, which helps to clearly establish the reference point on the drawing.



- Select the command from the Shortcut menu.
- Specify the room where you wish to fix a reference point.

- Specify a wall node in the room. (*point 1*)
- Specify another wall node in the room. (*point 2*)
You can define the reference point as the third vertex of the triangle with the basis line defined by the two wall nodes previously specified. (*by points 1-2*)
- Enter the length of the first side of the triangle. (*2.0 m*)
- Enter the length of the second side of the triangle. (*3.0 m*)

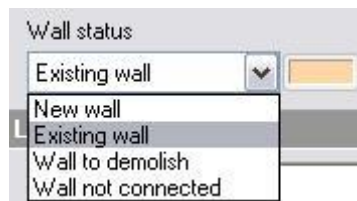
15.5.2.11. Transforming into a wall

After asking for the confirmation of the transformation the program transforms each surveyed room into individual walls.

This command is especially important in cases where you would like to continue drawing after the completion of the survey, e.g. you want to connect a new part to the surveyed building. Although the walls of the surveyed building have a few general properties, to individual walls you can apply all the wall editing functions. (You can create a layered wall structure, you can specify both longitude and cross-sections of wall profiles, you can place individual doors or windows on the drawing, or create sills and chamfers, etc.)

You can set the status of the walls of the surveyed building that have been transformed into real walls in the *Wall properties* dialog box:

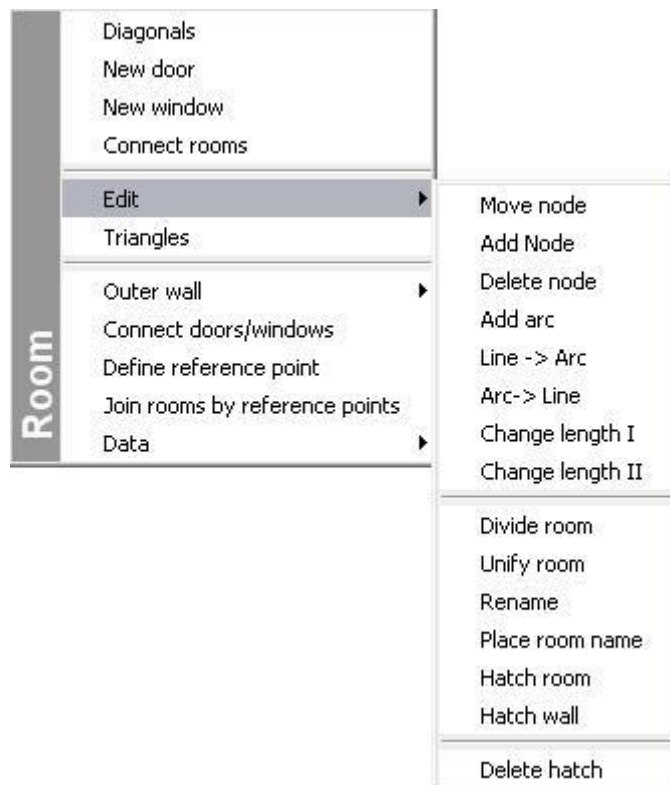
- ❖ **Existing wall**
- ❖ Wall to be demolish



When you renew or expand a building, this option allows you to distinguish between existing walls and walls to be demolished in the plan by applying different colours. Walls to be demolished are not displayed in the 3D view.

15.5.3. Edit and modify rooms

You can activate further editing, modifying and other survey-related commands from **Shortcut menu**:



15.5.3.1. Editing - Adding arcs

Using the given radius this command rounds off the selected room corner.

- Specify the room node to be rounded off or select one of the following options:

Options:

| | |
|---------------|---|
| RADIUS | Modifies the value of the given radius. |
|---------------|---|

| | |
|-----------------|---|
| DIAMETER | Modifies the value of the given diameter. |
|-----------------|---|

- Enter the new value, and then specify the room corner to be rounded off.

Enter Completes the command.

15.5.3.2. Editing - Changing length I

You often need to modify the wall length according to the survey results. The program has several methods to accurately establish for example the length of the outer wall in case of an external survey.

The first type of *Change length* modifies the length of the specified wall based on the triangle method. In this case the next wall only changes its direction but not its length.

- Click on the side to be modified. The dialog box appears and indicates the original length of the wall.
- Enter the absolute or the relative value of the new length.

Enter Completes the command.

15.5.3.3. Editing - Changing length II

This command changes the length of the specified wall without changing its direction. The wall next to the specified one follows the moving node and both its length and its direction change.

- Specify the side to be modified. The node closest to the place where you have clicked on will move while the other node will not change its position.

The dialog box shows the original length of the wall.

- Enter the absolute or the relative value of the new length.

Enter Completes the command.

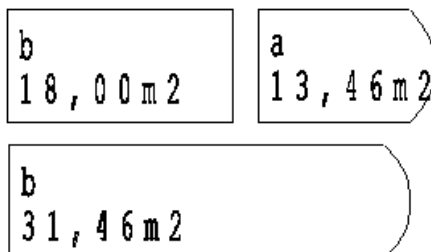
15.5.3.4. Editing - Joining

This command joins two rooms by specifying the mutual wall between them. The length of the mutual wall must be the same on both sides.

The command joins the two rooms together to be one. The names and areas of the rooms as well as the doors or windows - if there are any - are transformed accordingly. The name of the new room keeps the name of the first room.

- Specify the side of the first room to be joined to the adjoining room.
- Specify the appropriate side of the second room.

The command unites the two walls.



15.5.3.5. Editing - Renaming

This command renames the specified room.

- Select the name of the room from the list in the dialog box.
- Enter the new name in the name field. **OK**.

15.5.3.6. Editing- Placement of the name

This command places the indication of the name of the room to the required position.

- Specify a room to replace its name. Select the **AREA** option if you want to move the indication of the room name together with the indication of its area.
- Specify the direction of the text and press the **Enter** button. Place the text onto the drawing. You can also select any of the options.

Options:

| | |
|----------------|--|
| Tab | Press Tab to pick up an object angle. |
| POPMENU | Select one of the options in the Text specification pop menu to define the direction of the text. |

Enter Does not change the position of the text on the drawing.
Enter Completes the command.

15.5.3.7. Editing - Room hatching

This command applies a special hatch pattern to the specified room by applying the given hatching properties. The walls are automatically considered to be the boundary of the new hatch area.

- Specify a room.
Enter Quits the command.

15.5.3.8. Editing - Wall hatching

This command automatically applies a hatch pattern to each wall by applying the given hatching properties.



You can activate the specified room by the *Ctrl+T* button combination. You can modify the properties of the active room (wall) by clicking twice on its hatch pattern. After the modifications use the *Tools - Deactivate* command.

15.5.3.9. Editing - Delete hatching

This command deletes the hatch pattern of a specified room/wall.

- Specify a room/wall to delete its hatch pattern.
Enter Completes the command.

15.5.3.10. Creating an outer wall by selection

You can transform an existing profile into the outer contour of a room. First you have to draw a closed profile around the room using any of the *Line*, *Polyline*, or *Arc* 2D drawing objects. The *Create outer wall by selection* command can transform this shape into an outer wall. An error message is displayed if the contour line is not closed or its sections intersect and the transformation is not performed.

- Select each object of an already existing profile or select the **CHAIN** option to specify an already existing chain. Press **Enter** to finish the specification,
or
- Press the **Enter** button and draw the outer contour directly, using lines and arcs. Press **Enter** to close the contour.

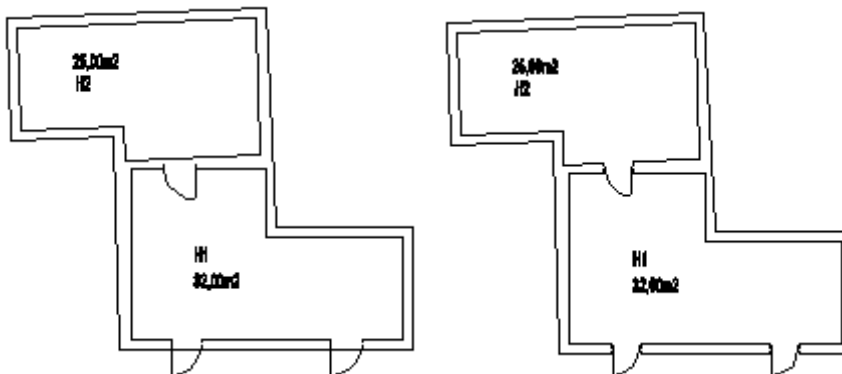
15.5.3.11. Connecting doors or/and windows

With the following commands you can connect doors or windows to the room or disconnect them from the specified walls. You can also use these commands if you have unconnected doors or windows in the room, however, you wish to create an outer wall.



15.5.3.12. Connecting doors or/and windows - Connecting all the doors or/and windows

After connecting the rooms and drawing the outer contour of the building you can connect the doors and the windows to the outer side of the wall. This command automatically connects each door and window to the wall.



15.5.3.13. Connecting doors or/and windows - Connecting one door or window

This command connects the selected door or window to the wall.

15.5.3.14. Specify a door or a window to be connected to the wall.

Enter Completes the command.

15.5.3.15. Connecting doors or/and windows - Disconnecting one door or window

This command disconnects the specified door or window from the dividing wall or from the outer wall.

- Specify a door or a window to be disconnected from the other wall.
Enter Completes the command.

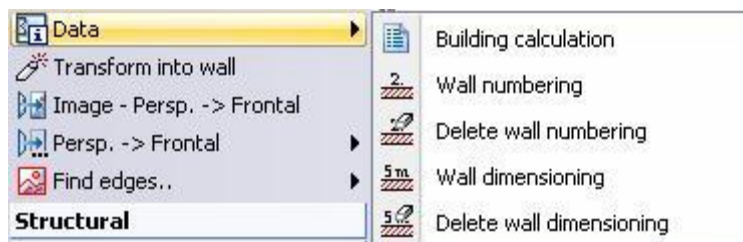
15.5.3.16. New window

You can place a new window in the surveyed building in a distance specified from the corner point of the wall. First you have to select the appropriate window type in the **Window properties** dialog box. You can move the selected window to the required position with the command in the **Shortcut menu**.

15.5.3.17. Data

It is very important to be able to query the survey data when drawing the survey plan.

- Both *Toolbox – Reconstruction tool – Data - Building calculation* command and *Add-On menu - Quantity Take-Off - Building calculation* command displays the same dialog box.
- The **Wall numbering** command facilitates the use of the list by making it possible to clearly identify the values of the list.
- The **Wall dimensioning** command is a quick way to see the length of the walls.
- After application you can also delete wall dimensioning.



