# **ARCHICAD Calculation Guide**



### **GRAPHISOFT**<sup>®</sup>

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#### **ARCHICAD Calculation Guide**

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# Introduction

The complex feature set of ARCHICAD's Calculate function interacts with the project database to calculate the number of elements in a project, their spatial disposition and the quantity of element components. Specialized menu commands allow you to perform various calculations (quantity takeoffs, inventories, pricing, schedules). The extracted information can be searched, presented in customized layouts and exported easily to other applications.

The ARCHICAD Calculation Guide is a compact manual aimed at experienced users that explains the features used to generate reports about your project. The Calculation Guide Appendix presents two step-by-step calculation examples. (If you are new to the Calculation function, begin by reading a brief overview: "Calculation" in the Documentation chapter of the ARCHICAD Help.)

**Note:** The Calculation functionality is considered legacy, and is unlikely to support new developments in ARCHICAD.

- The Stair and Railing Tools (as of version 21) are not supported.
- Segmented and tapered Beams and Columns (available as of version 23) are not supported. Single-segment Beams and Columns are supported as in previous versions.

To list the new element types, use the Interactive Schedule.

# **Calculation Commands**

The Calculation function is a tool aimed primarily at advanced users. Many of the commands referenced in this section are not visible in ARCHICAD's default work environment profiles. To add these commands to your work environment, use **Options > Work Environment > Menus** to add the following commands to an existing menu (e.g. Document > Schedules & Lists):

- Set up List Schemes
- Edit Database
- New Properties
- Edit Properties
- Last Selection's Properties
- Link Properties to Criteria

### **Listing Commands**

The **Element Lists, Component Lists** and **Zone Lists** commands generate lists of different formats and complexity for the entire project or a particular element selection based on the instructions defined in the **Setup List Schemes** dialog box.

To create the desired List, choose one of the predefined List Schemes from the submenus.

C	Doc	ument Options Teamwork Window	w	Test LHS Help	
	0	Documenting Tools	×	- & - 😹 ▥ ¤  ≈ ở क़ ┌⁺ ⊄  죠   ਲ਼ ở ☆ ∽	
ē	B	M <u>a</u> rk-Up Tools			
<	G	Change Manager			
		Spell Checker	•		
1		Document Extras	►	bject Inventory] × Ling [Drawing]	
		Set Model View	×		
		Layers	►	or 3.40 0.85	
		Renovation	•		
		Graphic Overrides	•		
		Pen Sets			
NNC)		Partial Structure Display		Schedules	
F	<u>ê.</u>	Floor Plan Cut Plane		Elements Lists Basic	
1		Set Drawing Scale		Component Lists My Object Inventory	
		3D Document	►	Zone Lists Objects total	
		Creative Imaging	•	German Calculation Tool Default	
		Schedules and Lists	Þ	General Element List	
		Project Indexes	•	Apartment Stamp Window schedule Type 1	

See the detailed explanation of the list types in List Types.

### **Selection and the Listing Commands**

When you choose a listing command while elements are selected in the project, there may be a conflict between the listing command's criteria and the selection. (For instance, if you choose a Window schedule when the current selection also contains Walls and Doors.)

In **Options > Work Environment > Model Rebuild Options**, the **Selected Elements to be Calculated** pop-up menu offers three options for managing this situation.

<ul> <li>MODEL REBUILD OPTIONS</li> </ul>	
Background Updating:	
Enabled	
Automatically updates inactive	model views when computer is idle.
O Enabled when device is plugg Power save mode recommende	ed in ed for mobile devices. Automatically suspends
background updating when d	levice is not connected to external power.
ODisabled	
Auto-rebuild Model View Control:	
🗹 Update Auto-rebuild Model vi	ewpoints continuously
ARCHICAD will continuously re	ebuild Sections/Elevations/Interior Elevations of
Auto-rebuild Model type to re	flect your edits while you work in the viewpoint
2D Window Pobuild Controls	
SD Window Rebuild Controls:	
Auto-rebuild 3D window whe	n activated
SD Settings changes bring SD	window to front
Keep zoomed detail on Rebuil	a
Section Window Rebuild Control:	
Keep zoomed detail on Rebuil 🗸	ld from Model
3D and Calculation Process Check Contr	ols:
Show Progress Window	
Interrupt with error messages	
Write Report	
	Drief Depart
	впет кероп Рин кероп
Selected Elements to be Calculated	Show Alert
Sector Designed to be calculated.	Show Alert
	List All
	Use Filters

- If you choose the **List All** option, all the selected elements will be calculated in the list, even though they do not correspond to the filtering criteria.
- If you choose the **Use Filters** option, the filters defined for the list template will be applied to the selected elements; elements that do not correspond to these criteria will be ignored.
- If you choose the **Show Alert** option, a warning of conflict will appear. You will then be able to choose between the two options described above.

### **List Schemes and Output Reports**

The sorting and analyzing of data, the calculation of required results and the formatting of reports are all done according to the selected **List Scheme**. List Schemes are predefined sets of instructions on how ARCHICAD should present the required results. List Scheme formats can be of two types:

- **Plain Text** reports display calculation results in editable tabulated text format. The reports appear in text windows and can be saved as spreadsheets, text files or HTML files.
- **Graphic** outputs allow for both alphanumeric and image information, including element symbol drawings, logos and other bitmaps. Graphic output reports can be saved as RTF List files or ARCHICAD Project files. It is also possible to copy all or part of these lists into any of the Drawings.

Although the content of each language version is different, some factory default list schemes are available even if ARCHICAD is running without an active Library.

Graphic Schemes based on predefined templates can be configured using the **Format Assistant** or **Format Wizard**.

See The Setup List Schemes Dialog Box and Using the Format Wizard/Format Assistant.

# **List Types**

ARCHICAD can generate three types of calculation reports: Element Lists, Component Lists and Zone Lists.

Note: Add-On commands can also generate other list types.

### **Element Lists**

**Element Lists** are best used for creating schedules and inventories, and to display the parameters of construction elements in a project.

ΓĮ	***** TEXTFIELD 1 *****	*******
	***** TEXTFIELD 2 *****	*******
	***** TEXTFIELD 3 *****	*****
Ĺ	***** TEXTFIELD 4 *****	*****

Element	Story	Layer Name	User ID	Library part	Width / Thickness	Height	Surface	Volumes
WALL			·	•				
	0. Story	Exterior walls	Wall-013		0.20 m	2.44 m	19.07 m²	3.87 m
	0. Story	Exterior walls	Wall-014		0.20 m	2.44 m	9.81 m²	1.99 m
	0. Story	Exterior walls	Wall-015		0.20 m	2.44 m	16.66 m²	3.39 m
	0. Story	Exterior walls	Wall-016		0.20 m	2.44 m	18.37 m²	3.73 m
	0. Story	Exterior walls	Wall-017		0.20 m	2.44 m	11.34 m²	2.30 m
	0. Story	Exterior walls	Wall-018		0.20 m	2.44 m	12.21 m²	2.48 m
	0. Story	Exterior walls	Wall-019		0.20 m	2.44 m	1.94 m²	0.33 m
	0. Story	Exterior walls	Wall-020		0.20 m	2.44 m	10.28 m²	1.99 m
	0. Story	Exterior walls	Wall-021		0.20 m	2.44 m	3.37 m²	0.58 m
	0. Story	Exterior walls	Wall-022		0.20 m	2.44 m	8.86 m²	1.73 m
WALL	0. Story tot	al					111.91 m²	22.40 m
WALL	total for all	stories					111.91 m²	22.40 m
COLUMN								
	0. Story	Columns	COL-001		0.41 m	2.44 m	2.97 m²	0.23 m



To generate Element Lists, ARCHICAD filters the project or the selection set for construction elements according to the configuration of the selected List Scheme. Elements matching the filter settings will be listed together with element Parameters, Components and Descriptors, if so defined in the List Scheme.

The following table lists different element types, their surfaces, and what **Volume** means for the different element types.

Element	Surface	Surface	Surface	Surface	Surface	Volume
Wall	Ref <sup>1</sup>	Other <sup>1</sup>	Edge <sup>2</sup>			Total volume
Column	Core					Core
Beam	Тор	Bottom	Left <sup>3</sup>	Right <sup>3</sup>	End	Total volume
Slab	Тор	Bottom	Edge			Total volume
Roof	Тор	Bottom	Edge			Total volume

Element	Surface	Surface	Surface	Surface	Surface	Volume
Mesh	Тор	Bottom	Edge			Total volume
Zone	Area					Total volume
Object	Total					Total volume
Door/ Window	Surface of library part elements					Total volume of library part elements

#### Notes:

- <sup>1</sup> including surfaces around openings with reveals and along reveal depth. "ref" stands for the reference line side of the wall and "other" for the side opposite the reference side of the wall.
- <sup>2</sup> all edges (top, bottom, both sides), including the edges of openings, except for some special edges of openings with reveals.
- <sup>3</sup> left and right side of the beam as defined by its orientation; left and right may be different when the beam is connected to a wall at a non-perpendicular angle.

#### **Component Lists**

**Component Lists** are generated when bills of materials, quantity takeoffs or price lists are required. These reports typically sum up and display component type properties; however, certain element parameters can also be listed.

гл	***** TEXTFIELD 1 *****	*******
	***** TEXTFIELD 2 *****	********
	***** TEXTFIELD 3 *****	*******
Ľ _	***** TEXTFIELD 4 *****	*******

Component List by keys 2/7/01							
Key Code/Name	Code	Name	Database Qty.	Unit	Ref. Qty.	Ref. Unit	Quantity
004 Masonry							
	100	common brick 24*11.5*7.1 cm	383.200	pieces	3.386	m³	1,297.510
	100	common brick 24*11.5*7.1 cm	383.200	pieces	5.045	m³	1,933.271
	100	common brick 24*11.5*7.1 cm	383.200	pieces	1.992	m³	763.507
	100	common brick 24*11.5*7.1 cm	383.200	pieces	3.732	m³	1,430.132
Total	common brick 24*	11.5*7.1 cm				5,	125.00 pieces
	101	mortar	0.169	m3	1.992	m³	0.337
	101	mortar	0.169	m3	3.386	m³	0.572
	101	mortar	0.169	m3	5.045	m³	0.853
	101	mortar	0.169	m3	3.732	m³	0.631
Total	mortar		,				3.00 m3
	102	plaster	0.030	m3	19.611	m²	0.588
	102	plaster	0.030	m3	33.327	m²	1.000
	102	plaster	0.030	m3	36.733	m²	1.102
	102	plaster	0.030	m3	49.656	m²	1.490
							Page 1

Untitle	Untitled / Components						
	Element type	Fill Name / Composite Name	Descriptor Short Text	Component Key Name 🛛 🛛 📥			
14	WALL	common brick	-common brick masonry with 12.5 mm horizontal and	L7 L			
14	WALL	common brick	17	Masonry			
14	WALL	common brick	/	Masonry			
14	WALL	common brick	17	Masonry			
1	SLAB	structural concrete	* Reinforced concrete slab *	L7 L			
1 1	SLAB	structural concrete	/	Concrete			
1	SLAB	structural concrete	17	Thermal & moisture protection			
4	ROOF	flat roof	* Tile+wood joist and rafters *	L7 L			
4	ROOF	flat roof	17	Finishes			
4	ROOF	flat roof	/	Finishes			
4	ROOF	flat roof	17	Finishes			
4	ROOF	flat roof	17	Thermal & moisture protection			
4	ROOF	flat roof	/	Wood-Plastic			
4	ROOF	flat roof	17	Wood-Plastic			
I				-			
•							

#### **Zone Lists**

**Zone Lists** are generally used to create room schedules and finish schedules. Zone Lists can include parameters of Zones and related construction elements. When related construction items are listed, the report is in fact an Element List where the range of calculated elements is limited by the Zones they belong to.

Untitle	Untitled / Components						
	Element type	Fill Name / Composite Name	Descriptor Short Text	Component Key Name 🛛 🛛 📥			
14	WALL	common brick	-common brick masonry with 12.5 mm horizontal and	L7 L			
14	WALL	common brick	17	Masonry			
14	WALL	common brick	17	Masonry			
14	WALL	common brick	17	Masonry			
1	SLAB	structural concrete	* Reinforced concrete slab *	17 1			
1	SLAB	structural concrete	17	Concrete			
1	SLAB	structural concrete	17	Thermal & moisture protection			
4	R00F	flat roof	* Tile+wood joist and rafters *	17 1			
4	R00F	flat roof	17	Finishes			
4	R00F	flat roof	17	Finishes			
4	R00F	flat roof	17	Finishes			
4	R00F	flat roof	17	Thermal & moisture protection			
4	R00F	flat roof	17	Wood-Plastic			
4	R00F	flat roof	17	Wood-Plastic			
				-			
•							

## **Structure of the Calculation Databases**

Most of the information that is needed by ARCHICAD to create complex reports comes from Property Databases in active Libraries. You can use, extend, modify and update factory default Database(s) that come with ARCHICAD, and you can also set up multiple Databases that match your specific needs. Databases can include Components, Descriptors and Units organized in logical groups called Keys. Databases can be edited - including the creation of new Databases, Keys, Components and Descriptors - using the Calculation commands.

#### See also Calculation Commands.

Databases are sets of files placed in List Templates/Property Data folder of the ARCHICAD Library.

Name

Properties 19

Properties Composite 19

ArchiCAD\_Library.lis
ArchiCAD\_Library\_COMP.txt
ArchiCAD\_Library\_CRIT.lic
ArchiCAD\_Library\_DESC.txt
ArchiCAD\_Library\_KEY.txt
ArchiCAD\_Library\_UNIT.txt
MASTER\_GDL\_ArchiCAD\_Library.gd

The built-in calculation database can be accessed through the Edit Database command.

🗎 Edit Database		
Databases in Active Libraries:	Duplicate	Delete Create V
> 🗐 ArchiCAD_Library	Edit Database:	
	Name:	ArchiCAD_Library

**Note:** The database also contains the units that elements refer to. (*See below.*) See also <u>Editing the Calculation Database</u>.

#### Keys



Data items in Databases are arranged in a hierarchical system categorized by Keys. A Key includes a group of Components and Descriptors that are logically grouped, typically following a country's takeoff standards. Properties can, for instance, be grouped by type of structure, e.g., Walls, Columns, Roofs; by material, e.g., Concrete, Timber, Steel; or type of work, e.g., Foundation,

Electrical, Furnishing. Cross-references are not possible, which means that the same Property item cannot be grouped in multiple Keys unless you duplicate it for each Key.

Every Key has a name and a code that are both alphanumeric definitions. A database's Keys are arranged in alphabetical order by their codes. Keys can have a hierarchy among themselves which is also controlled by the code. The Code is the identifier whose name can be descriptive.

#### **Example:**

🗎 Edit Database			
Databases in Active Libraries:		Duurlinete	Duluta
General	^	Dupiicate	
> 🖂 Sitework		Edit Key:	
✓ Image: Concrete		Database:	ArchiCAD Library
> Components		Carday	
> Masonry		code:	
> 🖂 Metals		Name:	Concrete
> 🖂 Wood-Plastic			

A Key named 'Concrete' is created. Its Code is '003'.

🗎 Edit Database				
Databases in Active Libraries:	^	Duplicate	Delete	Create V
> 📻 Sitework 🗸 📻 Concrete > 🚘 Components	1	Edit Key:		
Big Descriptors      Big Precast Concrete		Database:	ArchiCAD_Library	
> 🖾 Masonry > 🔄 Metals		Name:	Precast Concrete	
> 🖂 Wood-Plastic				

Another Key named 'Precast Concrete' is created. Its Code is '003.001'. Because of this format, it becomes the sub-key of the Key 'Concrete'

🗎 Edit Database				
Databases in Active Libraries:				
✓	^	Duplicate	Delete Create	~
🗁 General	100			
> 🗁 Sitework		Edit Key:		
V 🗁 Concrete		Databasa	AsshiGAD Liberary	
> 🎑 Components		Database:	ArchicaD_Library	
> 😼 Descriptors		Code:	003.001.001	
✓		Manag	Descent Well	
🖳 Precast Wall		Name:	Precast vvali	
> 🗁 Masonry				

An additional Key named 'Precast Wall' is created. Its Code is '003.001.001'. Because of this format, it becomes the sub-key of the sub-key 'Precast Concrete'.

This way up to four levels of hierarchical Keys and sub-keys may be created.

### Components



Components can either be the material ingredients (steel, concrete, etc.) of a structure, or anything (price, man hours, etc.) that can be measured in proportion to elements of the structure type. Each Component has a name, a code, a quantity definition, a unit and a reference to its proportion to related construction elements.

- Code: can be any alphanumeric string (e.g. '1143', 'Wall-012', 'JKG-ft', '345fdsr' etc.)
- Name: text string identifying the Component for the user (e.g. 'gravel')
- Quantity: a numeral value (e.g '412.5')
- **Unit:** any of the Units defined under 'Unit' within the same Database (e.g. 'kg', 'm2', 'Euro', '\$' etc.) selectable from pop-up menu.
- **Reference Quantity:** predefined set of values. The component will be calculated proportionally to the selected Reference Quantity.
  - Item: the component will be calculated per piece of the construction element
  - For other reference units, see the below table and its explanation:

Referenced element	Length	Surface A	Surface B	Surface C	Volume
Wall	(Ref+other)/2	Ref	Other	Ref+other	Total vol.
Column	Height	Around veneer	Around veneer	Around veneer	Core+veneer
Beam	(Left+right)/2	Left	Right	Total	Total vol.
Slab	Perimeter	Тор	Bottom	Top+bottom	Total vol.
Roof	Perimeter	Тор	Bottom	Top+bottom	Total vol.
Mesh	Perimeter	Тор	Bottom	Total	Total vol.
Zone	Perimeter	Area	Area	Area	Total vol.
Object	Length along x axis (=A)	0	0	Total	Total vol.
Opening	Width of the opening	Width* height	Width* height	Surface of the elements in the library part	Total volume of the elements in the lib. part

#### • Abbreviations:

ref: this means the reference line side of a wall

other: this means the opposite side of a wall left: this means the left side of a beam taking into account its orientation right: this means the right side of a beam taking into account its orientation

Meanings:

components proportional with column length: Height of the column is taken instead of 0 components proportional with beam length: (left+right)/2 is taken instead of 0 components proportional with object length: the parameter A is taken instead of 0 components proportional with column surfaces: the surface around the core is omitted, only the surface around the veneer is taken. If there is no veneer, the core surface is taken.

- Notes:
- the left and the right side length of a beam may be different when it is connected to a wall in a non-perpendicular angle.
- some values are intentionally different from the appropriate element list values, as the
  associated components are usually calculated based on different surfaces. For example you
  may want to calculate the painted surface of a wall. In this case you are not interested of the
  edge surface but the sum of the reference and the opposite side surface of the wall.
- Components can reside in Databases (global) or locally in Property Objects. Library Part type construction elements (Objects, Lamps, Windows and Doors) can also have locally defined (i.e., object-specific) Properties: however, these are only available for the Library Part they were defined in, and cannot be linked to other elements. Property Objects can be created and edited using the File > Libraries and Objects > Open Object, then editing in the Property Script window, or by using the appropriate Calculation commands: New Properties and Edit Properties.

For more information, see Property Objects.

### Descriptors



Descriptors are text elements related to structure types, e.g., finishing, security, shipping, assembly or handling information. Descriptors are simply displayed in reports: they are not used in calculations and are not linked to components or element parameters. Each Descriptor has a name (also called short text), a code and the full description (long text).

Just like Components, Descriptors can reside in Databases (global) or locally in Property Objects.

### Units



Every Database has a special item group for the Units used in calculations. The Units set is on the same hierarchy level as the primary Keys of the Database. An unlimited type of Units can be defined for every Database.

# **Editing the Calculation Database**

Choose the **Edit Database** command. The resulting dialog box contains the controls to create, customize, modify and delete the elements of the database(s) ARCHICAD uses to process your project information for reports.

🗎 Edit Database						×
Databases in Active Libraries:			_			
> 🖙 Concrete	^	Duplicate		Delete	Create	$\sim$
> 📴 Masonry						
> 🖂 Metals		Edit Key:				
> 🗁 Wood-Plastic		Detebase	Auchican	3		
> 🖼 Thermal & moisture protection		Database:	ArchicaD_I	Library		
🗁 Doors-Windows		Code:	003			
> 🗁 Finishes		News	Commente			
🕮 Specialties		Name:	Concrete			
🖼 Equipment						
🖼 Furnishings						
🖼 Special Construction						
Machanical	~					
Details of Database items on the same level						

The information elements are arranged in hierarchical order. You can view the contents of a database in the left-hand side of the dialog box.

The right-hand side of the dialog box changes according to the item selected on the left (*see specific sections for details*).

At the bottom of the dialog box, use the "Details of Database items on the same level" section to view the details of all the items that are at the same level as the one selected on top, that is, all databases, all keys in a database, all components under the same key, etc.

The default ARCHICAD database contains numerous preset Keys, Components and Descriptors, as well as the Unit set, listed at the very bottom.

🗎 Edit Database		
Databases in Active Li	ibraries:	
📻 Equipment	^	•
📻 Furnishings		
📻 Special Con	struction	
📻 Mechanical		
📻 Untitled Key		
📻 Dimensiona	l Lumber	
🗸 📼 Units		l
🚥 m		
🚥 m2		
🚥 m3		
🚥 pieces		
	- · · · · · · · · · · · · · · · · · · ·	

You can remove selected databases or database items with the **Delete** button at top, or create new databases or database items with the **Create** pop-up list at top right.

**Important:** When you leave this dialog box and click **Yes** in the **Save Changes** dialog box, ARCHICAD overwrites the corresponding database files with your changes.

The database files can be saved to the List Templates subfolder of the ARCHICAD Library folder. When creating a new database, a set of new files is generated using the name of the new database.



In addition to the \_KEY (keys), \_COMP (components), \_DESC (descriptors), \_UNIT (units) and \_CRIT (criteria assignment) files, a new \_SCHEME (list scheme) and \_MASTER\_GDL files are also created.

## **Editing Keys**

Highlight the name of a key in the database to edit its Code and Name in the text fields in the righthand side of the dialog box.

🗎 Edit Database				- • •
Databases in Active Libraries:				
✓	^	Duplicate	Delete	Create 🗸
🗁 General				
> 🖙 Sitework		Edit Key:		
> 🕞 Concrete		Databace	ArchiCAD Library	
> 📻 Masonry		Database.	Archicko_clonary	
> 🖂 Metals		Code:	001	
> 📻 Wood-Plastic		Name	General	
> 🖂 Thermal & moisture protection		Name:	General	
👼 Doors-Windows				
> 🗁 Finishes				
🕞 Specialties				
Equinment	*			
<ul> <li>Details of Database items on the sam</li> </ul>	e level			
Code				
001	ieneral			•
002 S	itework			
003 C	oncrete			
005 N	letals			
006 V	Vood-Plastic			
007 I 008 C	nermal & moistur loors-Windows	re protection		
				*

The order and hierarchy of keys is defined using the codes: subordinate keys appear at lower levels, e.g., together with primary components and descriptors of a key. The key code can include any

character, but when establishing a hierarchy, define keys as you would an IP address, in other words, a maximum of four sets of three digits separated by dots, e.g., "100.200.300.124".

Separator dots in the key code help define a hierarchy.

Keys must be unique within a database.

🗎 Edit Database				×
Databases in Active Libraries: Default Set Set Kostenermittlung MarchiCAD_Library Set NewDatabase Coverings Set Coverings Set Mail Painting Emulsion	Duplicate Edit Key: Database: Code: Name:	Delete NewDatabase 001.001.001 Emulsion	Create	<b>&gt;</b>

Example of fourth level sub-key

## **Editing Units**

Highlight the name of a selected unit to edit its attributes using the controls in the right-hand side of the dialog box.

🖩 Edit Database				
Databases in Active Libraries				
Euroisbings	~	Duplicate	Delete	Create V
Machanical		Edit Unit:		
		Database:	ArchiCAD_Library	
		Name:	m	
Dimensional Lumber	- 10	Justify left		
✓ 📖 Units		Plus sign		
		Space before po	sitive values (if no Plus sign)	
m2		🗌 Don't display Ze	ro wholes	
□ m3		Display Zero incl	hes	
pieces	~	Midth	11 Desimals	3
New Database		width.	Decimais:	5 ,
		Conversion Unit:	none	Þ
<ul> <li>Details of Database items on the same lev</li> </ul>	el			
· Details of Database items of the same ite				
	Space be	efore positive values	(If no Plus sign)	ubolar
	Plus sign -		Don't display Zero v     Display Zero v	vnoles
Name	Justily left		Width Decimal/Fra	ctio Conversion Uni
m				-
m2			11 3	-
m3 pieces				
pieces				

The top (uneditable) row displays the name of the database the selected unit belongs to. Edit the name of the unit in the text field provided.

The five formatting options in the center of the window control how the units will be displayed in the plain text list. Please bear in mind that Graphic Templates can override these settings.

- 1. Check the 'Justify Left' checkbox for the calculated value using the unit to be justified to the left, causing the remaining characters defined by 'Width' padded with SPACEs. As default, all Units are right-justified and character places on the left are padded with SPACEs.
- 2. Checking the 'Plus Sign' checkbox inserts a '+' sign as the first character of the values string, allowing one character less in the number value.
- **3.** Checking the 'Space before positive values (if no Plus sign)' checkbox places a SPACE character as the first character, if no plus sign is specified to be placed, making it possible for all values to align well to the left.
- 4. Checking the 'Don't display Zero wholes' checkbox will not display the Zero whole and the decimal separator, in case the absolute of the displayed value is between 0 and 1 inch. This applies to values displayed in decimal format. Such can be the case with width and height of Windows and Doors, for example.
- 5. Check the 'Display Zero inches' checkbox for Zero to be displayed when the absolute of the displayed value is between 0 and 1. This applies to values displayed in Imperial format.
- In the **Width** text field, set the number of digits to be used when displaying the unit. Note that the Width value cannot be less than three.