15.5.3.18. Data - Building calculation

The program creates two types of lists.

The first list contains the values of the rooms in the drawing, that is: room name, floor name, room area, room capacity, and room perimeter, the size of the surface to be illuminated and its proportion to the total wall surface, and the total area of the rooms.

| Szintek | ID | Név | Terület | Magasság | Térfogat | Körület | Bevilágított terület | Arány |
|---------|----|-----------|---------|----------|----------|---------|----------------------|--------|
| 0 | 1 | sz1 | 36.36 | 2.7 | 98.173 | 27.669 | 1.53 | 0.0421 |
| 0 | 10 | sz2 | 27.251 | 2.7 | 73.577 | 21.065 | 0 | 0 |
| 0 | 75 | Kőiső fal | 79.488 | 2.7 | 214.618 | 39.764 | 0 | 0 |
| Summa | | | 83.611 | | 171.75 | 48.734 | 1.53 | |

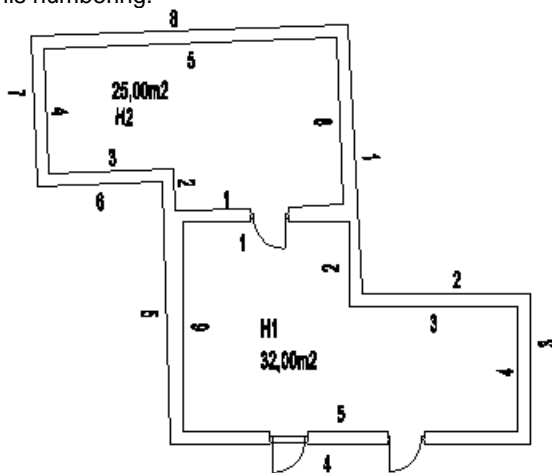
The detailed list displays the values related to each wall in each room, that is: wall numbering, wall height, wall length, and gross and net wall surface. The gross wall surface consists of the net wall surface and the area of the openings.

| Kőiső fal | ID | Magasság | Hosszúság | Brut. terület | Net. terület |
|-----------|---------|----------|-----------|---------------|--------------|
| | Fa1 | 2.7 | 5.289 | 14.307 | 14.307 |
| | Fa2 | 2.7 | 6.387 | 17.246 | 17.246 |
| | Fa3 | 2.7 | 12.328 | 33.281 | 31.819 |
| | Fa4 | 2.7 | 4.483 | 12.132 | 12.132 |
| | Fa5 | 2.7 | 3.469 | 9.34 | 9.34 |
| | Fa6 | 2.7 | 2.935 | 7.826 | 7.826 |
| | Fa7 | 2.7 | 3.82 | 9.776 | 9.776 |
| | Fa8 | 2.7 | 1.243 | 3.357 | 3.357 |
| | Összeg: | | 38.784 | 107.384 | 105.891 |
| sz2 | ID | Magasság | Hosszúság | Brut. terület | Net. terület |
| | Fa1 | 2.7 | 5.924 | 15.996 | 13.788 |
| | Fa2 | 2.7 | 5.225 | 14.107 | 14.107 |
| | Fa3 | 2.7 | 5.845 | 15.242 | 15.242 |
| | Fa4 | 2.7 | 4.271 | 11.532 | 11.532 |
| | Összeg: | | 21.065 | 56.877 | 54.678 |

These lists can be displayed in the drawing area, as well as printed, or exported into Word or Excel.

15.5.3.19. Data - Wall numbering

This command numbers the outer and inner walls. The objects are displayed in the lists of building calculation according to this numbering.

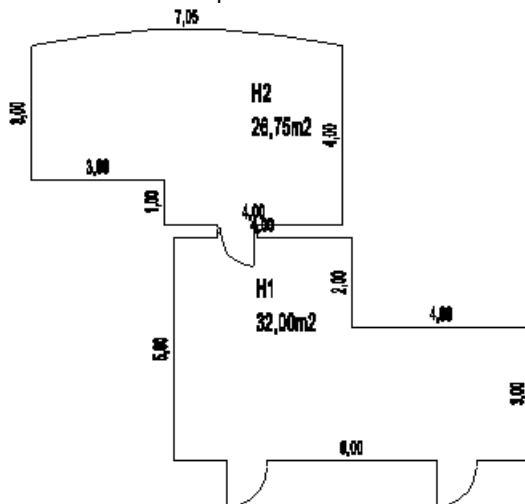


15.5.3.20. Data - Deleting wall numbering

This command deletes the numbering of the wall in the drawing.

15.5.3.21. Data - Wall dimensioning

This command automatically measures the length of each wall in each surveyed room to facilitate dimensioning. The values are indicated parallel to the walls.



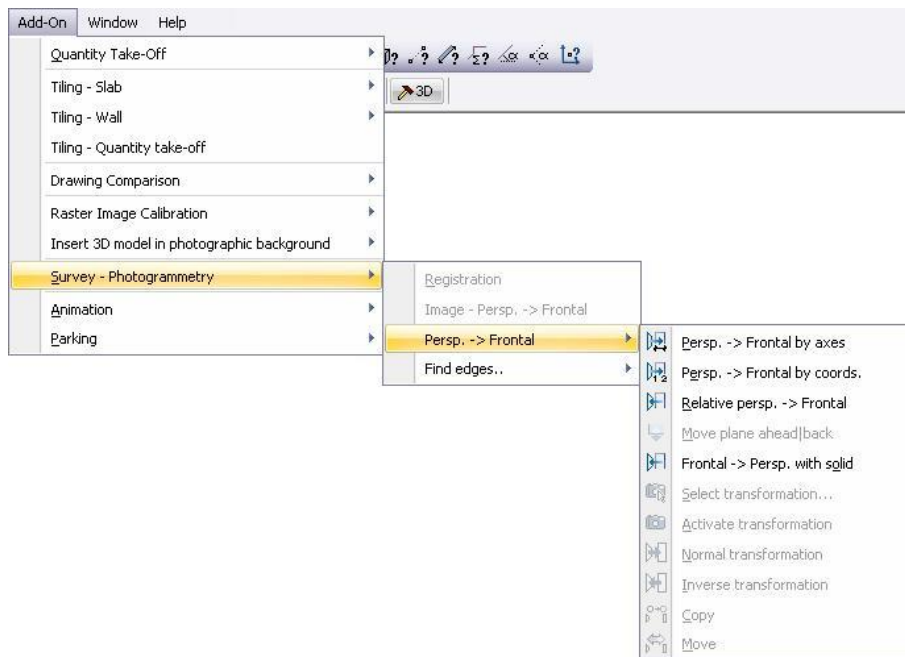
15.5.3.22. Data - Delete wall dimensioning

This command deletes all the indicated values in the surveyed room.

15.6. Reconstruction - Photogrammetry

15.6.1. Introduction

The topic to be discussed in this part is *Photogrammetry*. You find the commands in the *Add-On menu - Survey - Photogrammetry* and in the *Reconstruction* toolbox



Photogrammetry

In architecture photogrammetry means the proportional documentation of building fronts.

This documentation provides the data necessary for the calculation of reconstruction or rebuilding costs, and makes possible to create the plans.

Without photogrammetry, surveying and drawing building fronts, frescos or different architectural objects would be the most time-consuming and costly tasks in architecture.

Photograph

A *photograph* is used to survey the object to be documented (a building).

The photograph always implies a perspective, even if we have a front view photo of the object. As a reference document you can use a traditional photograph or an image taken with a digital camera. In the former case you must scan the photo to create the image file. The extension of the file can be *.jpg*, *.bmp*, or *.tiff*.

With *perspective calibrating* the photogrammetry tool of ARCHLine.XP enables you to make the photograph proportionate, so that later on you can work on the image. This way, with the help of the photographs, the measured values and the photogrammetry tool you can reconstruct damaged buildings, parts of buildings or other objects, of which no plans or drawings are available.

Practical advice

It is advised to mark the selected points on the building so that they can be easily recognized during calibration.

For the sake of precise measurements we suggest that you use calibration points located at the sides of the photograph.

To get even more precise values you should define distances that represent 70–80% of the base or the height of the photograph.

Overlay image

The next step is loading the image file. With the *Drafting menu – Insert raster images* command you can adjust the preferences of the loaded image file, i.e. the overlay image, and apply *Perspective calibration*.

Perspective calibration

The aim is to gather overall, proportionate measurements about the object during calibration, based on the measured distances and the photograph.

With perspective calibration you can proportionately represent in the Descartes coordinate system the points of that plane of the object that is displayed on the photograph. This way, you can define a complex transformation.

1. Defining orthogonal view

With this function you can create – based on a perspective photograph – an orthogonal photograph, on which you can carry out the survey of a building front.

In this case the program transforms the original photograph into a proportional frontal view, which has the shades of grey, after you have defined the following:

- ❖ a horizontal and a vertical distance, and
- ❖ at least two horizontal and two vertical directions.

II. Finding edges

This method is used in particular when you have to carry out a quick survey and there are complex forms, decorations or stonework on the frontal view. The *Find edges* method means that the program recognizes the edges of the object displayed on the photograph by identifying the shades of grey. Therefore, with this method you can demonstrate the frontal structure of the building. Naturally, the *Find edges* method does not substitute drawing the frontal view plan, but it can supplement it.

We recommend that you use this method if you wish to carry out a quick survey, but there are complex forms, decorations or stonework on the building front.

The *Find edges* function means that on the orthogonal photograph the program recognizes the edges by distinguishing between the different shades of grey. This way we can demonstrate the frontal structure of a building. Of course, this method cannot substitute drawing the frontal view plan, but it can supplement it.

It is best to use a photograph on which the edges, sills etc. on the building front can clearly be distinguished, and which contains the fewest possible shady areas, because these can be considered edges by the program.



15.6.2. Define orthogonal view

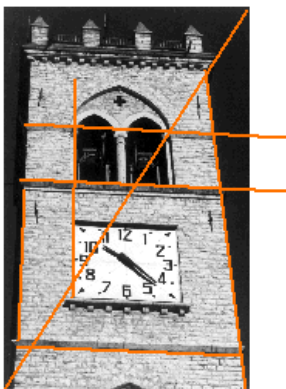
To define an orthogonal view you need to define the following:

- ❖ a horizontal and a vertical distance, specifying the dimensions of the orthogonal photograph, and
- ❖ at least two horizontal and two vertical directions, to calculate the focus points,
- ❖ a diagonal, to select that part of the image you wish to display on the orthogonal view.

Following these steps the program transforms the perspective photograph into an orthogonal view.

The function is demonstrated on the photograph of a tower (*campane.jpg*).

Defining horizontal lines:



- Select the raster image.
- Define a line on the photograph that is horizontal in real.
- Specify the length of the line (the width of the tower: 6 m)
- Define at least two more horizontal lines according to the figure. After this the program asks you to define the distances again. If you do not know the precise numbers, tick the **Distance unknown** option.
- **Enter** Completes the definition of horizontal lines.

Defining vertical lines

- According to the above figure, draw the vertical line at the edge of the column that is between the two string cornices.
- Specify the length of the line: 5.5 m.
- Define at least two more vertical lines, according to the above figure.
- It is not necessary to define distances.
- **Enter** Completes the definition of vertical lines.

When you define a direction with horizontal and vertical lines, in order to get a more precise result, draw these lines longer than they are in real life. You can be even more precise if you zoom on the photo when tracing the lines.

Defining a diagonal

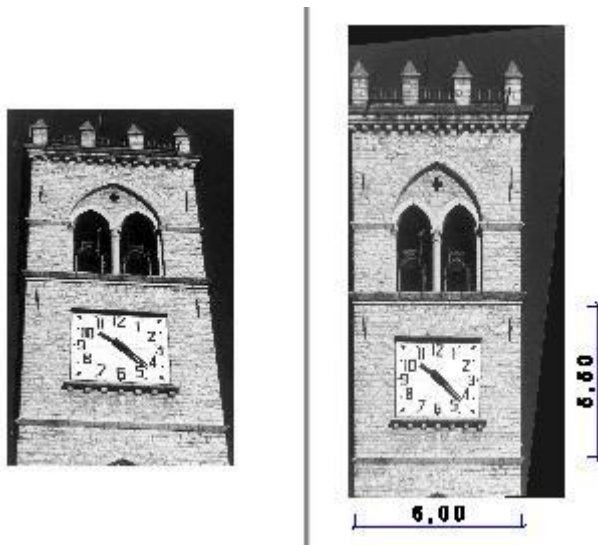
Select the part of the image you wish to display on the orthogonal view by defining the diagonal.

- Draw a diagonal from the bottom left corner to the top right corner of the photograph. As a result, the front view of the tower will be fully visible.



To display only part of the photograph in frontal view, you should draw the diagonal only on the part you wish to display. In this case the rest of the image will not be visible.

When you have finished the definition, the program creates the orthogonal image of the tower. The easiest way to check the accuracy of your work is to press Shift and draw actually horizontal and vertical lines along the most visible horizontal and vertical sides and edges on the photograph.




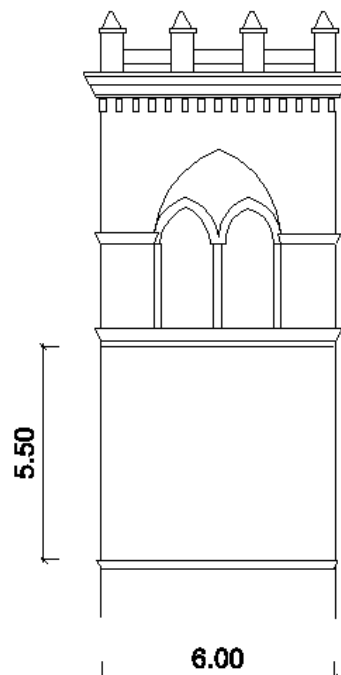
The program creates the orthogonal photograph under a new name, CAMPANEOrto.jpg, and saves it in the project.

Creating a frontal view plan

The frontal view of the tower has become proportional during the transformation process, so you can measure real values. Each object you draw on this image with the help of the geometrical drawing tools will correspond to the original dimensions of the tower.

After defining the orthogonal image the Perspective – Frontal transformation command becomes active.

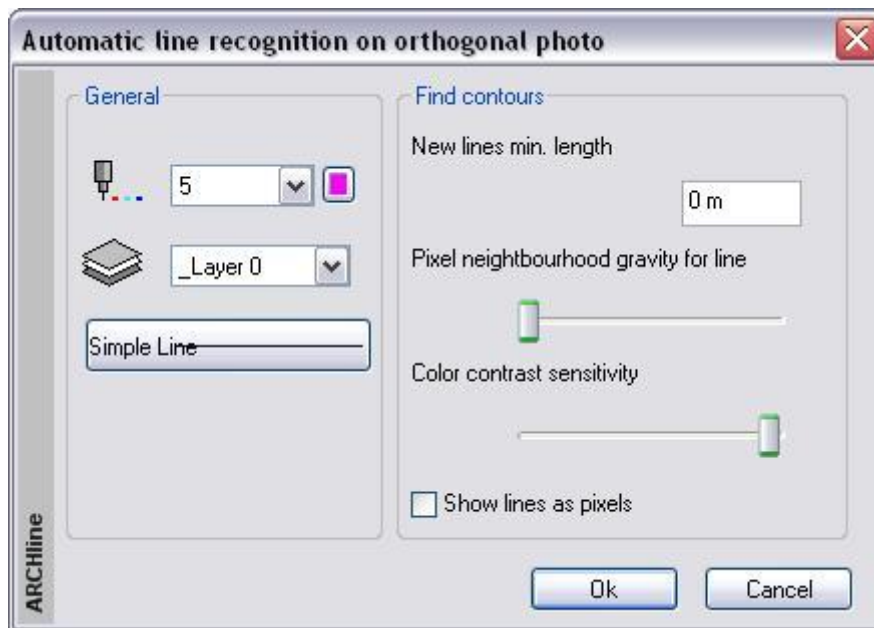
- Switch off the transformation by clicking on the  camera icon in the **Photo** toolbar.
- Trace the contours of the image on the frontal view image. This way you get the frontal view plan of the building.



15.6.3. Find edges – General

Drawing building fronts is a very demanding and time-consuming task. The Find edges function of ARCHLine.XP offers two possibilities to facilitate this work. The **Find edges – general** function distinguishes every line on the photograph by recognizing the different shades of grey.

- Select the raster image.
The **Automatic line recognition on orthogonal photo** dialog box appears.



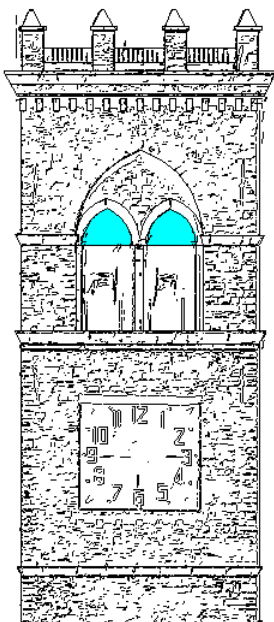
General

- First, specify the general properties (colour, layer, line type). It is recommended to choose a colour that is distinctly visible on a grey photograph.

Assign separate layers to the edges you have found.

Find contours

- The smaller value you determine for *new lines minimum length*, the more lines the program will draw. We suggest you set 0 as minimal length.
 - The *pixel neighbourhood gravity for line* value should be the smallest possible, while the *colour contrast sensitivity* value should be the highest possible.
- The *show lines as pixels* option can be turned on or off.



- Click **OK** when you have defined all the properties in the dialog box. The program begins the line recognition process.

To be able to see the lines drawn on the building front better, display the drawing without the photograph.

- Select from the photo shortcut menu the Frame / Show command. Then just the frame of the photo appears.

The displayed image is a real vector graphics drawing, which can be enlarged. On this image you can continue drawing your building front, by using any geometrical objects.

15.6.4. Find HV edges

Find HV edges are very similar to the previous command. The only difference is that in this case the program only searches for the horizontal and the vertical lines on the drawing.

15.7. Animation

Introduction

The Animation module of ARCHLine.XP makes a film in .avi format by sequencing rendered images.

15.7.1. Creating animation by path

To create animation you need a path to be followed by the camera and you also have to define the target point in each point of the path.

The animation will be created with the following method:

- ❖ Definition of the animation path by spline.
- ❖ Setting the timeframe of animation and the number of frames.
- ❖ Graphical adjustment of the path: moving, inserting and deleting nodes.
- ❖ Setting viewpoints and target points on the basis of display when viewing the animation.
- Setting correct timeframes and refining animation.
- This is facilitated by the DirectX technology.
- ❖ Creating animation: making the AVI file.

For this method you can use the commands in the *Add-On menu – Animation* submenu or in the *Define path* submenu:

15.7.1.1. Defining the path

You can specify a 3D animation by the definition of the following data:

- ❖ default height of camera path,
 - ❖ places of viewpoint/observer,
 - ❖ the target point/observed object in the individual viewpoints,
 - ❖ the height of the observer and the target points (e.g. always changing in the case of stairs).
- Specify the default height of the animation path; each point of the path will have the same height.
 - Give the observer's path by defining the points of the spline. The spline can be open or closed. In the case of closed path select the **CLOSED** option.
 - **Enter** Closes the path.
 - Define one by one the location of target points in the case of each viewpoint.

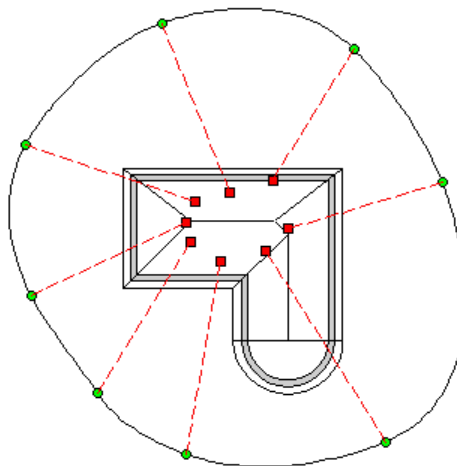


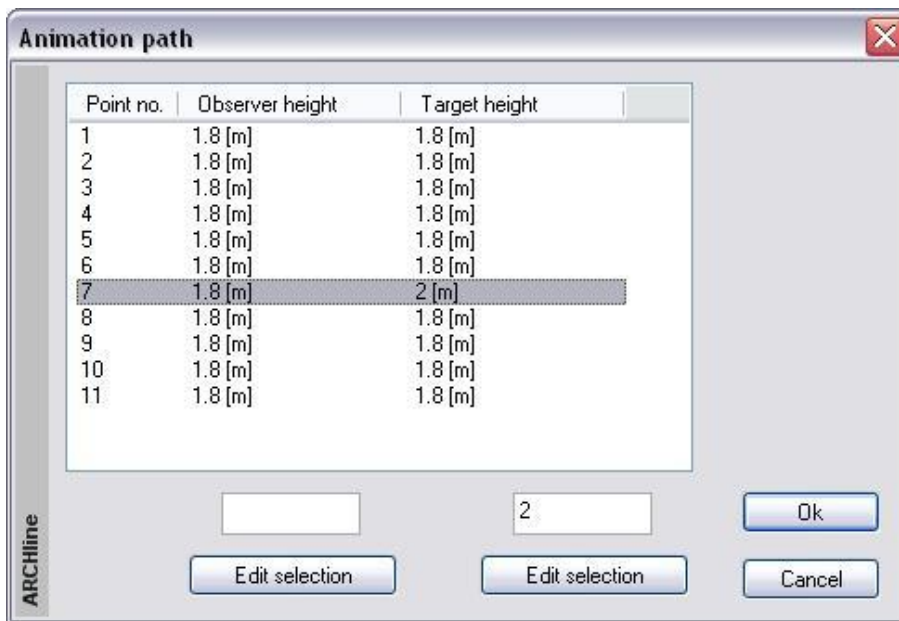
For details, see Chapter 11.2.9.  *Spline*.