Image: Construction         Image: Construct		Name: Justify left Plus sign Space before po Don't display Zero inco	m positive values (if no Plus sign) ero wholes thes	]
📼 m2	~	Width:	11 Decimals: 3	0
Details of Database items on the same level		Conversion Unit:	none	1 2 ✓ 3 4 5
				6

- Choose the desired number of decimals places to be displayed in reports from the **Decimals** pop-up list in the bottom right corner.
- Use the Conversion Unit pop-up at the bottom of the dialog box if the selected database unit is different from the one chosen in the Options > Project Preferences > Calculation Units & Rules dialog box. Choose "none" from the pop-up list if using this option is not appropriate. Selecting the proper conversion units decreases calculation errors when database units and calculation units are different.

**Note:** ARCHICAD calculations are performed according to the settings of the **Calculation Units** and **Rules** dialog box (**Options** > **Project Preferences** > **Calculation Units & Rules**) except when instructions in Graphic Templates override the settings.

Project Preferences		? ×
Calculation Units & Rules V	<< Previous	Next >>
+ <sup>1.2</sup> + Length Unit:	meter	~
Decimals:	2 ~	
Extra Accuracy:	Off ~	0.12
🖉 Area Unit:	square meter	~
Decimals:	2 ~	
Extra Accuracy:	Off ~	0.12
Volume Unit:	cubic meter	~
Decimals:	2 ~	
Extra Accuracy:	Off ~	0.12
<u>Λ</u> Angle Unit:	decimal degrees	~
Decimals:	0 ~	0°
Note: Calculations using Graphic Te	mplates will override the	ese settings
Conditional Parameters	Calculate Totals by	
Setup Rules	<ul> <li>Displayed values</li> <li>Exact values</li> </ul>	s
	Cancel	OK

## **Editing Components**

Click the plus sign next to any Key in the Database tree in the left-hand side of the **Edit Database** dialog box to see whether the selected Key has Components, Descriptors or both grouped in it, then click the plus sign next to the Components icon to view the items belonging to the selected Key.



To edit any of the Component records in the selected Database, highlight its name in the Database tree. The right-hand side of the dialog box will display the attributes of the highlighted component.

🗎 Edit Data	abase						x	
Databases	in Active Libraries:							
	eneral	^	Duplicate		Delete	Create	$\sim$	
> 📼 Sitework								
v 📻 c	oncrete		Edit Component:					
			<b>-</b>					
			Database:	Archicad_Library				
			Key:	003	Concrete			
			Code:	1226				
			Name:	concrete				
			Quantity:	0.150				
		~	Unit:	m3			۰.	
			Reference Quantity:	Surface A			•	
<ul> <li>Details</li> </ul>	of Database items on the same level							
Code	Name		Quantity	U	Init	Ref.Quantity		
082	lightweight concrete		0.050	n	13	Surface A	$\sim$	
084	structural concrete		0.200	n	13	Surface A		
1226	concrete		0.020	n	13	Surface A		
1845	concrete block 20*24*49 cm		8.000	p	ieces	Surface A	-	
2053	concrete		1.000	n	13	Volume		
2358	precast concrete plank		1.000	n	12	Surface A		
							$\sim$	

Component type database records are identified by their Key-codes and Codes which appear in the second and third rows of the component attributes in the right-hand side of the dialog box. The component's Code can be edited by typing the new number into the corresponding text field.

Components can be moved from one key to another using click-and-drag. You can drop the moved item either into the Components folder of the new key location if the key is open, or simply drop it into the Key folder. In the latter case, the moved component will automatically be placed in the Components folder of the key.

Edit the component's name directly in the Name text field, or by clicking on its name in the Database tree.

The bottom three rows of the component's attribute controls allow you to define:

- the Component Quantity
- the Unit used to calculate the component
- the number of component units per **Reference Quantity** unit, e.g., eight pieces of tiles per square meter of a wall's inside surface.

🗎 Edit Database					
Databases in Active Libraries: General Sitework Concrete Components Lightweight concrete Structural concrete Lightweight concrete Concrete Concrete	Â	Duplicate Edit Component: Database: Key: Code: Name:	ArchiCAD_ 003 1226	Delete (	Create ~
concrete     frecast concrete plank     Mil Descriptore	v	Quantity: Unit: Reference Quantity:	0.150 m3		•

For more information on Reference Quantity, see Components.

### **Editing Descriptors**

Descriptors are listed in the Database tree in the Edit Database dialog box.

Select any Descriptor to edit it.

🗎 Edit Database						×
Databases in Active Libraries:			_			
> 🗁 Sitework	^	Duplicate		Delete	Create	$\sim$
✓ 🗁 Concrete						
> 🎑 Components		Edit Descriptor:				
✓ 100 Descriptors		Detabases	A			
🗘 * Reinforced concrete slab *		Database:	ArchicaD_L	ibrary		
> 🖂 Precast Concrete	_	Key:	003	Concrete		
> 🗁 Masonry		Cardan	22			
> 🗁 Metals		Code:	22			
> 🗁 Wood-Plastic		Full Text:				
> Թ Thermal & moisture protection		* Reinforced concr	ete slab *			~
Doors-Windows	×	reinforcement: refer to working drawings and				
		Tennorcen	lient notes			
						_ ×
		<				2
Details of Database items on the same level						

Descriptors can be moved from one key to another using drag-and-drop in the Database tree. The descriptor's full text can be edited directly in the Full Text field.

# **Property Objects**

### What are Property Objects?

Property Object files are special ARCHICAD Library Parts without a 3D Script. Property Objects are generally used to describe specific structures for the purposes of calculation, e.g., the quantities and the detailed description of reinforced concrete beams used in the project.

See the Component and Descriptor definitions above.

**Hint:** Think of a Property Object as a custom cooking recipe including ingredients from your garden (local components), "in-house" cooking instructions (local descriptors), ingredients that need to be shopped for (database components) and instructions you commonly find in cookbooks (database descriptors). Just as the amount of ingredients must be adjusted to the number of people you cook for, in calculating the actual amount of components of an element, ARCHICAD calculates on the basis of the given relationship between each component and the reference parameter of the element calculated.

Data not directly derived from construction elements is contained or collected from databases through indirect links facilitated by Property Objects.

Properties are used to define quantities and descriptions of construction elements. The two types of Property definitions are Components and Descriptors. Components and Descriptors (along with Units) can reside in Databases or be defined locally. Local Properties definition is possible in any Library Part type element (Window, Door, Object, Lamp etc.) for the exclusive use of the Library Part, or in Property Objects. As well as local Properties, Property Objects can also access Database Properties, which are then assigned to construction elements.

Property Objects can be linked to elements either globally by matching certain criteria, or individually from the Settings dialog boxes of the different elements.

Topics in this section:

Creating and Editing Property Objects Defining Components and Descriptors Linking Components and Descriptors to Databases Linking Property Objects to Element Criteria Creating Criteria for Property Assignment Assigning Properties to Elements Last Selection's Properties Locating Property Objects

## **Creating and Editing Property Objects**

The **New Properties** command opens a new, empty Property Object file that you are able to edit using the dialog box controls and ARCHICAD's GDL language. The effect of choosing this command is identical with that of the **File** > **Libraries and Objects** > **New Object** command.

🔚 Un	titled-1					
17		Object's subtype:	Property Objects		Select Subtype	
Ø			Use as subtype	Placeable	-	
묘						-
9		Author:				
Ħ		License:	Public Domain Dedicatio	n 1.0 🗸	(j)	
		Password:			Set Password	
	Details				Set Password	
	Parameters	Description:			<u>^</u>	
	Migration					
	Components					
Scrit	Descriptors				×	
	Master	Keywords:			~	
	2D 🗖					
	Properties 🛅					
	Parameter 🛅				~	
	Interface 🛅					-
	2D Symbol 🛅					
	Preview Picture					
	2D View					

Choose the **Edit Properties** command to select an existing Property Object and edit it in its library part master window. (You can also edit Property Objects by choosing **File** > **Libraries and Objects** > **Open Object** and selecting the Properties File type.)

IZ       New Delete Remove Link to Database Change Link         Proportional with (Custom):       DB Set Key Code Name Quantity Unit Proportional with         OB Set       Key Code Name Quantity Unit Proportional with         + ArchiCAD_Library       009         Obtails       Parameters         Migration       Components         Descriptors       Descriptors											00F33 20	🔙 FP
Proportional with (Custom):         DB Set       Key       Code       Name       Quantity       Unit       Proportional with         DB Set       Key       Code       Name       Quantity       Unit       Proportional with         + ArchiCAD_Library       009       3071       hexagonal tile       38.50       pieces       Surface A         + ArchiCAD_Library       004       2767       mortar       0.02       m3       Surface A         Details       Migration       Components       Descriptors       Ferriptors       Ferriptors				k	Change Lin	Database C	ove Link to	Rem	Delete	New		17
DB Set       Key       Code       Name       Quantity       Unit       Proportional with         Image: ArchiCAD_Library       009       3071       hexagonal tile       38.50       pieces       Surface A         Image: ArchiCAD_Library       004       2767       mortar       0.02       m3       Surface A       Image: ArchiCAD_Library         Image: Details       Parameters       Migration       Image: ArchiCAD_Library       Image: ArchiCAD								om):	al with (Cust	Proportiona		Ø
ArchiCAD_Library 009 3071 hexagonal tile 38.50 pieces Surface A     ArchiCAD_Library 004 2767 mortar 0.02 m3 Surface A     ArchiCAD_Library 004 2767 mortar 0.02 m3		1	Proportional with	Unit	Quantity	Name	Code	Кеу		DB Set		
ArchicAD_Library 004 2767 mortar 0.02 m3 Surface A      ArchicAD_Library 0.04 2767 mortar 0.04 8778 mortar	$\sim$		Surface A	pieces	38.50	hexagonal tile	3071	009	D_Library	ArchiCAD		
Details Parameters Migration Components Descriptors			Surface A	m3	0.02	mortar	2767	004	D_Library	ArchiCAD		
Parameters Migration Components Descriptors												
Migration Components Descriptors											Details	
Components											Migration	
Descriptors											Components	
											Descriptors	
Scripts											ots	Scri
Master 🗖											Master 🛅	
2D 🗖											2D	
Properties											Properties 🛅	
Parameter											Parameter 🛅	
Interface											Interface	
2D Symbol											2D Symbol 🛅	
Preview Picture											Preview Picture	
2D View											2D View	

**Note:** If you choose this command while any construction element is selected in the ARCHICAD Project, all directly assigned Property Objects will open automatically.

The Property Object type Library Part does not have a 3D Script or a 3D View. Otherwise, the available controls are similar to those of the other Library Part types, which are described in the ARCHICAD Reference Guide.

For more information, see the "GDL Master Window" chapter in <u>ARCHICAD Help</u>.

## **Defining Components and Descriptors**

When defining Properties, you should first decide whether they will ever be assigned to different elements, whether they may ever be parts of different Properties combinations in Property Objects, or if only one Library Part will use them.

- A unique object's properties, e.g., the coating of a custom-made truss, is best defined locally, within the Library Part.
- More generic Properties, e.g., the amount of cement needed to build elements made of reinforced concrete, are better described locally in Property Objects so that any such element can refer to them.
- The most generic Properties, e.g., the amount of paint needed for walls (Component) or general safety instructions (Descriptor), which are expected to be used in several Properties combinations are best defined as Database Properties so that any Property Object can refer to them.

Click the **Components** button in the left-hand side of the Library Part master window. This will display the Components controls on top of the window.

1	🔚 FP	00F33 20									
			New Delete Remove Link to Database Change Link								
	Ø		Proportional with	n (Custom):							
	-		DB Set	Key	Code	Name	Quantity	Unit	Proportional with		
			ArchiCAD_Libra	ary 009	3071	hexagonal tile	38.50	pieces	Surface A		
	目		ArchiCAD_Libra	ary 004		mortar	0.02		Surface A 🛛 🕨		
		Details									
		Parameters									
		Migration									
L		Components									
		Descriptors									

Click the **New** button to create a new Component line.

Type the desired values or strings into the **Code**, **Name** and **Quantity** text fields to define the corresponding attributes of the new component.

Use the **Proportional With** pop-up list to choose a reference quantity (Item, Length, Surface, Volume) for the component.

Ref.element	Length	Surface A	Surface B	Surface C	Volume
Wall	(Ref+other)/2(1)	Ref(1)	Other (1)	Ref+other	Total volume
Column	Height	Around veneer	Around veneer	Around veneer	Core+veneer
Beam	(Left+right)/2	Left (2)	Right (2)	Total	Total volume
Slab	Perimeter	Тор	Bottom	Top+bottom	Total volume
Roof	Perimeter	Тор	Bottom	Top+bottom	Total volume
Mesh	Perimeter	Тор	Bottom	Total	Total volume
Zone	Perimeter	Area	Area	Area	Total volume
Object	Along X axis (A)	0	0	Total	Total volume
Door/ Window	Width of opening	Width x height	Width x height	Surface of library part elements	Total volume of lib. part elements

The following table shows the components referencing different parameters of ARCHICAD element types:

#### Notes:

- 1. Including surfaces around openings with reveals and along reveal depth. "ref" stands for the reference line side of the wall and "other" for the side opposite the reference side of the wall.
- 2. Left and right side of the beam as defined by its orientation; left and right may be different when the beam is connected to a wall at a non-perpendicular angle.

Some values are intentionally different from appropriate element list values, as the associated components are usually calculated based on different surfaces. For example, you may want to calculate the painted surface of a wall: in this case, you are not interested in the edge surface but in the sum of the reference and opposite side surfaces of the wall.