The program will show the current observer and target points of the path.

- Select a viewpoint with a target point to be modified and define the location of the new target point.
- Select the next viewpoint, or
- **Enter** completes individual modification.

The **Animation path** dialog box will appear, showing the height of the viewpoints and target points:





The 'Animation path' dialog box contains a table with 11 rows. The first six rows have '1.8 [m]' in both the 'Observer height' and 'Target height' columns. The seventh row is highlighted and has '1.8 [m]' in the 'Observer height' column and '2 [m]' in the 'Target height' column. Rows 8 through 11 have '1.8 [m]' in both columns. Below the table are two empty input fields, a '2' in a small input field, and buttons for 'Edit selection', 'Ok', and 'Cancel'.

| Point no. | Observer height | Target height |
|-----------|-----------------|---------------|
| 1 | 1.8 [m] | 1.8 [m] |
| 2 | 1.8 [m] | 1.8 [m] |
| 3 | 1.8 [m] | 1.8 [m] |
| 4 | 1.8 [m] | 1.8 [m] |
| 5 | 1.8 [m] | 1.8 [m] |
| 6 | 1.8 [m] | 1.8 [m] |
| 7 | 1.8 [m] | 2 [m] |
| 8 | 1.8 [m] | 1.8 [m] |
| 9 | 1.8 [m] | 1.8 [m] |
| 10 | 1.8 [m] | 1.8 [m] |
| 11 | 1.8 [m] | 1.8 [m] |

- Select the observer/target points with the heights to be modified.
 - Type the new values in the appropriate fields.
 - Click on the **Edit selection** button.
- If you select multiple observer/target points, the program will assign the value given to each selected point.
- If you want to adjust value only, you can type in that value directly in the *Observer height/Target height* field.
- **OK** Closes the dialog box and ends the command.

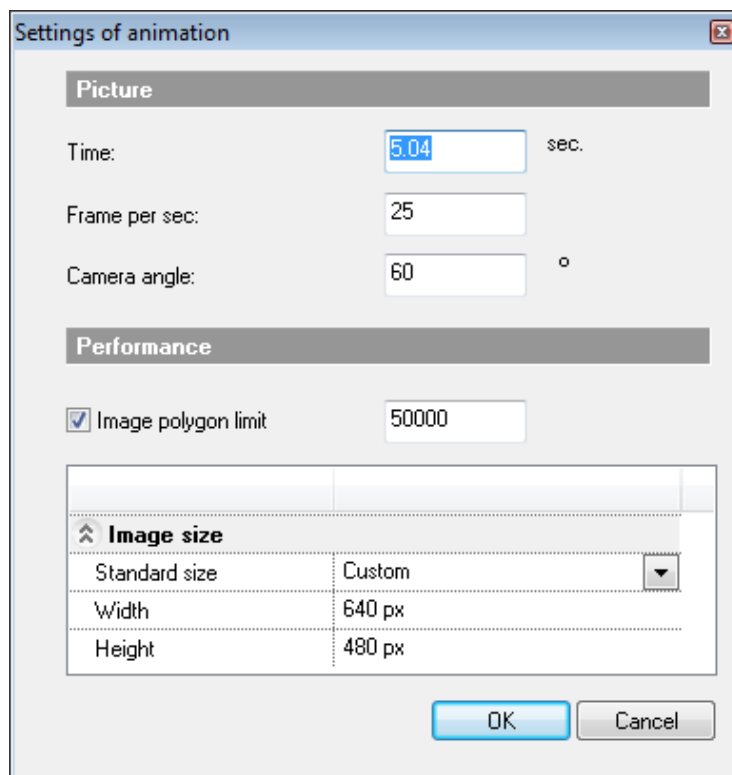
The animation path has been completed and you can modify anytime afterwards:

15.7.1.2. Settings of animation

Picture

After creating the animation path you have to specify the length of time and the number of frames of animation per second.

- Choose the animation path.



The 'Settings of animation' dialog box has two sections: 'Picture' and 'Performance'.

Picture section:

- Time: 5.04 sec.
- Frame per sec: 25
- Camera angle: 60 °

Performance section:

- ☒ Image polygon limit: 50000

Image size section:

| Image size | |
|---------------|--------|
| Standard size | Custom |
| Width | 640 px |
| Height | 480 px |

Buttons: OK, Cancel

- Type the length of animation in seconds.
- Type the number of frames of animation per second. For real film this value is between 25 and 30 images. With this number of images can perceive as a film. Under 25 frames per second the film is broken.
- Type the value of the Camera angle.

Image polygon limit (Face limit)

You can watch the animation in 3D view window before finishing the creation, that is why the setting of Image polygon limit is very important. You can reach the image polygon limit (Face limit) through Build 3D model dialog box too.



For details see *Chapter 13.2.1. DirectX settings*.

15.7.1.3. Adjusting node height

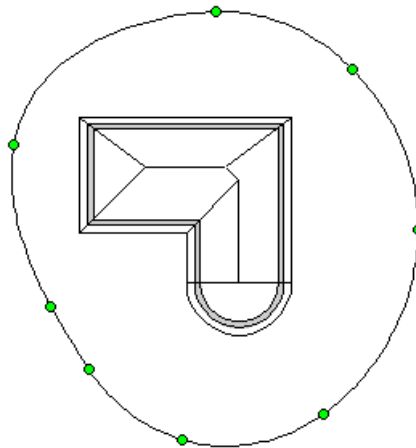
- Select the animation path.
- In the appearing dialog box, as in the case of definition, select the points with the height to be modified and set their new values.

15.7.1.4. Graphical adjustment of the path

To adjust the path graphically, use the commands

- ❖ Move node
- ❖ Add node
- ❖ Delete node
- ❖ Move destination point.

You can access these commands in the *Add-On menu – Animation submenu* or in the *Shortcut menu* of the path.

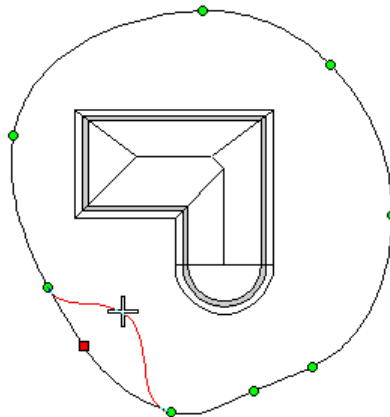


15.7.1.5. Move node

With this command you can modify the place and height of observer and target points.

Changing the place of observation points.

- Select the animation path.
- Select the node to be relocated.
- Define the place of the new node.
- **Enter** closes the modification of observation points.



In the figure you can see the observation and target points.

Modify target points + height.

- Select the observation point with the target point to be modified.
- Specify the new place of the target point.
- Specify the height of the selected observation and target point:
- Select a new point pair, or
- **Enter** completes modification.



You can run the Move node command by first selecting the animation path, then clicking on a node, and selecting the node to be moved and defining the new place for the node.

15.7.1.6. Add node

With this command you can add a new observation point to the animation path. You can modify the place of the corresponding target and you can also define the height of the new pair.

- Select the animation path.
- Select the edge of the spline where you want to add a new observation point.
- Specify the place of the new observation point.

The observation and target points now appear.

Modify the place of target points + height.

- Select the observation point with the target point to be modified.
- Specify the new place of the target point.
- Specify the height of the selected observation and target point:
- Select a new point pair, or
- **Enter** completes modification.

15.7.1.7. Delete node

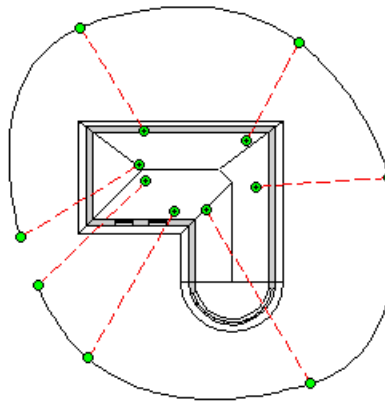
With this command you can delete an observation point from the animation path.

- Select the animation path.
- Click on the node to be deleted.
- Select another node to be deleted, or
- **Enter** Completes the command.

15.7.1.8. Move destination point

With this command you can modify the place of the target points.

- Select the animation path.
- In the figure you will see the observation and the target points.
- Select a target point and move it to its new place. You can move multiple target points if you want. Enter.
- The *Animation path* dialog box will pop up where you can modify observation and target point height.



15.7.1.9. Animation preview

After defining the animation path and making graphical modifications open the preview of the animation where you can:

- ❖ Play the animation promptly.
- ❖ Set animation time.
- ❖ With the perspective setting on key frames you can fine tune the spatial location of the observation point and the target point.
- ❖ You can record the animation.
- ❖ Select *Add-On menu – Animation – Preview* command and select the animation path. The *Animation editor* window will appear.