To define a special reference, choose Custom from the **Proportional with** pop-up list. This will make active the field that the 'Proportional with' header points to, on top of the headers. Enter any GDL expression using global and local variables.

New Delete Remove Link to Database Change Link										
Proportional with (Cust	om): 🚺	VALL_THIC	KNESS							
DB Set	Key	Code	Name		Quantity	Unit	Proportional with			
ArchiCAD_Library	009	3071	hexago	onal tile	38.50	pieces	Surface A			
ArchiCAD_Library	004	2767	mortar		0.02	m3	Custom 🕨			

You define **Descriptors** in much the same way. Click the Descriptors button to display the appropriate controls on top of the window.

🔚 FI	200F33 20				
17		New	Delete	Remove	Link to Database Change Link Text
Ø		DB Set	Кеу	Code	Short Text
묘		ArchiCAD	. 009	30	-hexagonal tiles, 10 cm edges
9					
国					
	Details				
	Parameters				
	Migration				
	Components				
	Descriptors				

Click the **New** button to create a new Descriptor line.

Type the desired value in the **Code** text field and the appropriate **Short Text** (first line) in the corresponding text field.



Click the **Text** button to open the **Descriptor Full Text** dialog box where you can give a longer description of the part, element or structure. This description may include technical parameters and specifications or other useful assembling or safety instructions.

🚺 Des	criptor Full Text			?	×
Code:					
					^
<					>
Key:	009		Finishes		
				Ca	incel
	You can modify t Short Text.	ne Full lext of the De	scriptor. The first line of the Full lext is the		ОК

## Linking Components and Descriptors to Databases

If you want a Component or Descriptor defined in a Property Object to be identified with a Database item, select it in the list of the Property Object's master window, and click the **Link to Database Item** button at the top of the dialog box.

New Delete	Link to	Database Item Change Link Text
DB Set Key	Code	Short Text
ArchiCAD 009	30	-hexagonal tiles, 10 cm edges
ArchiCA ▶ 009 F	F▶ 31	mortar blocks

The **Select Components** or **Select Descriptors** dialog box appears. You can choose from all the relevant items in the selected database.

M Select Descriptors		? ×
Check Descriptors to be listed:	Full Text	
V 🖮 Finishes	<ul> <li>* Asphalt shingle+cond</li> </ul>	crete plank roof * 🛛 🔺
🗘 -10 cm wide board siding nailed to 7*4 cm	furring	
🔯 * Asphalt shingle+concrete plank roof *		
🗘 -15x15 cm glazed tiles		
-25x25 cm ceramic tiles		
🗘 -10x10 cm square + octagonal tiles		
🗘 -hexagonal tiles, 10 cm edges		
🗘 -nailed to plywood subfloor		
🗘 -applied to plywood subfloor with blind r	nailing	× ×
<ul> <li>Details of Descriptors on the same level</li> </ul>		
Code Short Text		
13 -10 cm wide board siding nailed	to 7*4 cm furringfurring every 45 cmcomm	ion brick with raked jointsin
27         -15x15 cm glazed tileslaid in 20 m           28         -25x25 cm ceramic tileslaid in 20 r           29         -10x10 cm square + octagonal til           30         -hexagonal tiles, 10 cm edgeslaid           31         -nailed to plywood subfloor           32         -applied to plywood subfloor with	m mortar bedsubfloor protected with wa nm mortar bedplywood subfloor protecte eslaid in 20 mm mortar bedplywood subfl in 20 mm mortar bedplywood subfloor p th blind nailing	ter proofing ed with water proofing loor protected with water pr protected with water proofing
	Cancel Edit Dat	tabase Select

As long as a Component or a Descriptor of a Property Object is linked to a Database, the item will be updated with every update of the Database.

When a selected Component or a Descriptor is already linked to a database item, the name of the linking button changes to **Remove Link to Database**, and the **Change Link** button also becomes active. You can then either break the link to a database item, or replace it with a different one.

New	Delete	Remove	Link to Database Change Link	Text
DB Set	Кеу	Code	Short Text	
ArchiCAD	009	30	-hexagonal tiles, 10 cm edges	
ArchiCAD	009		* Asphalt shingle+concrete plank ro	of *

Object-specific items are listed in plain text, database items are listed in italic and the names of missing database items are grayed.

## **Linking Property Objects to Element Criteria**

To define a combination of element parameters (type, pen color, size, material etc.) by which a Property Object is assigned to construction elements, choose the **Link Properties to Criteria** command.

Link Property Objects to Criteria - • × Show Links in: ArchiCAD\_Library  $\sim$ Enable Property Objects of all links Delete New Link O Use more specific Criteria only Edit Criteria... Link Property Object. If an element matches these criteria... ... use this Property Object Туре Fill Composite Width/Size Object Name WPOOFmas 20.g... Common Brick = 190 Stud Partition CWall12 20.gsm 田 PROPWindow 20. PROPDoor 20.gsm PROPobject 20.g.. Flat Roof 🖹 CRoof01 20.gsm <

A dialog box appears, displaying the links of the default set.

Links between construction elements (on the left) and Property Objects (on the right) are based on a set of criteria, including element type and different common or tool-specific attributes. Click **Edit Criteria** to open the **Criteria Selector** dialog box (*see description below*).

The Link Properties dialog box displays four parameters at a time. To see all available parameters, use the horizontal scrollbar at the bottom of the Criterion List.

Click any column header to sort the list alphabetically.

To link Property Objects to criteria or change the previously assigned Property Object, click Link **Property Object** in the upper right of the dialog box while the criterion is highlighted in the list. This opens the Link Properties to Criteria > Link Properties dialog box.

🗎 Link Property Obj	ects to Criteria			23
Show Links in:	ArchiCAD_Library	~		
New Link	Delete	Enable Property Ob Use more specific Co	jects of all links riteria only	
Ec	dit Criteria		Link Property Object	]
If an element matc Composite	Link Property Objects to	o Criteria / Link Property Objects		
Flat Roof Stud Partition - - - - -	Choose Manually Searc Available Property Obje CSlab04 20 CSlab03 20 CSlab02 20 CSlab01 20 CRoof03 20 CRoof03 20 CRoof02 20 CRoof01 20 WPOOFmas 20	th by Keywords	v	~
<	Property Object Preview     Confirm your select     a new Property by	w tion by clicking the Link button. Yo Property Object by clicking the Edit clicking the New button.	u can edit the New button or create Edit	Link

The **Choose Manually** tab page lists available Property Objects in the active libraries in alphabetical order. The currently assigned Property Object is highlighted in the list. To see the components and descriptors of highlighted Property Objects, open the Property Preview section of the dialog window.

Highlight the Property Object you wish to assign to the selected criterion.

If you need help to find Property Objects in the active libraries, click on the **Search by Keywords** tab. Type the keywords in the appropriate text field and press **Search** to list the Property Objects that match the keywords.

Link Property Objects to Crite	ria / Link Proper	ty Objects		- • 💌
Choose Manually Search by K	eywords			
Search in	all loaded Libra	ries	~	
Search Keywords:	concrete			Search
Property Objects including all	keywords:			
CSIab01 20				^
🖹 CRoof01 20				_
				~
Property Object Preview (Plain Components Descriptors	n: Database item	s, Italic: Object-specific items, G	irayed: Missing	) Database items.
Database Keycode	Code	Name	Quantity	Unit
				~
Confirm your selection by	clicking the Link	button. You can edit the	New	
a new Property by clicking	y Object by click g the New butt	on.	Edit	Link

- Click **Link** button to confirm your selection.
- Click Edit to open the highlighted Property Object

• Click **New** to create a new Property Object.

In the **Link Property Objects to Criteria** dialog box, the two radio buttons give you a choice for how to interpret multiple criteria whose parameters partly coincide.

🗎 Link Property Obje	ects to Criteria		- • 💌
Show Links in:	ArchiCAD_Library	~	
New Link	Delete	<ul> <li>Enable Property Objects of all links</li> <li>Use more specific Criteria only</li> </ul>	
Ed	it Criteria	Link Prope	erty Object

**Enable Property Objects of all links** means that both the Property Object assigned to a simpler criterion and the one assigned to a more specific criterion will be applied to matching elements. An example:

The simpler criterion includes only two parameters, wall *Type* and solid brick *Fill*, and the assigned Property Object is one whose components are bricks and mortar.

The more specific criterion includes three parameters of which two, wall *Type* and solid brick *Fill*, are identical with those of the simpler criterion. The third parameter is whitewash *Material*, and the assigned Property Object's only component is plaster. In this case, the construction elements matching the more specific criterion will receive not only the plaster component but also the bricks and the mortar. Elements matching the simpler criterion only (non-plastered walls) will receive the bricks and the mortar but not the plaster.

If you choose **Use more specific Criteria only**, a match to a more specific criterion always overrides a match to a simpler one. Elements matching a certain criterion will only receive the Property Object linked to that particular parameter combination. In the above example, the elements matching the criterion with three parameters would receive the plaster component only.

Only one criterion can be selected and edited at a time.

Click Edit Criteria to open the Criteria Selector dialog box.

Criteria Selector		×
Find Elements:	🗇 Wall	× <b>Þ</b>
Fewer Choices		
Fill	Common Brick	
Width •		
More Choices		ロシ
	App	у

Choose the Element Type for the active criterion from Find Elements pop-up, and click More Choices as needed to select and define additional criteria.

Save, load and rename or delete criteria sets using the commands from the pop-up list at the top right of the **Criteria Selector** dialog box. The list items activate the corresponding dialog boxes where you can perform the desired action.

Criteria Selector			< Comparison of the second sec
Find Elements:	🗇 Wall	~	Save
Fewer Choices	]		Load Rename & Delete

The **Copy Settings** button is only active if a construction element is selected in the project. Click this button to set the parameter values to match those of the selected element.

Criteria Selector		×
Find Elements:	🗇 Wall	~
Fewer Choices		
Fill	Common Brick	
Width •		
More Choices		Γſ
	Apply	

**Note:** This action will also set the element type.

Click **Apply** to update the Criteria list.

## **Creating Criteria for Property Assignment**

In order to create calculation reports that use the Properties information, Properties data must be linked to construction elements.

Properties can be associated with construction elements through Criteria or individually.

Assignment through Criteria is defined with the Link Properties to Criteria command.

Link Property Objects	to Criteria			
Show Links in:	ArchiCAD_Library	~		
New Link	Delete	Enable Use mo	Property Objects of all re specific Criteria only	links
Edit C	riteria		Link	Property Object
If an element matches	these criteria			use this Property Object
Туре	Fill	Composite	Width/Size	Object Name
	Common Brick	-	= 190	🖹 WPOOFmas 20.g \land
	-	Stud Partition	-	🖹 CWall12 20.gsm
B	-	-	-	PROPWindow 20
	-	-	-	PROPDoor 20.gsm
<u></u>	-	-	-	🖹 PROPobject 20.g
	Structural Concrete	-	-	E SP02F00 20.gsm
$\langle A \rangle$	-	Flat Roof	-	E CRoof01 20.gsm
			>	
			· · · · · · · · · · · · · · · · · · ·	

Each Property Object can be associated to a unique combination of element selection criteria, e.g., the Property Object called "Concrete Wall" can be associated with all walls of concrete block fill, drawn in pen No.12, and placed on the "Exterior Walls" layer. When this option is active, ARCHICAD filters the project's construction elements and automatically links the Property Object in question to all elements matching the given Criteria. Criteria sets are saved within the active Library so that they can be used in multiple projects.

**Note:** You can check this assignment by selecting an element, opening its settings dialog box and clicking the Listing Panel.

**Note:** The Listing Panel is not visible by default. To enable it in any construction element's settings, go to Options > Work Environment > Tool Settings Dialog Boxes.

You can also choose to assign Property data directly, **individually** for each element in the Listing Panel of its Settings dialog box or in the Info Box.

**Note:** The Listing Panel is not visible by default. To enable it in any construction element's settings, go to Options > Work Environment > Tool Settings Dialog Boxes.

A combination of Criteria-based linking and direct Assignment is also possible.

See also Creating and Editing Property Objects.

## **Assigning Properties to Elements**

When editing a construction element in its Settings dialog box, you can assign Property Objects to the element in the Listing panel.

Mall Selection Settings	?	×
	Selected: 1 Ed	itable: 1
► Dt GEOMETRY AND POSITIONING		
FLOOR PLAN AND SECTION		
▶		
▼ IISTING		
Link Property Objects By Criteria		^
✓ Individually Choose CWall12 20.gsm		~
CATEGORIES AND PROPERTIES		
Cance Cance	el Ol	<

**Note:** This panel is not visible by default. To enable it in any construction element's settings, go to **Options > Work Environment > Tool Settings Dialog Boxes.** 

The link can be made by criteria or individually.

To assign a Property Object through criteria (that is, all elements that match the criteria selection made in the Link Property Objects to Criteria dialog box - *see above*), check the Link Property Objects By Criteria box in the Listing panel. Property Objects that match these criteria will be shown in the panel.

You may wish to override this setting by creating a specific assignment for a particular element. In this case, uncheck the **Link Property Objects By Criteria** box, check the **Individually** box below and click **Choose**.

**Note**: It is possible to keep both checkboxes active at the same time and thereby create a combined assignment.

₿	Link Property Objects	?	$\times$
	Choose Manually Search by Keywords		
	Available Property Objects in all loaded Libraries		
	CWall12 20		~
	🖹 CWall11 20		
	🖹 CWall10 20		
	CWall09 20		
	CWall08 20		
	CWall07 20		
	🖹 CWall06 20		
	🖹 C.Wall05 20		~

Assigning the Property Object manually or through keywords is done the same way as for criteria, as described earlier in this chapter.

### **Last Selection's Properties**

Selected Property Objects cannot be edited directly from the Settings dialog box. Use the **Last** Selection's Properties command to access Property Objects from construction elements to which they have been assigned.

If any construction element is selected in the project, use **Last Selection's Properties** to see which Property Objects are linked to the selected element.

Select a property object and view its details in the Contents section of the dialog box.

	's Property Obj	ects				
roperty Object	s matching Elen	nent Criteria:				
CWall12 20	linked to Eleme	ent individually	<b>y</b> :			
	ig sin					
- Contants of	the calested Dr	an arth Object				
Contents of	the selected Pro	operty Object				
Components	Descriptors					
Components Database	Descriptors Keycode	Code	Name	Quantity	Unit	
Components Database ArchiCAD_Lib	Keycode	Code 109	Name wood stud 9.5*4.5 cm	Quantity 3.000	Unit m	^
Components Database ArchiCAD_Lib ArchiCAD_Lib	Descriptors Keycode r 006 r 006	Code 109 110	Name wood stud 9.5*4.5 cm wood noggins 9.5*4.5 cm	Quantity 3.000 0.860	Unit m m	^
Components Database ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib	Descriptors Keycode r 006 r 006 r 006	Code 109 110 111	Name wood stud 9.5*4.5 cm wood noggins 9.5*4.5 cm wood sole plate 9.5*4.5 cm	Quantity 3.000 0.860 1.000	Unit m m m	^
Components Database ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib	Descriptors Keycode r 006 r 006 r 006 r 006 r 006	Code 109 110 111 112	Name wood stud 9.5*4.5 cm wood noggins 9.5*4.5 cm wood sole plate 9.5*4.5 cm wood head plate 9.5*4.5 cm	Quantity 3.000 0.860 1.000 1.000	Unit m m m	^
Components Database ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib	Descriptors Keycode r 006 r 006 r 006 r 006 r 009	Code 109 110 111 112 1951	Name wood stud 9,5*4.5 cm wood noggins 9,5*4.5 cm wood sole plate 9,5*4.5 cm wood head plate 9,5*4.5 cm regular gypsum wallboard	Quantity 3.000 0.860 1.000 1.000 1.000	Unit m m m m m2	^
Components Database ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib	Descriptors Keycode r 006 r 006 r 006 r 006 r 009 r 009	Code 109 110 111 112 1951 920	Name wood stud 9,5*4,5 cm wood noggins 9,5*4,5 cm wood sole plate 9,5*4,5 cm wood head plate 9,5*4,5 cm regular gypsum wallboard regular gypsum wallboard	Quantity 3.000 0.860 1.000 1.000 1.000 1.000	Unit m m m m m2 m2	^
Components Database ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib	Descriptors Keycode r 006 r 006 r 006 r 009 r 009	Code 109 110 111 112 1951 920	Name wood stud 9.5*4.5 cm wood noggins 9.5*4.5 cm wood sole plate 9.5*4.5 cm wood head plate 9.5*4.5 cm regular gypsum wallboard regular gypsum wallboard	Quantity 3.000 0.860 1.000 1.000 1.000 1.000	Unit m m m m2 m2	~
Components Database ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib Plain: Databas	Descriptors Keycode r 006 r 006 r 006 r 009 r 009 se items	Code 109 110 111 112 1951 920	Name wood stud 9.5*4.5 cm wood sole plate 9.5*4.5 cm wood head plate 9.5*4.5 cm regular gypsum wallboard regular gypsum wallboard	Quantity 3.000 0.860 1.000 1.000 1.000 1.000	Unit m m m m2 m2	~

Click the **Edit** button to the selected Property Object to modify it directly in the Library Part Editor, if the selected Property Object item is object-specific. If the selected item belongs to a database, click **Change Link** in the upper right of the window to modify the item.

## **Locating Property Objects**

You may need to locate a Property Object that contains a specific component or descriptor, or one which includes links to a specific database or a specific key.

These two commands help you find what you need:

- Find Property Objects by Properties
- Find Property Objects by Elements

Use these commands to search based on a set of criteria.

#### **Find Property Objects by Properties**

Enter criteria and search terms as needed, then click Find Property Objects.

	ties				
Criteria:					
Property Object Name	$\sim$	contains	$\sim$	roof	Þ
Component Name	$\sim$	contains	$\sim$		Þ
Database Name	$\sim$	contains	$\sim$		
Include Property Objects with	out Com	onents/Descriptors		Find Property Object	s
CRoof01 20					^
CRoof01 20 CRoof02 20 CRoof03 20					^
CRoof01 20 CRoof02 20 CRoof03 20					^
CRoof01 20 CRoof02 20 CRoof03 20					<b>•</b>

Highlight a Property Object name and click **Edit** to open the **Edit Properties** dialog box.

Let's say you want to find all Property Objects within your ARCHICAD Database that has the text 'tile' in its Component Name. You would select the below two criteria.

Find Property Objects by Properties						
	Criteria					
	Citteria:					
$\checkmark$	Database Name	$\sim$	contains	$\sim$	ArchiCAD_Library	
$\checkmark$	Component Name	$\sim$	contains	$\sim$	tile	Þ
	Property Object Name	~	contains	$\sim$		
Include Property Objects without Components/Descriptors Find Property Objects						
CRO	of03.20					
CSIab01 20						
CSlab03 20						
FP00F33 20						
FP00F44 20						
FP00F45 20						
FP00F48 20						
FP0	9F45 20					
RPO	5F00 20					
						~
					Edit	
#### **Find Property Objects by Elements**

Find F	Property Objects by Elements							×
	Criteria:			Selected:		16	Editable:	16
	Component Name	$\sim$	contains		$\sim$	stud		Þ
	Property Object Name	$\sim$	contains		$\sim$			
	Database Name	$\sim$	contains		$\sim$			
	Selection			) ) )		@ii	Ø	3

You have all Walls selected on the Floor Plan. You want to find only those Walls that have studs in them. Enter the criterion shown above, then click the 'cross-section' button (cross-section of Selection and Criteria). As a result, only those walls are now selected whose associated Property Objects contain Components with 'stud' in their Name.

# **List Schemes and Templates**

List Schemes are factory default or user-defined instruction sets to control how the Listing Engine processes and displays project information. List Schemes can be independent files or can reside in Databases.



List Schemes are of Element, Component and Zone types.

It is also possible to create complete List Scheme files that contain definitions for Element, Component and Zone lists.

List Schemes can be configured to suit a large variety of needs, and new schemes can be created in the **Set up List Schemes** dialog box, accessed with the Set up List Schemes command. Moreover, graphic outputs are highly customizable using a Format Wizard (Windows) or Format Assistant (Mac).

See Using the Format Wizard/Format Assistant.

### Templates

Graphic List Schemes are based on templates that contain information about the list's structure, layout and content.

Templates can be of two types:

- Template files are simple text files residing in the active library. They are factory-shipped or created manually. It is also possible to create copies of embedded templates by saving them as external files.
- Embedded templates, created with the Format Wizard, reside in the list scheme itself. You can transform them into template files by unchecking the Include in List Scheme box on the Setup List Schemes dialog box's List Format tab page (see later).
   Note:
  - Templates are coded in a simple programming language. It is highly recommended not to edit these files unless you are thoroughly familiar with the syntax.
  - Template files cannot be edited with the Format Wizard.

#### **Records and Fields**

Graphic Templates define layouts to display and print information units called Records. Records are small layouts that can include numerous Fields and one bitmap image. Fields are units of alphanumeric data. Field contents are collected, filtered and calculated by the ARCHICAD Listing Engine. The bitmaps can be external image files from any of the active Libraries, ARCHICAD object symbols, 3D drawings generated by Property Objects and by the objects themselves, or Preview Pictures of ARCHICAD Library Parts in the active Libraries.

See Graphic Template and Using the Format Wizard/Format Assistant.

# **The Setup List Schemes Dialog Box**

The **Setup List Schemes** command takes you to a complex dialog box where you can define which element types, components or zones will be calculated by ARCHICAD to produce the required report, as well as the complexity and format of the output.

Set Up List Schemes Edit Selected List Scheme: Default c	ру			?	×
Available List Schemes: Duplica	Elements Properties & Paramet	ers List Format			
<ul> <li>✓ ■ Default Set</li> <li>✓ ■ Element List Schemes</li> <li>① ■ Basic</li> <li>① ■ Default</li> <li>① ■ General Element List</li> </ul>			Skip Elements without a Skip Elements with an ei Reduce Wall Quantities if a Opening is larger than	n associative lat mpty ID field <sup>n</sup> 1.00	m².
0 🗱 Window schedule Type 1 0 📆 Window schedule Type 2 고종 Default copy	by Linked Property Objects: All Elements by Layers: All		List Fills and Objects Includ Floor Plans by Stories:	ed In:	
Component List Schemes     Concent List Schemes     Kostenermittlung     ArchiCAD_Library     RoofMaker 2.1	<ul> <li>☑ ARCHICAD Layer</li> <li>☑ ARCHICAD Layer</li> <li>☑ Drafting - General</li> <li>☑ Drafting - Hotspot</li> <li>☑ Annotation - General</li> <li>☑ Annotation - Label</li> <li>☑ Annotation - Structure</li> <li>☑ Annotation - Text</li> </ul>	~	2 O. Story		~
			Cancel	ОК	

Choose the Setup List Schemes command to open the corresponding dialog box.

The Database tree (at the left-hand side of the dialog box) contains the available Databases, marked with the filing cabinet (
) icon, and the List Schemes in the List Scheme folders. This list includes all the list schemes that are in databases placed in active Libraries.

**Note:** List Schemes will function in Teamwork projects only if you save them to the project's Embedded Library.

List schemes are arranged in a hierarchy, organized by type in three folders: the Element, the Component and the Zone List Schemes. Each folder includes at least some default sets, even if no Library is loaded, including a Basic list.

📶 Set Up List Schemes
Available List Schemes: Duplicate
Delete Create ~
✓
> 🗒 Element List Schemes
> 🚘 Component List Schemes
> 💼 Zone List Schemes
> 🗐 Kostenermittlung
> ArchiCAD_Library
> 🗐 RoofMaker 2.1

User defined Schemes appear in the same hierarchy under the default Schemes. Plain Text Schemes are marked with spreadsheet-like icons.



- Schemes belonging to a database can only create lists from their own databases.
- Schemes that are independent from any database can be used for listing all loaded databases.

Select a List Scheme from the tree to see its configuration on the right.

## **Managing List Schemes**

Click Create to create a new List Scheme, or select an existing one and click **Duplicate**.

🚺 Se	t Up List S	chemes					
Edit S	elected Lis	st Scheme:	Win	dow	schedule	Тур	be 2
Availa	able List Se	hemes:	Du	plicat	:e	]	
D	elete	Create		$\sim$	Elemen	ts	Prop
~		Create			by Ty	nec	
Ś	Koste	en List Schei	ne File			ξ	
~	🗐 Archi	C. Element I	ist Schem	e			~
~	💼 Ele	m Compone	ent List Sch	neme	1	<	$\sim$
	A III I	Zone List	Scheme		EFFE		14

**Note:** List Schemes will function in Teamwork projects only if you save them to the project's Embedded Library.

Rename the new untitled Scheme or any other List Scheme by selecting its name and retyping it. Click the padlock toggle to lock or unlock a List Scheme for editing.



To remove List Schemes, select the name, and click the **Delete** button.

**Important:** Clicking **OK** in the **Setup List Schemes** dialog box will overwrite all changed List Schemes that are stored in the Preferences file of the Project and in the LISTSET.TXT database file placed in the Library.

- When starting ARCHICAD without opening a project file, List Schemes are loaded from the Preferences files (Listset files /\*.lis/ will not be loaded from any of the loaded libraries);
- When opening a Project file, List Schemes stored in the project will be loaded. (Listset files /\*.lis/ will not be loaded from any of the project's libraries).
- When choosing File > Libraries and Objects > Library Manager, all List Schemes (\*.lis) found in any of the selected libraries will be loaded.

**Note:** List Schemes will function in Teamwork projects only if you save them to the project's Embedded Library.

# **Editing List Schemes**

You can edit, modify and customize unlocked list schemes by selecting from the Available List Schemes area on the left.

Depending on the List Scheme type selected, the right-hand side of the dialog box will display three or four tab pages.

- When selecting **Element** or **Component** List Schemes, three pages appear: the Elements page, the Properties & Parameters page, and the List Format page.
- If the selected List Scheme is a **Zone** List, you can see four tab pages: Zones, Properties & Parameters, Related Elements, and List Format. Click the tabs to switch between pages.

## **Elements Tab Page**

This is the first tab page. Use the controls (filters) in this page to select the construction elements to be calculated.