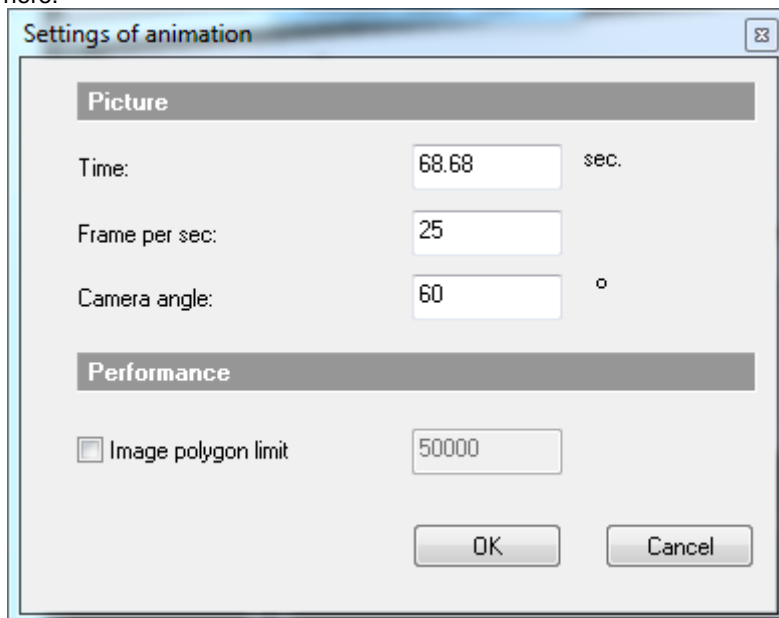
The Animation editor window is made up of different parts:

- ❖ **Animation settings**
- ❖ **Time line**
The timeline toolbar belongs to the bottom of the animation window.
- ❖ **Player toolbar**

Animation settings

Before playing the animation, you have to define the timeframe of the animation and the number of frames per seconds. If you click on the gear icon, the *Animation settings* dialog box will appear:

If you failed to set parameters with *Add-On menu – Animation – Animation settings* command, you can set these values here.



- Type in the length of the animation in seconds, then
- Type in the number of frames per second to be created. In the case of real films this number is between 25 and 30. The human eye would see it as a film. Under 25 frames per second the image will be jerky.
- Set the visual angle of the camera.
- Image polygon limit: The setting of *Image polygon limit* is necessary here, because you can see the animation in Image 3D window before creating.

Polygon limits set here will concern motion only. If you do not have a high performance graphic card, you should enable polygon limit to avoid the slowdown of the model.

Playing the animation

After setting the animation path you can play the definition.

To do so, click on the **Player toolbar** –  **Play icon**.

The animation will be shown in the frame. You can check this with the blue indicator in the timeline.

Timeline

The timeline expresses the total length of the animation in seconds. This corresponds to the timeframe you entered in the *Animation settings* dialog box.

If you have failed to set a timeframe, the program will assign to each path section (edge between the nodes of the spline) 1 second, and 25 frames to each second.



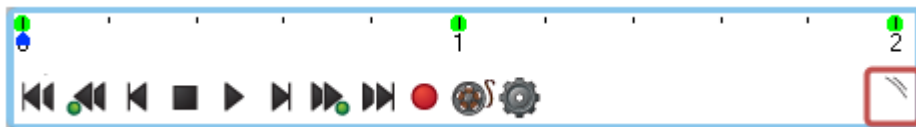
The green dots in the timeline are **key frames** corresponding to the nodes (spline nodes) of the path.

The image frame will always show the status corresponding to the position of the **blue slider**. You can move the blue slider in different ways:

Click on any point of the timeline and the blue slider will jump there and the model will take the corresponding status. Use the Arrow icons of the Player toolbar to step or to jump to the next frame in the timeline:

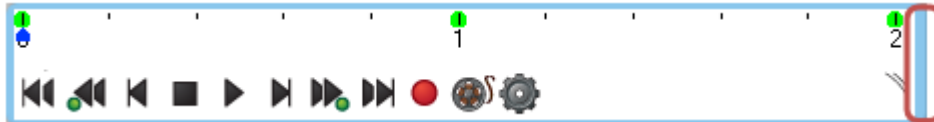
Move

You can move the timeline toolbar as a floating window anywhere on the workspace. To move the bar, move the mouse over the grip point on the right side and left click and drag it to where you want to place it and release the mouse button.



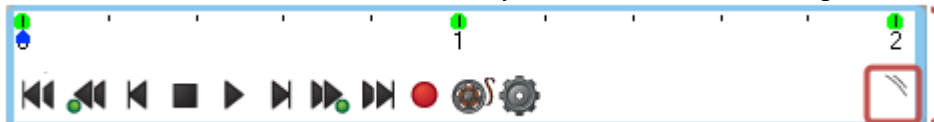
Resize

Move your cursor to the right size of the window. You will see the cursor change appearance. Hold down the left mouse button and drag the window to the size you want. then release it.



Restore

You can restore the timeline toolbar to its factory default state with a mouse right button click on the grip point.



Player toolbar



Besides playing the animation, you can use the icons of the *Player toolbar* to step in the animation and to launch the creation of animation. The meaning of the icons is the following (from left to right):

- | | |
|------------------------------|---|
| ❖ Jump to first frame | ❖ Jump to next frame |
| ❖ Jump to previous key frame | ❖ Jump to next key frame |
| ❖ Jump to previous frame | ❖ Jump to last frame |
| ❖ Stop animation | ❖ Create animation with photorealistic rendering, |
| ❖ Play animation | ❖ Create animation with quick AVI rendering |

Setting animation time section by section in the path

You specify the total animation path time when setting the animation. The program distributes that total time evenly among the path sections.

You can modify the time intervals of the individual path sections. You can do this in two different ways:

- ❖ Redistribution of the total timeframe
- ❖ Time by path sections

Redistribution of the total timeframe – Sliding key frames

- Click on a key frame in the timeline. The green dot representing the key frame will turn into a double arrow.
- Hold the mouse button and
- Drag the key frame.

Now you have modified the time relating to the path section before and after the key frame. The total timeframe did not change, only the distribution of time related to the two path sections.

Time by path sections – Right-click on the key frame

- Click on a key frame in the timeline. The green dot representing the key frame will turn into a double arrow. Right-click the double arrow.



You can define the time of the path section before the key frame in the dialog box popping up. This will not influence the next interval, so the total timeframe of the animation may be affected.

Relocate the observation point and the target point

- ❖ On key frames the perspective setting icon appears and you can fine tune the spatial location of the observation point and the target point.



The changes will be applied on the animation path on the floor plan after closing the Perspective setting dialog.

15.7.2. Create animation

After playing the animation several times and performing the necessary adjustments, the final step is to create the animation:



Please note that the *Animation editor window* is not saved into the project.

15.7.2.1. Quick AVI rendering

Add – on menu – Animation – Preview animation editor is extended with a quick AVI rendering command (camera icon). This command creates an animation video in AVI file format. The quality of the video corresponds to the 3D representation (wireframe, hidden lines, textured, x-ray view etc.).



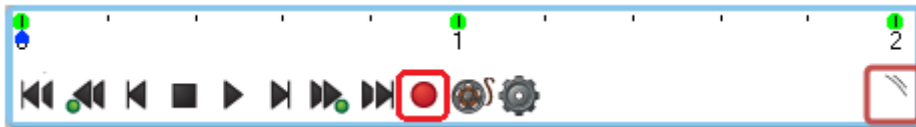
- Enter the name and path of the animation file. The file will be in .AVI format.



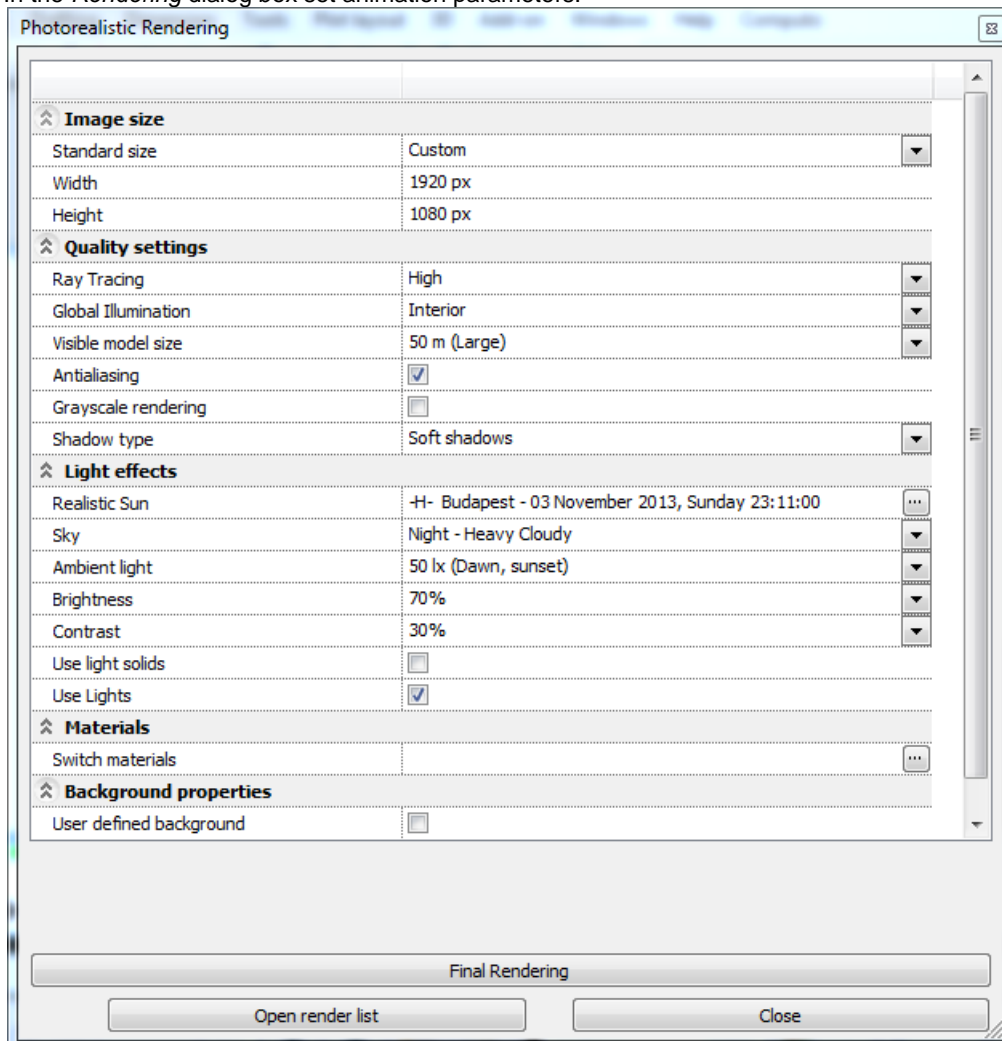
There is no need for Rendering Module to use quick AVI rendering command. This tool is based on the settings of the active DirectX or OpenGL 3D window.

15.7.2.2. Create animation by rendered images


Use this command to start creating animations.