🚺 Set Up List Schemes				?	Х
Edit Selected List Scheme: Default co	ру				
Available List Schemes: Duplicat	e Elements Properties & Parameters	List Format			
<ul> <li>✓ ■ Default Set</li> <li>✓ ➡ Element List Schemes</li> <li>⊕ ➡ Basic</li> <li>⊕ ➡ Default</li> <li>⊕ ➡ General Element List</li> </ul>	by Types: □ □ □ □ ○ ○ ※ 田 ○ 哈 ◎ ♡ 田 11 11 11 14		Skip Elements without an as Skip Elements with an empty Reduce Wall Quantities if an Opening is larger than	sociative lab ID field 1.00	el m².
<ul> <li>Window schedule Type 1</li> <li>受 题 Window schedule Type 2</li> <li>受 题 Default copy</li> </ul>	by Linked Property Objects: All Elements by Layers: All	~	List Fills and Objects Included In Floor Plans by Stories:	n: V All	
	<ul> <li>☑ ▲ ARCHICAD Layer</li> <li>☑ → Hidden</li> <li>☑ ☑ 2D Drafting - General</li> <li>☑ ☑ D Drafting - Hotspot</li> <li>☑ ▲ Annotation - General</li> <li>☑ ▲ Annotation - Label</li> <li>☑ ▲ Annotation - Structure</li> <li>☑ ▲ Annotation - Structure</li> </ul>	^	☑ 0. Story		~
			Cancel	ОК	

### **Filter by Element Type**

by Ty	pes:				✓ AI	I.
			$\langle \rangle$	Ŷ		
	$\triangleleft$	<b>H</b>	1	$\checkmark$	Ð	$\langle \rangle$
	11	1	#	14		

Use the filter buttons with the familiar tool icons to determine which element types to list and which to exclude from report calculations. Click the **All** checkbox to select all construction element types.

Note: Unchecking the All checkbox will activate the custom setting last used.

### Filter by Label and ID

Elements	Properties	& Parar	meters	List F	ormat	
by Type:	5:			<b>A</b>	ui -	Skip Elements without an associative label
	7 0	$\langle \rangle$	÷Q:		Π	Skip Elements with an empty ID field
⊞₹		Ħ	$\checkmark$	Ð	Ø	Reduce Wall Quantities if an Opening is larger than 1.00 m <sup>2</sup> .
囲:	# #	#	栟			

Use these checkboxes to further filter the Element List for any element without an associative label and/or elements that have no associated ID.

### **Reduce Wall Quantities Based On Opening Size**

Elements	Properties & Parameters	List Format	
by Type		All	Skip Elements without an associative label
			Skip Elements with an empty ID field
⊞₹		\$0	Reduce Wall Quantities if an Opening is larger than 1.00 m².
田	は其井井		

The **Reduce Wall Quantities** option allows you to set the minimum size of wall opening that will be taken into consideration by ARCHICAD in wall surface and volume calculations. Type the size limit in the text field in accordance with local building code or project requirements.

### **Filter by Layer**

Elements	Prop	erties 8	Parame	ters	List F	ormat
by Type	::				<b>A</b>	ai -
		Ð	$\langle A \rangle$	କ୍		Ū
田	$\sim$	R-	1 E	$\land$	Ð	$\mathcal{O}$
囲	#	1	##	#		
by Link	ed Pro	perty O	bjects:			
All Elem	ients				$\sim$	
by Laye	ers:		All			$\sim$
	ARCH	ICAD La				
Ø0-	Hidder	1	All Visib	ole		
Ø @ 21	D Draft	ing - G	Selecter	d		
Ø ⊙ 21	D Draft	ing - H	otspot			_
🗹 💿 A	nnotat	ion - Ge	eneral			
🗹 💿 🗛	nnotat	ion - La	bel			
🗹 💿 🗛	nnotat	ion - St	ructure			
🗹 💿 🗛	nnotat	ion - Te	xt			~
		1				

Elements on unchecked layers will not be calculated. The pop-up menu allows you to list elements on All layers, Visible layers or Selected layers.

### **Filter by Story**

Elements	Properties	& Parameters	List Format	t		
by Types				•	Skip Elements without an associative labo Skip Elements with an empty ID field Reduce Wall Quantities if an Opening is larger than	el m².
by Linke	ed Property ( ents	THE TRACE	~		List Fills and Objects Included In:	_
by Layer 2 ○ ▲ 2 ○ - H 2 ○ 2D 2 ○ 2D 2 ○ An	rs: ARCHICAD   Hidden Drafting - ( Drafting - H Drafting - G	Layer General Hotspot General		^	by Stories: ☑ All ☑ 3. Story ☑ 2. Story ☑ 1. Story ☑ 0. Story	~
⊻⊚An ⊻⊚An ⊻⊚An	notation - L notation - S notation - T	abel tructure ext		<i>~</i>		~

The Stories scrolling list allows you to include elements placed on selected stories in calculations. Elements on unchecked stories will not be calculated. Click the **All** boxes to select all stories.

### **Filter by Property Objects**

Elements	Properties	& Para	meters	List F	ormat
by Types	s:				ai
	7	$\langle \rangle$	Эć		Ū
⊞₹	> ₽	Ħ	$\triangleleft$	B	$\bigcirc$
田	# ≇	#	粠		
by Linke	ed Property	Object	51		
All Eleme	ents			$\sim$	
All Eleme	ents				
Elements	Linked to	Selected	d Prope	rty Obj	ects
Select Pr	operty Obje	ects			

Use the **Linked Property Objects** pop-up list to determine whether you want to select particular Property Objects to further elaborate listing criteria.

- Choose All if you do not want to use this filter.
- Choose **Elements Linked to Selected Property Objects** if you wish to calculate elements to which certain Property Objects are assigned either by criteria or in the element's own Settings dialog box.
- To make the Property Object selection, e.g., for listing construction elements made of reinforced concrete only, choose **Select Property Objects** in the pop-up list to open the corresponding dialog box.

selectroper	ty Objects				?	×
heck Property	Objects of the l	oaded libraries	s to be listed:			
Test.a	рх		^ List an	element if		
	tamp.apx					
Embe	dded Library		_ 0 4	ts individually lin	iked, or ria" linked	
			P	roperty Objects a	are checked	d.
	IICAD LIbrary 20					
E E FPO	0F33 20		O A	ALL of its linked F	roperty	
□ 🖹 FP0	0F39 20		0 0	bjects are check	ed.	
	0F40 20					
	0541.20		0	ANY of its linked	Property	
	0F4120		⊖ c	bjects are check	ed.	
✓  FP0	0F42 20		~			
		dead Dearsets	Objects			
<ul> <li>Cumulateu (</li> </ul>	contents of the	keu Property	Objects			
Components	Descriptors					
Components Database	Descriptors Keycode	Code	Name	Quantity	Unit	
Components Database ArchiCAD Lib	Descriptors Keycode	Code 818	Name grout	Quantity 0.050	Unit m3	^
Components Database ArchiCAD_Lib ArchiCAD_Lib	Descriptors Keycode r 002 r 003	Code 818 082	Name grout lightweight concrete	Quantity 0.050 0.050	Unit m3 m3	^
Components Database ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib	Descriptors Keycode Ir 002 Ir 003 Ir 003	Code 818 082 082	Name grout lightweight concrete lightweight concrete	Quantity 0.050 0.050 0.050	Unit m3 m3 m3	^
Components Database ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib	Descriptors Keycode Ir 002 Ir 003 Ir 003 Ir 003	Code 818 082 082 084	Name grout lightweight concrete lightweight concrete structural concrete	Quantity 0.050 0.050 0.050 0.200	Unit m3 m3 m3 m3	^
Components Database ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib	Descriptors Keycode r 002 r 003 r 003 r 003 r 003	Code 818 082 082 084 084	Name grout lightweight concrete lightweight concrete structural concrete	Quantity 0.050 0.050 0.050 0.200 0.200	Unit m3 m3 m3 m3 m3 m3	^
Components Database ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib	Descriptors Keycode r 002 r 003 r 003 r 003 r 003 r 003 r 003	Code 818 082 082 084 084 084	Name grout lightweight concrete lightweight concrete structural concrete structural concrete	Quantity 0.050 0.050 0.050 0.200 0.200 0.200	Unit m3 m3 m3 m3 m3 m3 m3 m3	^
Components Database ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib	Descriptors Keycode r 002 r 003 r 003 r 003 r 003 r 003 r 003	Code 818 082 082 084 084 084 084	Name grout lightweight concrete lightweight concrete structural concrete structural concrete structural concrete	Quantity 0.050 0.050 0.050 0.200 0.200 0.200 0.200	Unit m3 m3 m3 m3 m3 m3 m3 m3 m3	^
Components Database ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib	Descriptors Keycode r 002 r 003 r 003 r 003 r 003 r 003 r 003 r 003	Code 818 082 082 084 084 084 084 084	Name grout lightweight concrete lightweight concrete structural concrete structural concrete structural concrete structural concrete structural concrete	Quantity 0.050 0.050 0.200 0.200 0.200 0.200 0.200	Unit m3 m3 m3 m3 m3 m3 m3 m3 m3	<b>^</b>
Components Database ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib	Descriptors           Keycode           r         002           r         003           r         003	Code 818 082 082 084 084 084 084 084	Name grout lightweight concrete structural concrete structural concrete structural concrete structural concrete structural concrete	Quantity 0.050 0.050 0.200 0.200 0.200 0.200 0.200	Unit m3 m3 m3 m3 m3 m3 m3 m3 m3	< ×
Components Database ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib ArchiCAD_Lib IstribiCAD_Lib	Descriptors Keycode r 002 r 003 r 003 r 003 r 003 r 003 r 003 se items specific items	Code 818 062 082 084 084 084 084 084	Name grout lightweight concrete lightweight concrete structural concrete structural concrete structural concrete structural concrete	Quantity 0.050 0.050 0.200 0.200 0.200 0.200 0.200	Unit m3 m3 m3 m3 m3 m3 m2	~

The checkboxes next to folder names have three states: checked, unchecked, or minus. If the checkbox is checked or unchecked, all items in the folder in question will be used or ignored when filtering the project. If only some items are checked, a minus sign will appear.

View the components and the descriptors of the Property Objects at the bottom of the dialog box.

### Filter Listed Fills and Objects by Viewpoint

The **List Fills and Objects** pop-up menu allows you to list Fills and Objects that are included in particular project viewpoints.

Elements	Prope	rties & Para	ameters	List Format	t		
by Types			<i>⊗</i> <i>▼</i>		•	Skip Elements without an associative lab Skip Elements with an empty ID field Reduce Wall Quantities if an Opening is larger than	el ] m².
Linked Property Objects:     Elements Linked t Property Objects    by Layers:     All     ①    ▲ ARCHICAD Layer     ③    ▲ ARCHICAD Layer     ③    ④    ▲ ARCHICAD Layer     ③    ④    ▲ Drafting - General     ④    ②    D Orafting - Hotspot     ③    ④    Annotation - General     ④    ④    Annotation - Label     ③    ④    Annotation - Label     ③    ④    Annotation - Label				ts v	~	List Fills and Objects Included In: Floor Plans Sections Elevations Interior Elevations Worksheets Any Selected Viewpoints Select Viewpoints	^
⊻ ⊙ An	notatio	on - lext		·	¥		$\sim$

Once you choose a viewpoint type, a subdialog appears allowing you to choose any particular viewpoints of that type (e.g. certain Elevations) to include in this filter. (To include all viewpoints of the chosen type, check the "All" box in the subdialog box.)

To include several types of viewpoints, choose the "Any Selected Viewpoints" option, then go through the subdialog and check any viewpoints, of any type, to include in this filter.



### **Properties & Parameters Tab Page**

The second tab opens the Properties & Parameters page. Use the controls in this page to determine the amount of information included for each element in the report.

vailable List Schemes: Duplica	te			
Delete Create V	Elements Properties & Parameter	rs List Format		
Default Set	Keys:		Global Element Parameters:	
Kostenermittlung	Default Set		☑ Element type	1
<ul> <li>ArchiCAD_Library</li> </ul>	> V Kostenermittlung		View Pen	
<ul> <li>Element List Schemes</li> </ul>	ArchiCAD_Library		Composite Section Pens	
🖯 🌉 Basic			Line Type	
🖯 🧱 Default			Building Material/Composite/Profile Na     Skin Cut Fill Names	1
🕞 🧱 General Element List			Skin Building Material Names	
🖯 🧱 Window schedule Type 1			Cut Fill Pen	1
🗑 📰 Window schedule Type 2	Components:		Extra Parameters of the Selected Types:	
> 🔂 Component List Schemes	None	~	3D Resolution of a Curved Wall     Disation of the Wall	1
> 🙀 Zone List Schemes	Descriptors:		Start Thickness of the Wall	
-	None	~	End Thickness of the Wall	
	Library Parts' Additional Paramet	ers:	□ Wall Skin Thickness on the Outside Face	
	None	~	Wall Insulation Skin Thickness	
	1			_

### **Select Keys**

Keys are logical categories in Databases, which group the primary Database items - Components and Descriptors - by type.

Select the desired Keys for filtering the components and descriptors to be listed. You can only select Keys from the Database in which the selected List Scheme resides. In the case of a database-independent scheme, you can select Keys from any of the existing databases.

### **Select Components and Descriptors**

Use the **Components** and **Descriptors** pop-up lists to determine the combination of components and descriptors to be listed.

			Elements	Properties & Parameters	List Format	t
Elements	Properties & Parameters	List Format	Keys:			
Keys:				Default Set		
	Default Set			Kostenermittlung		
	Kostenermittlung			ArchiCAD_Library		
	ArchiCAD_Library					
			Compon	ents:		
Compon	ents:		All		```	~
All		$\sim$	Descript	ors:		
All			 None		~	Ś
None			All			
From Da	atabases Only		None			
Object : Custom Custom	Specific Items Only Set From Databases Only Set & Object Spec. Items		From Da Object Custom	atabases Only Specific Items Only Set From Databases Only Set & Object Specification		_
Custom	ize		Custom	Set & Object Spec. items		_
			Custom	ize		

- Choose All to include all related Components (or Descriptors) in the calculation.
- Choose None to ignore Components (or Descriptors).

Select one of four global options:

- From Databases Only will include all properties (Components or Descriptors) residing in databases.
- **Object Specific Items Only** will include only locally defined properties (those in regular library parts or Property Objects).
- **Custom Set From Databases Only** opens the Select Descriptors and the Select Components dialog boxes, where you can define the set of properties to filter the report.
- Custom Set & Object Specific Items is a combination of the second and third options.
- If you want to use a filter set that does not match any of the predefined options, use the **Customize** button.

#### Example:

Let us say you have a Wall with a Property Object assigned to it, in which the following Components are created:

FP0	0F33 20							
17		New Delete	Rem	ove Link to	Database	Change Lin	k	
Ø		Proportional with (Cust	om):					
#		DB Set	Key	Code	Name	Quantity	Unit	Proportional with
9		ArchiCAD_Library	003	2358	precast conc	1.00	m2	Surface A 🔹 🕨
		ArchiCAD_Library	004	1844	plaster	0.04	m3	Surface A
		ArchiCAD_Library			Gravel	0.900	m3	Volume
1	Details	ArchiCAD_Library			Water	0.500	m3	Volume
	Parameters	ArchiCAD_Library			Cement	300.00	MISSING	Volume
	Migration							
	Components							
	Descriptors							

The first two are taken from the Database by clicking the 'Link to Database Item...' button in the top row and selecting an item from the Database for each.

The other three Components are Local Components of the Property Object, meaning they will not become part of the Database so they are accessible for only those Elements and Objects to which this specific Property Object is assigned.

Depending on how you filter components in Setup List Schemes, the resulting element list will vary:

Elements	Properties & Parameters	List Format				
Keys:		All				
	Default Set					
	Kostenermittlung					
	ArchiCAD_Library					
Compon	ents:					
All		$\sim$				
All						
None						
From Da	atabases Only					
Object 9	Specific Items Only					
Custom	Custom Set From Databases Only					
Custom	Set & Object Spec. Items					
Custom						
Cascom	ize					

- All: All five components are listed.
- None: Nothing is listed.
- From Database Only: Only the first two components, linked to the database, are listed.
- **Object Specific Items Only:** Only the last three components, which are local to this property object, are listed.

#### **Select Parameters**

In the **Global Element Parameters** list, choose any of the common parameters of all element types, such as surface, volume, height, thickness or user ID.

Shift-click to multi-select.

The Extra Parameters lists those which are specific to the selected element type(s).

Under Library Parts' Additional Parameters, the Select Additional Parameters dialog box allows you to select parameters by type and one-by-one.

Elements	Properties & Parameters	List Format		
Keys:	) Default Set Kostenermittlung NewDatabase ArchiCAD_Library	All	Global Element Parameters: Ø Element type View Pen Ø Section Pen Composite Section Pens Line Type Ø Building Material/Composite/Profile Na Skin Gut Fill Names Skin Building Material Names Cut Fill Pen	^ ~
Compon	ients:		Extra Parameters of the Selected Types:	
All Descript None	ors:	~	W/D Reveal Depth to Wall Face     W/D Nominal Sill Height     W/D Sill Height on the Reveal Side     W/D Sill Height on the Side Opposite t     W/D Jamb on the Left Side	^
None All None		~	□ W/D Jamb on the Right Side □ W/D Sill/Threshold Depth	¥
As in Se Select A	elected Library Parts		Cancel OK	

### List Format Tab Page

The third tab opens the **List Format** page. The controls in this page allow you to define the overall appearance of the report, and set the logical order of properties and parameters.

Choose one of the formatting alternatives: click **Text List** to display raw data, or **Graphic Template** to select a predefined list format template.



These two radio buttons let you toggle between two control windows, described below.

### **Plain Report**

The following page appears when clicking **Text List** button from the List Format tab page.

ements Prop	erties & Parameters List Format		
🖲 Text Li	st 🔛 🗍 🖓 Graphic Temp	olate	
Elements:	Each Item in Separate Row $$	Separators:	Show Column Heade
Components:	Quantity only V	Column:	_
Descriptors:	Short Text only 🗸	Row: -	Mark for 'None': /
	Parameter:	Use & Def	ine Custom Headers:
01 🗘	Library Part Name		· · · · · · · · · · · · · · · · · · ·
02 🗘	Thickness/Size		
03 \$	Height		
04 \$	User ID		
05 \$	Reveal Side is Opposite to the Ope	eni 🗌	
06 \$	Surface Name		

When you choose this report format, you have only a limited number of controls over the report layout. However, the report will appear in a text window and the list settings fully enable you to logically organize the data in the report.

### **Sorting Order**

To change the default order, drag the parameters to their new position in the list.

01	ext List	Graphic Temp	late	
Element	s:	Each Item in Separate Row $\sim$	Separators:	Show Column Heade
Compor	ents:	Quantity only ~	Column:	
Descript	ors:	Short Text only 🗸	Row: -	Mark for 'None': /
	<b>—</b>	Parameter:	Use & Det	fine Custom Headers:
01	÷	Library Part Name		~
06	÷	Surface Name		
02	÷	Thickness/Size		
03	÷	Height		
04	÷	User ID		
05	÷	Reveal Side is Opposite to the Ope	eni 🗌	

### **Column Headers**

Check the **Show Column Headers** checkbox if you want to print column headers in the report. Column headers will bear either the parameter name or a Custom Header. To create a Custom header, check the box next to the Parameter name you want to customize and type the desired header into the text field.

• Text Lis	t 🔛 🖂 Graphic Ten	plate	
Elements:	Each Item in Separate Row	Separators:	Show Column Heade
Components:	Quantity only	, Column:	_
Descriptors:	Short Text only	Row: -	Mark for 'None': /
	Parameter:	Use & De	fine Custom Headers:
01 ‡	Library Part Name		~
02 🗘	Surface Name	CineRend	der Surface Name
03 🗘	Thickness/Size		
04 <b>\$</b>	Height		
05 \$	User ID		
06 \$	Reveal Side is Opposite to the Op	peni	

### **Listing Preferences**

Use the three pop-up menus in the upper part of the tab page to define the listing logic.

At Elements, the **Each Item in Separate Row** option creates an item by item list even for identical elements, while **Group and Count Identical** groups and counts up identical items as well as their parameters. *For the difference, see the following reports:* 

Elements Propert	ies & Parameters List Format		
Text List	Graphic Temp	plate	
Elements:	Each Item in Separate Row 🗸 🗸	Separators:	Show Column Headers
Components:	Each Item in Separate Row	Column:	
Descriptors:	Group & Count Identical Short Text only ~	Row: -	Mark for 'None': /

At **Components**, the **Unfold Components** option lists the parameters of the components. **Quantity Only** will display quantities without units.

At **Descriptors**, the **Unfold Descriptors** will list all the Parameters, Keys and Codes of the Descriptors. **Short Text only** displays only the first line of the descriptor in the report.

**Note:** Text lists can be saved in plain text, tabbed text or HTML format. Text lists will only list the short text of Descriptors.

## **Graphic Template**

This page appears when you click the **Graphic Template** radio button on top of the List Format tab page.



With a **Graphic Template**, you can either select a predefined list template from your Library, or use an embedded template layout (or a copy of it).

List layout templates offer sophisticated ready-to-present report formats incorporating both text and graphic elements.

Reports formatted using templates appear in a non-editable project windows. The contents of the windows can be copied to the other project window, including the floor plan views, or saved in ARCHICAD Project, RTF and PlotMaker layout format.

Click the **Choose Template** button to browse the library for list templates. Select the desired template file in the **Open** dialog box. Default templates can be found in the List Templates folder of the ARCHICAD Library.

If you use independent templates, ARCHICAD refers to the actual template file for the settings. If you check the **Include in List Scheme** checkbox, the template file will be archived in the listset.txt file (*see above*). When the box is checked, the template name appears in italic.

### **Data Order and Parameter Options**

See the Text List section above on how to rearrange the order of data columns and customize columns headers.

If the list of parameters includes Components or Descriptors, use the checkboxes to define additional list items.

**Note:** Changing data order can result in inconsistent list content if the template contains fixed column headers.

#### **Parameter Listing**

Element List template files can include instructions to list element parameters separately and/or add up parameter values in the report. Define your preference for each parameter using the appropriate checkbox:



- List on separate level: List parameter types for each element
- Use for Grouping/Total: add up parameter values in the report

## **Component Lists**

When selecting a Component List type scheme, the **Setup List Schemes** dialog box changes accordingly, to display controls available for that list type.

Many of the controls are similar to those used for Element Lists. *See relevant sections above*.

### **Components Tab Page**

In the **Keys** list on top of the tab page, select the keys to filter the components and descriptors to be listed, or check **All** box to enable all components and descriptors.

🚺 Set Up List Schemes		?	×
Edit Selected List Scheme: Defa	ilt		
Available List Schemes: Du	licate		
Delete Create	Components Properties & Parameters List Format		
<ul> <li>         Default Set     </li> <li>         Element List Schemes         Image: Basic         Image: Default         Image: Default</li></ul>	<ul> <li>by Keys:</li> <li>Default Set</li> <li>Kostenermittlung</li> <li>NewDatabase</li> <li>NewDatabase</li> <li>ArchiCAD_Library</li> <li>by Linked Property Objects:</li> <li>All Elements</li> <li>by Layers:</li> <li>All All</li> <li>by Layers:</li> <li>All</li> <li>by Stories:</li> <li>by Stories:</li> <li>by Condition - General</li> <li>Annotation - General</li> <li>Annotation - Label</li> <li>List Fills and Objects</li> <li>Annotation - Label</li> </ul>		m <sup>2</sup> .
	Cancel	ОК	

### **Properties & Parameters Tab Page**

The Master Property Controls and Element Parameter checklists work just as they do for Element Lists. (See relevant sections above.)

The **Optional Components Data** buttons determine which parts of the component will be listed (the name and the quantity always appear).

Components	Properties &	Parameters	List Format			
Master Pro Componen All Descriptors All	perty Controls ts: ::		~	Slobal Elem Element View Per Section F Composi Line Type Building Skin Cut Skin Buil	ent Parameters: type h Pen te Section Pens Material/Composi Fill Names ding Material Nam	te/Profile Na
Optional Co	mponent Data	:				
Full Ke	y Code	Key Name	Compor	nent Co	Unit	Reference Unit
Fragments: 1 2 3 4					Name and Quan	tity always listed.
Optional De	scriptor Data:					
Full Ke	y Code	Key Name	Descrip	tor Code	Full Text	
Fragments:	1234				Short Text alway	s listed.

• The **Fragments** buttons represent the four possible fragments of the Key Code string that are separated by dots. In case of a Key Code of 004.003.002.001, Fragment 3 will return the string '002', as this is the 3rd fragment of the Key Code.

# Zone Lists

For a Zone List, the Set Up List Schemes dialog box changes accordingly.

Many of the controls are similar to those used for Element Lists.

See relevant sections above.

### **Zones Tab Page**

The first tab on top of the **Setup List Schemes** dialog box opens the Zones tab page.

/ail	lable List Schemes:	Duplic	ate							
1	Delete Create	~	Zo	nes Prope	rties & Parame	ters Related	Elemen	nts List Format		
	তি 🧱 General Element List তি 🌉 Window schedule Ty	t ^ ype 1		.by Categori 교	es: Generic	<b>∠</b> A	" []	by Zone Number field:		
-	이 분號 Window schedule Ty 이 또 Component List Schen 이 또 Basic 이 또 Default	ype 2 nes		90 1 1 2 2 3 3 4 マ 5	Residential a Office Production & Storage & Sa Education &	nd Recreation Research es Culture		List if it conta	ins	`
	@I Component/Keys			.by Layers:	All	·	- ~	by Stories:	All	
•	Image: Construction of the second			☑ ③ ▲ ARC ☑ ④ - Hidd ☑ ③ 2D Dra ☑ ③ 2D Dra ☑ ③ Annot ☑ ③ Annot	CHICAD Layer en afting - Genera afting - Hotspo ation - Genera ation - Label ation - Structu	l I I	^	☑ Roof ☑ Gallery ☑ Ground Floor ☑ Foundation		
	Kostenermittlung	ories V	6	⊴ @ Annot ⊴ @ Annot	ation - Text		~			

Check individual boxes to filter the list by Zone categories; or check All to use all categories.