In the *Rendering* dialog box set animation parameters:

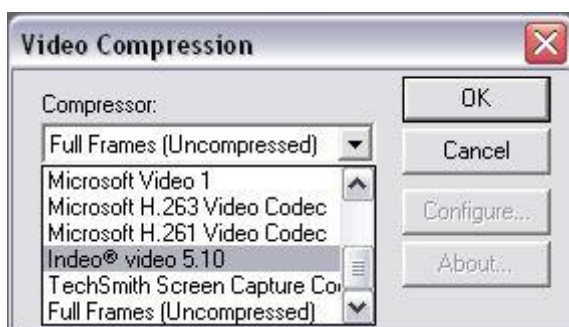


- Click on the *Final Rendering* button.
- Enter the name and path of the animation file. The file will be in .AVI format.

• Set further rendering parameters;
 See Chapter 13.1 *Rendering* for their detailed description.

- Click on the *Start* button.

After creating the first image the program will ask to select the video compression method you want to apply.



- ❖ You can select the uncompressed file format if you want. This will work with all computers; however, the size of the AVI file will be extremely large.
- ❖ You should select a compression method which is available in your operating system. For example, you may want to use *Indeo video codec*.

! You can download codec's from the Internet. Please note, that if you copy your films to other computers, they must have the codec's you used to be able to play the films!

The program will create your rendered images according to the values entered.
When creation is finished, close the last window.
Find the saved .avi file with Windows Explorer and double-click to play the film.

15.7.2.3. Create Partial animation

You can record a part of the animation from key frame to key frame. Press CTRL and mouse left click over the timeline and drag it to the required key frame and release the mouse button. The selected part will be highlighted.



This function is useful when you record relatively big video over 30 seconds or more.

15.7.3. Virtual reality

With the virtual reality tool of ARCHLine.XP the program creates a virtual reality out of the rendered image of the 3D model, having a *.mov format.

Unlike the .avi format, this display tool creates an apparently still picture, where you can move with the mouse among the pre-set camera positions.

You can activate the completed virtual reality with **Quick Time Player**, and then you can move the camera, or take a look around in the virtual model.

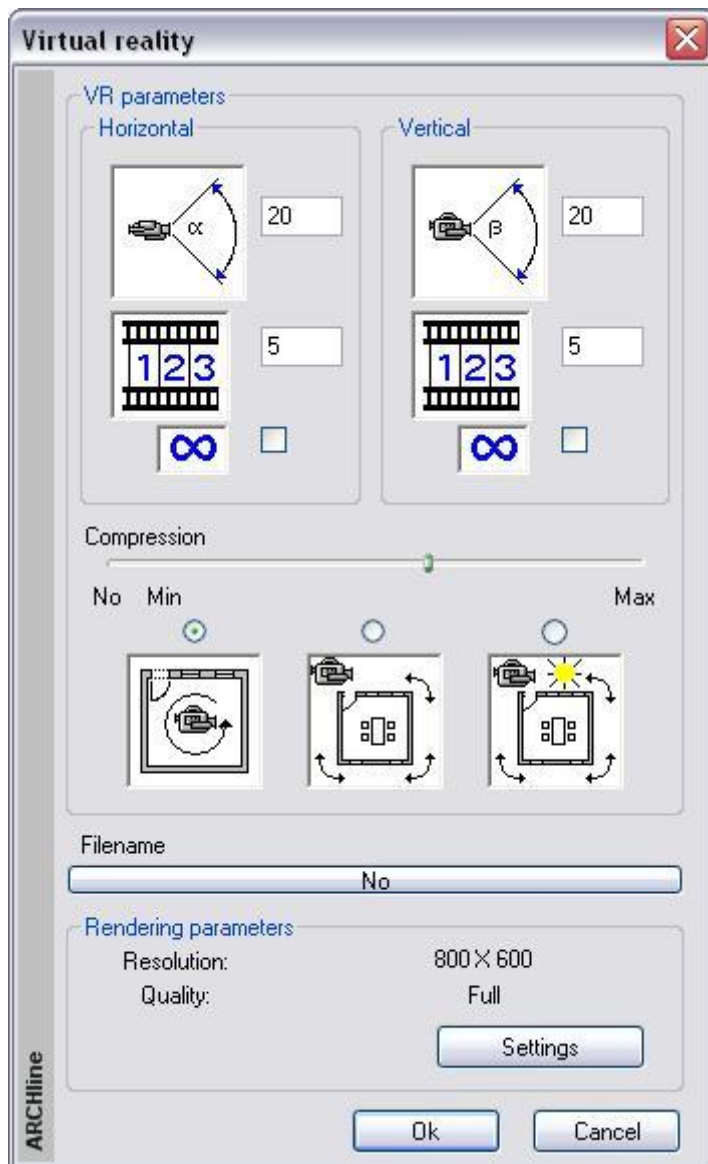
To activate the command, select *Add-On menu – Animation – Virtual reality*.

! Before starting to create the virtual reality, do not forget to set perspective. The virtual reality tool of ARCHLine.XP will consider the view set in the perspective.
Quick Time Player is available on <http://www.apple.com/quicktime/download/>

You can run this command from the active 3D window; you can set the properties of the virtual reality in the **Virtual reality** dialog box appearing after the launching of the command.

Defining the parameters of horizontal motion

- ❖ **Horizontal camera angle:**
This angle refers to the interval of horizontal camera movement; the viewpoint is always in the centre of the interval. For example: a 20° interval means that the visual angle is 10° on both sides, i.e. left and right.
- ❖ **Number of frames:** set the number of frames within the horizontal motion angle of the camera. If you increase the number of frames, camera movement slows down and the film quality will be better and smoother; however, this will increase the film making time.
- ❖ **Auto repeat:** if this option is disabled, object movement will be jerky. This means that the film ends at the end of the actual visual angle and you can move the model in the opposite direction with the mouse.



- ❖ If this option is enabled, the motion of the model will be continuous, so if you move the mouse at the end of the visual angle, the film jumps back to the starting angle and will repeat motion within the given angle. Auto repeat gains its significance if the angle of the motion is 360°. In this case motion will be uninterrupted, and if you move the mouse, you can go back from the last frame to the first frame automatically; you can walk around the model this way. Auto repeat is very useful for the rendering and visual inspection of indoor spaces.

Defining the parameters of vertical movement

These values refer to the vertical movement of the model. They correspond to the horizontal parameters in respective of their adjustment and other properties. For a detailed description see Heading *Defining the parameters of horizontal motion*.

Compression

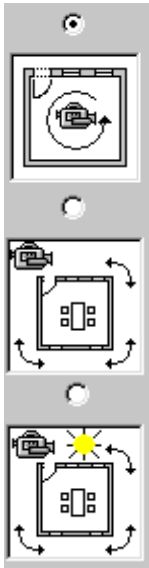
Define the size and the quality of the film. The higher the value of compression is, the smaller the size and the poorer the quality of the created film will be.

- ❖ **Max. Compression**
The size of the film is small, but its quality is poor.
- ❖ **Min. compression**
large size, but good quality.
- ❖ **No compression**
this option allows for the best quality, but the size of the film is the largest in this case.



Moving

The different figures of the dialog box indicate the movement of the camera and the object. By selecting from the three figures you can decide what to move in the picture: the camera, the object without the Sun, or the object with the Sun. Select one of the three options:



The camera position will remain the same the whole time but the camera will be rotated around its own axis. This option corresponds to the situation where you are standing in a room and look around.

The Sun does not move relative to the object therefore the shadow will not change.

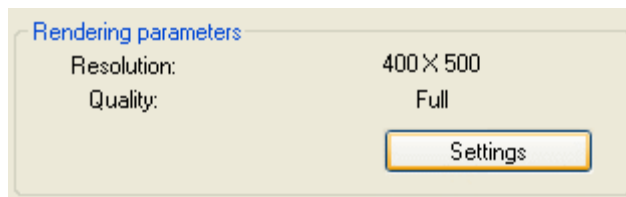
The camera moves around a static object. It resembles the way planets are orbiting the Sun.

Compared to the previous option, here the position of the Sun is changing relative to the object. The angle defined by the camera and the Sun will not change.

File name

Specify the name and the path of the .mov file. You cannot continue your work without defining the name of the file.

Rendering parameters



- Click on the **Settings** button, then
- Define the rendering parameters in the *Rendering* dialog box.
-



See the description of the **Rendering** dialog box in Chapter 13.1. *Rendering*.

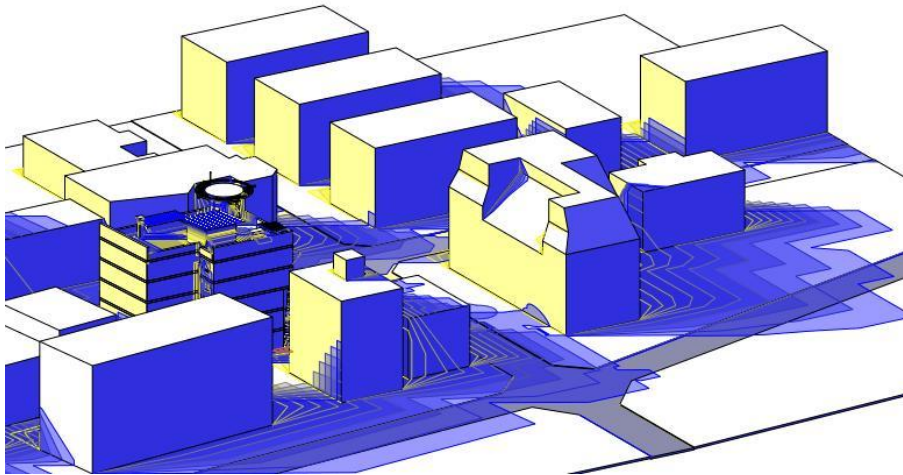
15.7.4. Solar access protection

Introduction

The ARCHLine.XP provides a great opportunity to survey the solar access of the building or its rooms. The advantage of the function is that it is prepared in clear graphical form, which is easy to survey and with its help we can support the proper solar access of the designed building's room.

In case of not proper solar access (because of the parameters of the building or the place), you can make a decision easily about modifications according to the prepared model.

Further advantage is that you can use the *Solar access* in any phase of designing. So you can prepare the building with equal efficiency on the volume model, on the sketch plan or on the authorization plan and on the working draw.



Information

Before using the solar access, shadow analysis functions, it's worth knowing certain rules and features.

Calculation basis on 3D model

The shadow graphic is prepared according to the information of actual 3D model of the project. It's important now to mention, that the ARCHLine.XP can represent and hide certain parts of the model according to the user settings. Before using the solar access function it's worth making sure, that the 3D model has all the information or you have to refresh it with other settings.

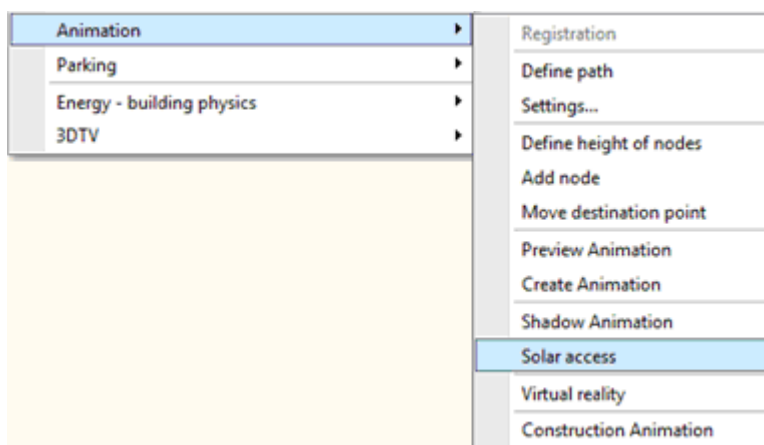
Appearance

The appearing of the solar access depends on the set representation features. You can represent colour or black sketch depending on that you need spectacular or technical draw.

How to use

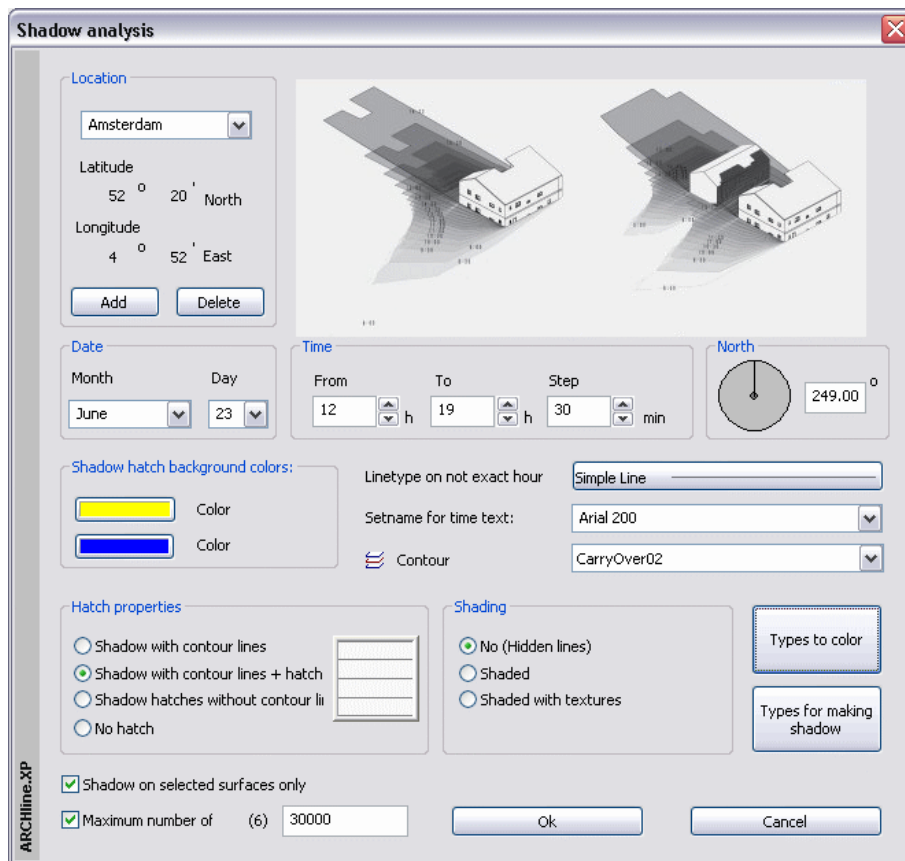
Before use you have to activate the 3D model window, in which you want to prepare the solar access analysis. It's important, that you can make the solar access analysis draw only in the 3D window. Because of the complexity of the calculation, the drawing doesn't follow the model changing, and the changing of the 3D model view. So it's worth setting in advance the 3D view, before the solar access analysis.

Start the shadow analysis with the *Add-On menu – Animation – Solar access* command.



Then the *Shadow analysis* window appears where you can determine the sun position, north direction and preferences of the created graphic, for example: *Shadow, Shade, and Contour*.

Follow these instructions step by step:



Location, date, north

You can determine the location, date and north, which is important for the shadow analysis

Time setting

The shadow analysis will be finished according to the here determined Start- and finish point and step.

Line type on not exact hour

You can determine, that the shadow contours between whole hours (for example 08:00 and 09:00) which line type will draw, if it is needed according to the interval time.

Set name for time text

When the shadow analysis is finished, on the shadow contours time points appear belonging to it for easier identification. You can select the set name for time text.

Contour

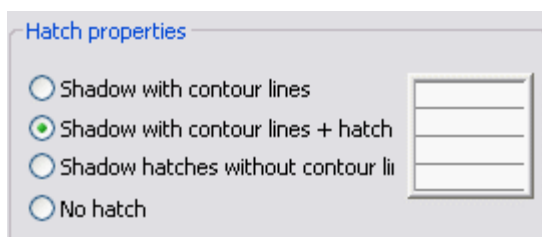
It determines the layer of the shadow's contour.

Shadow hatch background colours

You can determine even two different hatch backgrounds. The first colour is the starting, while the second will be the finishing colour. If you determine two different colours the program makes transition between the first and last colour.

Hatch properties

Set the shadow and the hatch properties.



On the example draw we used the *Shadow with contour lines + hatches* options, and in the Hatch properties window the *Solid* and *Transparency* option is switched on.

Shading

Because of the complex counting method of the function it is offered to use the hidden lines.



Types to colour

Select those types of objects (wall, roof...) where the shadow appears.

Types for making shadow

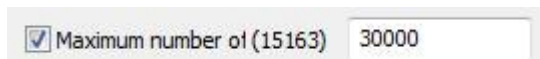
Select those types of object (wall, roof...) which throw a shadow.

Limiting the two groups you can reduce the time consuming process of shadow analysis in case of a mass model.

Shadow receiving surfaces

In the Shadowing or shading dialog window you can select the *Shadow on selected surfaces only* option. If you switch it off, the program prepares the shadow analysis on all surfaces of the model, which can take long time in a case of a complex model. If you switch the option on, then the program considers only the surfaces selected by the user. Select this option, if the shadow receiving surfaces are easily determined and their number is low.

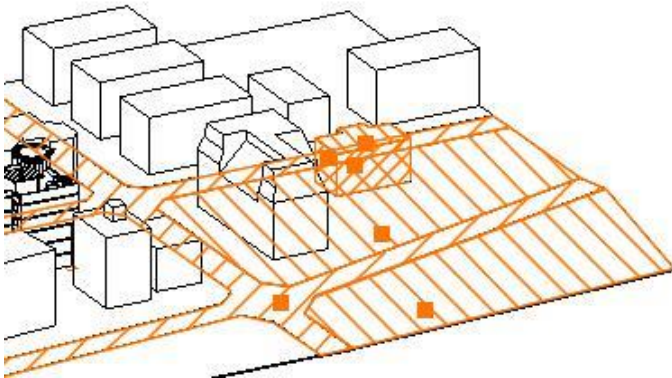
Face limit

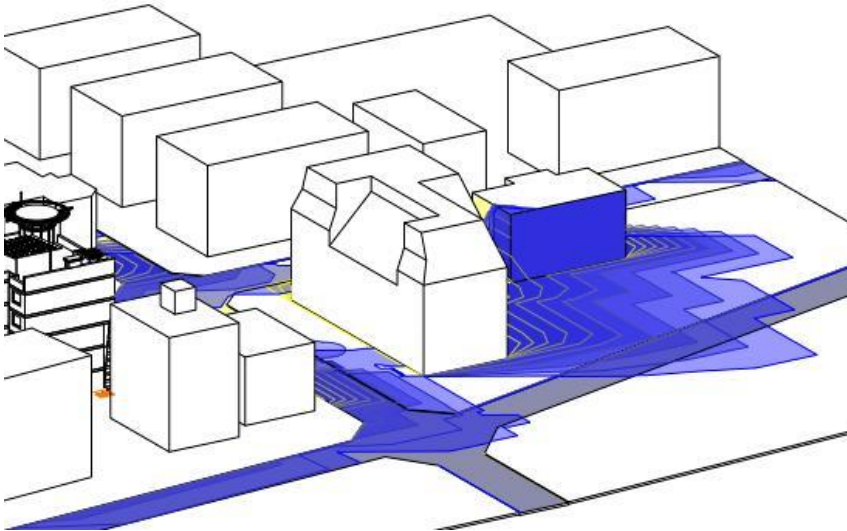


Switching on the option if the face number of the model is higher than the selected face number, the limitation is executed. It means that only the object with the selected face number is created.

Creating shadow analysis

After clicking on OK in the *Shadow analysis* dialog window, and selecting the shadow receiving surfaces (if the option is switched on), begins the shadow analysis and the process mark of the program informs about its actual state. (You can interrupt the counting by pressing the ESC.)



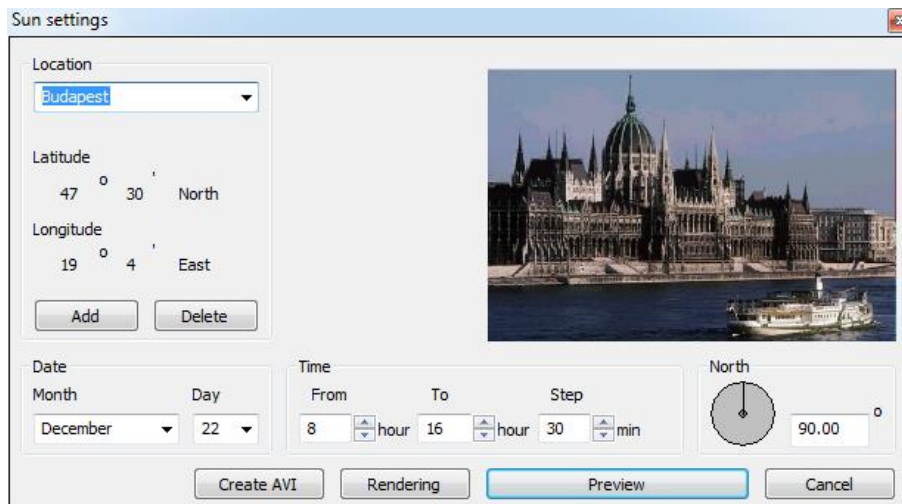


15.7.5. Shadow animation

With shadow animation you can create your films in accordance with the position of the Sun at a given geographical location. The viewpoint will be unaffected in the case of such animation, and the Sun will make its way according to the settings within the defined interval.