You can further filter zones using the checkboxes and options under **Zone Number Field** at the upper right of the tab page.

- Skip if it is empty: Omits zones without a number
- Skip Zones with an empty ID field: Omits zones without ID numbers

### **Properties & Parameters Tab Page**

Use the checkboxes to filter the list by Zone parameters.

Shift-click to multi-select.

Zones	Properties & Parameters	Related Elements	List Format
Keys:	<ul> <li>Default Set</li> <li>Kostenermittlung</li> <li>NewDatabase</li> <li>ArchiCAD_Library</li> </ul>	All	Enable Listing of Related Elements Types: All Type: All Type: Type: Type: Type: Type: Type:
Comp	onents:		an Opening is larger than 1.00 m <sup>2</sup> .
None	2	~ Z	Ione Parameters:
Descri	ptors:		Zone Story Index
None	2	~	☑ Zone Story Name □ Zone Category Code
Libran	/ Parts' Additional Paramet	ers: V	□ Zone Category Name ☑ Zone Name

The **Enable Listing of Related Elements** buttons define which element types in the listed zones should be included. Selecting any of these activates the Related Elements tab page (see below).

Keys: All Enable Listing of Related Element	
Keys: All Enable Listing of Related Elemen	
Default Set	nts
> ☑	□AII 序 资 井 井
Components:	Objects ∨ 0 m².
None V Zone Parameters:	
Descriptors:	^
None Zone Story Name	
Library Parts' Additional Parameters:	
All	Ý

The **Reduce Wall Quantities** field and the **Linked Property Objects** pop-up work as they do for Element List Schemes (*see above*).

### **Related Elements Tab Page**

This tab page, available only for Zone List Schemes, is active if you previously selected any Related Elements on the Properties and Parameters tab page (see above).

Keys:       All       Global Element Parameters:         Image: Default Set       Element type       Image: Default Set         Image: Default Set       View Pen       Image: Default Set         Image: Default Set       Section Pen       Image: Default Set         Image: Default Set       Composite Section Pens       Image: Default Set         Image: Default Set       Composite Section Pens       Image: Default Set         Image: Default Set       Skin Cut Fill Names       Skin Suilding Material Names         Image: Default Set       Extra Parameters of the Selected Types:         None       Image: Default Set       Direction of the Wall         Image: Default Set       Extra Parameters of the Wall       Mall Start Thickness of the Wall         Image: Default Set       Wall Set Thickness of the Wall       Mall Set Thickness of the Wall	Zones Properties & Para	meters Related Elemen	nts List Format	
Image: Components:       Element type       Image: Components:         Components:       Element type       Image: Components:         None       Discriptors:       Discriptors:         None       Wall Start Thickness of the Wall       Image: Component Start Thickness of the Wall	Keys:		Global Element Parameters:	
Components:     Extra Parameters of the Selected Types:       None     3D Resolution of a Curved Wall       Descriptors:     Direction of the Wall       None     End Thickness of the Wall       Wall Skin Thickness of the Wall     Wall Skin Thickness on the Outside Face	Default Set      Content of the set      Content	ing ary	Element type  View Pen  Section Pen  Composite Section Pens Line Type Building Material/Composite/Profile Na Skin Cut Fill Names Cut Fill Pen	* *
None       Image: Start St	Components:		Extra Parameters of the Selected Types:	
Descriptors:              Direction of the Wall             Start Thickness of the Wall             End Thickness of the Wall             Using Darks' Additional Descentance	None	~	3D Resolution of a Curved Wall	^
None   I End Thickness of the Wall  Wall Skin Thickness on the Outside Face	Descriptors:		Direction of the Wall     Start Thickness of the Wall	
Wall Skin Thickness on the Outside Face	None	~	End Thickness of the Wall	
Library Parts Additional Parameters:	Library Parts' Additional	Parameters:	Wall Skin Thickness on the Outside Face Wall Skin Thickness on the Inside Face	
None Wall Insulation Skin Thickness	None	~		v

Zone listing is not restricted to the geometry of zones. It also involves the construction elements contained in zones, specifically the surrounding walls, columns, freestanding walls, doors, windows and other objects within Zone spaces.

The controls of the Related Elements page allow you to customize the settings by which the elements associated with a zone or multiple zones are calculated in the zone report. The element types to be considered in calculations are selected in the Properties & Parameters tab page.

The filters of the Related Elements tab page are identical to those of the Properties & Parameters tab page of Element type lists.

# Using the Format Wizard/Format Assistant

In the **Setup List Schemes** dialog box, make the List Format tab active and make sure that the **Graphic Template** option is chosen. Select a list scheme from the left-hand tree structure, then click the **Start Format Wizard** (Windows) or **Start Format Assistant** (Mac) button.

This opens a complex dialog box that allows you to rename, delete, duplicate and customize templates.



**Note:** The **Wizard/Assistant** does not work on external template files, only with embedded layout sections that are stored in binary format, in the program itself, in an ARCHICAD project (.pln, .pla) file, or in the Preferences file.

When you quit the **Wizard** and return to the **Setup List Schemes** dialog box, you will notice that the name of the previously created Layout is shown in the **Template:** field, and the **include in List Scheme** checkbox is enabled. This means that a reference to this layout will be stored in the List Scheme file in the library, but the Layout itself will be saved within the project (.pln, .pla) or in the Preferences file. If you disable the checkbox, the Layout can be saved as an external template text file in the library, but in this case it will no longer be available from within the Wizard.

Note: New & Reset deletes all custom Layouts; only factory default Layouts will be available.

See <u>Templates</u>.

### Format Wizard: Layout Tab Page

🚺 Format Wizard		? ×
Layout Content Fields		
Layout Names:		
Basic Element General element list General element list0	∧ Layout Type:	Single Column 🗸
Window schedule Type 1 Window schedule Type 2	Paper Size:	Custom ~
	Width:	270.0
	Height:	193.0
		Header
		Footer
Unit in the selected layout: mm.	×	Background
Duplicate Rename Delete		Details
() General element list layout		
Preview < Back Next	t>	Cancel Done

The Format Assistant/Wizard dialog box opens with the Layout tab page by default.

Select a Graphic Template to edit from the Layout Names list at the left-hand side of the tab page.

- In the list, factory default and locked templates appear in gray. Default templates are wired into the ARCHICAD resource code and cannot be edited; only the details can be viewed in the **Format Assistant/Wizard**.
- Editable layouts appear in black print and can be customized individually.

All existing layouts can be duplicated, including default and locked ones. The copies are freely editable.

Duplicate, rename and delete selected layouts using the corresponding buttons below the Layout Names list at the bottom left of the Layout tab page.

**Note:** To edit the template of a locked list scheme, first unlock it in the **Setup List Schemes** dialog.

### Layout Type

Define the layout type of the selected graphic template from the Layout Type pop-up list page.

- To order pages vertically, choose Single Column.
- To organize pages in a grid system, choose **Tiled**.

#### **Layout Details**

Click Details to define individual settings for either option (Single Column or Tiled).

	∧ Layout Type:	Single Colu	umn ~
🚺 Details			? ×
Line Gap: Layout Scale:	0.0		
Comment: General eleme	nt list layout		
		Cancel	ОК
mm	•	Backg	round
Delete		Det	ails

For a Single Column list:

- Define the Line Gap between two consecutive list items
- Choose the Layout Scale to be used when pasting the list into ARCHICAD views Note: The Auto option will use the current scale of the Floor Plan.

You can type any remark in the **Comment** field. The comment appears in the Info field of the **Format Assistant/Wizard**.

For a **Tiled** list:

- Use the **Grid** fields to define the number of horizontal and vertical cells, then define the gaps between them in both directions.
- Use the Cell Sequence buttons to organize the direction that the cells should follow each other.

🚺 Details		?	X Tiled V
Grid:	4		Custom ~
Gap betw	een cells:	Cell Sequence	
	□□ 10.0	mm 🔿 🖶 🕥 👭	270.0
	↓□□ ↑□□ 10.0	mm	193.0
Line Gap:	0.0	mm	Header
Layout Sci	ale: Auto	~	Footer
Comment General e	: element list layout		Background
L		Cancel OK	Details

### Edit Page Item

Clicking any of the **Header**, **Footer** or **Background** buttons opens the **Edit Page Item** dialog box where you can edit these settings. It is possible to place a Header and/or Footer on each page or only on the first page. The first page Header and/or Footer can be different from the rest.

🚺 Edit Page Item				?	×
Edit:					
Header	~		Default Te	xt Format	
Footer Background			Pict	ure	
Header on the first page		Total Width:	265.0		
Footer on the first page Rows: 2 Columns:	9	Total Height:	14.0		
Field to Edit:	1 📮	Width:	29.4		
Text Field:		Height:	7.0		
#usertext[5]	0	Offset:	0.0		
<	>		0.0		
Insert >> Element type	~		Text Fo	ormat	
Insert	~	All values in mm.	Bord	iers	
			Cancel	OK	

Choose the Page Item you wish to modify from the **Edit** pop-up list at the upper left of the dialog box. Predefined formats are available from the **Record Type** pop-up.

Define the Page Item size by typing the desired values in the **Total Width** and **Total Height** fields. Organize the selected Page Item into Fields using the **Rows** and **Columns** fields.

Edit the default text type of the selected page item in the **Default Text Format** dialog box. Use the **Insert text** pop-up to define how the text will be cropped if it does not fit in the cell.

idit:		_		
Header	~		Defa	ult Text Format
Record Type:			M Default Text Format	? >
Empty Header (landscape)	~	Tot	Arial Western	
Rows: 1 Columns:	1	Tot	Bold	M <sup></sup> 1 3.17 mn
ield to Edit: 1 💌	1		☐ Italic ☐ <u>Underline</u>	1.25↓ 1
ext Field:	^	]	Insert text	E X I
<	>		As is	~
Insert >> Element type	~	_	Ca	ncel OK
Insert	~	AI		Borders

Click **Picture** to import a bitmap image into the layout of the edited page item. The bitmaps can be external image files from any of the active Libraries, ARCHICAD object symbol drawings generated by Property Objects, or Preview Pictures of ARCHICAD Library Parts in the active Libraries.

N Picture		? ×
Use Picture Library Part Preview Change	Picture Position & Sca <ul></ul>	sle : 1, 0.00 %
	Width: Height: Offset:	0.0 0.0 0.0 All values in mm.
Figure Name: Bookshelf 01 20.gsm	Anchor Point:	
	Ca	ncel OK

Use these controls in the Edit Page Item dialog box to further define the item (e.g. header, footer).

🚺 Edit Page Item			? ×
Edit:			
Header	~		Default Text Format
Record Type:			Picture
Corporate Header	~	Total Width:	175.0
Rows: 1 Columns:	3	Total Height:	12.5
Field to Edit: 1	1	Width:	20.0
Text Field:		Height:	0.0
Page #page	0	Offset:	155.0
<	>		0.0
Insert >> Element type	~		Text Format
Insert	~	All values in mm.	Borders
			Cancel OK

- Use the **Field to Edit** counters to define which field you wish to modify. The first counter is for the column, the second is for the row.
- Define the size and position of the selected field using the Width, Height and Offset fields.
- To set a non-default text type for the field, click the **Text Format** button.
- Click the **Borders** button to set Field borders.

🚺 Field Borders	? ×
Borders Top Left Bottom Right U 1 Offset: 0.0 mm	Preview 123
	Cancel OK

Define the contents of **Text Fields:** Choose an item from the pop-up and click the **Insert >>** button. Click the Insert pop-up below to add globally defined data.

🔊 Edit Page Item						
Edit:						
Header		~				
Record Type:						
Custom		~				
		Total				
Rows: 1	Columns:	3 Total				
		-		Text Field:		
Field to Edit: 1	<b></b>	1 🍦 🗆		Page #page#		_
Text Fields				ruge » puge»		
lext Field:						
Page #page#		~		<		
		$\sim$		Insert >>	Element type	_
<		>	-			_
				Insert		
Insert >>	Element type	<u>~</u>		Insert		
Incent	Element type					
Insert	Story Name / Vi	ewpoint Name		Page Number		
	Layer Name			Date		
	Library Part Nan	1e		Inne Droject Nome		
	Thickness/Size			Project Name		
	Height			Lavout Scale		
Preview	Surface Area			Drawing Scale		
	Volume			Total Number		

## Format Wizard: Content Tab Page

Use the Content tab page of the **Format Assistant/Wizard** to define how to display the parameters in the list.

Parameters					
✓ 07 Height	^	Edit Record:			
✓ 08 Surface Area					
09 Volume		Pagebreak:	None		$\sim$
V Display Headlines by					
List Headline		Gr	roup selected parameters		
✓ 01 Element type					
✓ 02 Story Name / Viewpoint Name		Ung	group selected parameter:	5	
☑ 03 Layer Name					
✓ 04 User ID					
✓ 05 Library Part Name					
06 Thickness/Size					
Ø 07 Height					
✓ 08 Surface Area					
09 Volume					

The Parameters list here is the same as those in the Properties & Parameters tab page of the **Setup** List Schemes dialog box.

Select the Parameters you want to use to generate Records. The Parameters are listed according to Record type, of which there are three:



- Records to display one by one
- Calculate Totals/Subtotals by...
- Display headlines by....

Check the Parameter boxes to make the selection.

Group a selection