To activate the command, select *Add-On menu – Animation – Shadow animation*.

In the dialog box popping up you can set the properties concerning shadow animation:



Location

Select the city in the scroll down menu whose position you want to set. ARCHLine.XP will automatically display the image of the selected city with its longitude and latitude.

If you want to add a new location to the list, use the *Add* button.

Date

Set the date for shadow analysis (month, day).

Setting time intervals

After giving the date, you have to define a time interval. This will be an interval within which the shadow analysis is performed. Use the **Step** option to define periods within an interval for the creation of images. The more frames you set (i.e. the shorter interval you define) the more realistic shadow analysis you get and it takes a lot more time to make the film, too.

North

Set the northern direction. The northern direction will be defined relative to the horizontal zero degree. To set the direction, enter the values or use the indicator.

- use the OK button to close the dialog box,
- choose a 3D window for the selection of the desired 3D view,

- Define the properties of rendering in the **Rendering** dialog box popping up.
The format of the film will be *.avi*.



For the description of the Rendering dialog box, see Chapter 13.1 *Rendering*.



In the Render dialog do not forget to select the *Shadow*; otherwise shadows will not be displayed in the film.

15.8. Virtual Staging

Virtual staging is a fast easy and economical way to illustrate the complete potential of a vacant property. No need to rent furniture, organize the staging, take good quality photos, etc. ARCHLine.XP new Virtual Staging module allows you to create realistic images using photographs of the vacant property by simply adding furniture and other decorative objects to the photos.



To furnish a room, use Indoor virtual staging, to visualise a building in its real environment use Outdoor virtual staging. The two methods are essentially equivalent, we demonstrate here the use of the indoor virtual staging, mentioning the outdoor version where the two methods are different.

You can find the necessary commands in the Add-On / In/Outdoor Virtual Staging menu.

15.8.1. Importing raster image

Select **Add-On / In/Outdoor Virtual Staging / Import raster image**, choose an image file (the picture of the room), and place it in the 3D window.

15.8.2. Setting up reference 3D model

The next step is placing a 3D reference model (a rectangular block) in the 3D window. We will align the edges of this model to the imported photo.

First select **Add-On / In/Outdoor Virtual Staging / Set up reference 3D model** and then enter the dimensions of the model. Use dimensions which make the aligning to the photo easier, for example use the height of the room as the model height.

Finally place the model in the 3D window (There is no need for precise positioning here.)

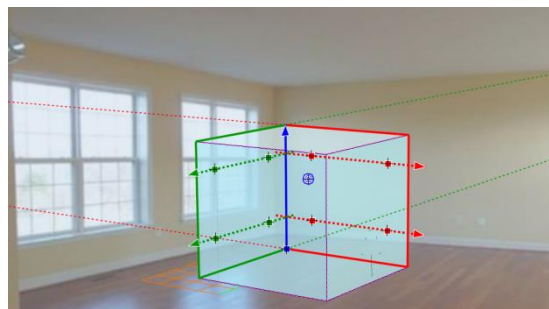
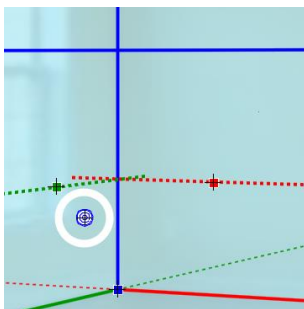


15.8.3. Setting up perspective

The next step is aligning the edges of this model to the imported photo. Select **Add-On / In/Outdoor Virtual Staging / Set up reference perspective**. The reference cube appears with coloured edges on the screen.

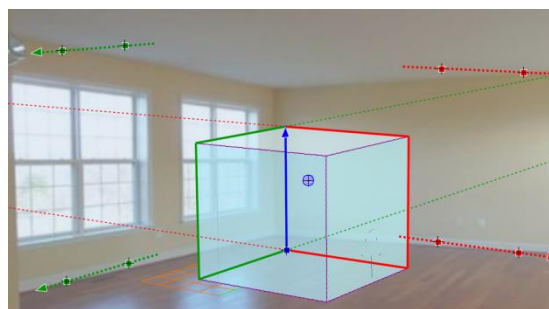
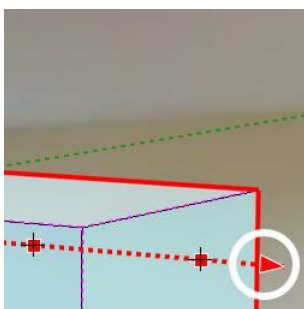
15.8.3.1. Setting the position of the view point

First move the view point roughly to the centre point of the picture.



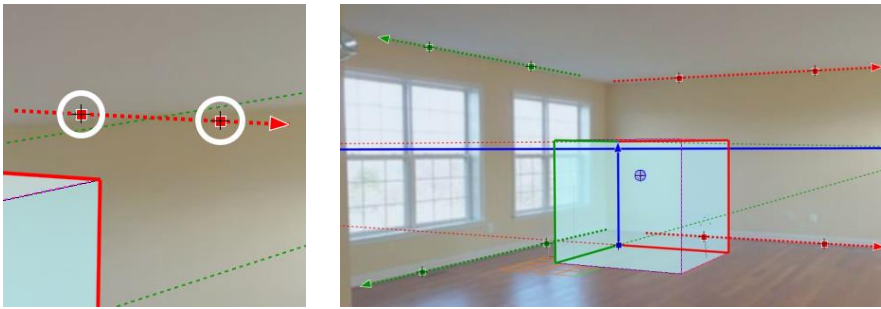
15.8.3.2. Positioning the dashed lines

Click on a red arrow or on the red dashed line and move the line near a corner edge of the. There is no need for precise positioning at this point. Repeat the operation with the other red and the two green dashed lines.



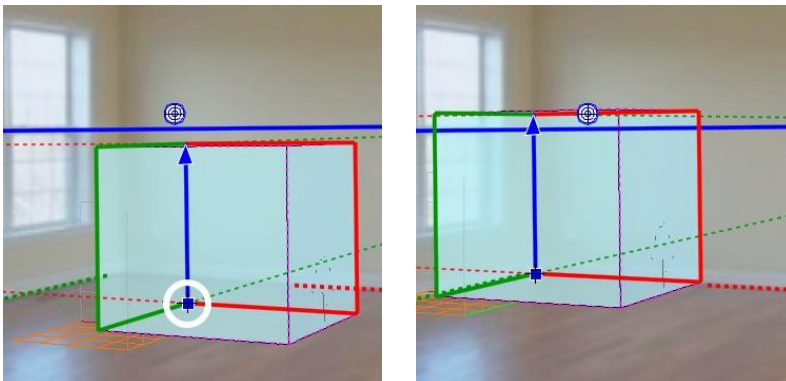
15.8.3.3. Aligning the dashed lines

Align a red dashed line to an edge of the room: click on a red square on the line and move it onto the edge and then move the other red square, too. Align the other red and the other two green lines to the appropriate edges of the room.



15.8.3.4. Positioning the 3D reference model

Click on the blue arrow and move the reference model to the appropriate corner of the room.



Finally click on the blue arrow and resize the 3D reference model according to the underlying picture.

15.8.4. Refining perspective

You can modify the perspective any time by selecting **Add-On / In/Outdoor Virtual Staging / Refine perspective** command. You can work with the same tools like described in the previous section.

15.8.5. Rendering

Select **Add-On / In/Outdoor Virtual Staging / Rendering** command and set the Rendering Properties. Press then **Start Rendering** button and define the name of the rendered image file. The renderer saves two files, the normal rendered image with the given name like "model_to_photo.jpg" and the single background image with an extended filename "model_to_photo_back.jpg". Finally the **ArchLINE Image** application appears and opens these two files. You can compose the final image using this application.

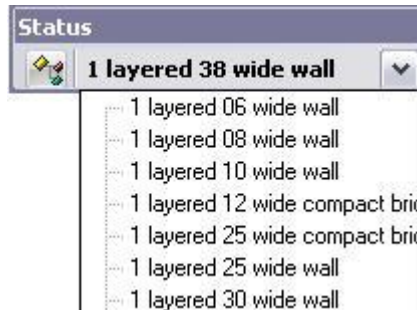
Selecting a set to create new object

According to the object type you work with, the appearing list of sets changes dynamically.

If you draw a wall, for example, the list includes the predefined wall sets stored in the current template file.

To change a predefined set:

- Click on the roll-down list of sets in the status line,
- select the set you want to work with,
- Continue your work with the new set.



The method is flexible that you do not need to interrupt the command you are working in. You can change the sets you want to work with in the meantime.



Global work plane

It places the 3D work plane to the selected plane.



Projected 3D point on the work plane

3D input points to go on the work plane. This makes the design work in the 3D window much easier, when, for example, you want to move an object on a selected work plane, moving the input cursor point projected on the work plane. By this the object will keep its height.



In switched on state you can see the placing point projected on the selected 3D plane with orange colour. By moving the cursor with your mouse, this projected point is staying on the work plane, so the distance relative to the work plane will not change. For example, in the DirectX window, in axonometric view, you want to move a projector staying on a writing-desk. Independently from the point of the projector you have chosen to drag, the projector will keep on staying on the written-desk after the movement.



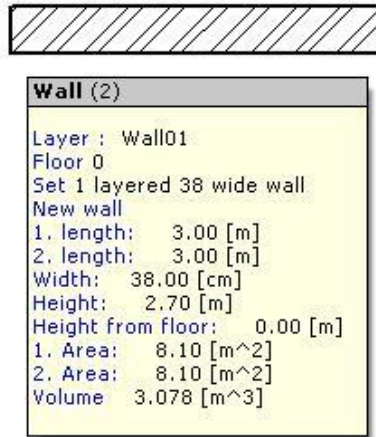
In switched off state the object can be placed anywhere in the space by its selected point.

Object info

Information window that appears when the cursor is moved above an object, and waits a little. Geometrical information is listed here. Tool tip with these data can be placed on the drawing by the last icon of Text menu



This option can be switched on/off in File menu / Preferences / General /



This option can be switched on/off in File menu / Preferences / General / Object snap option:

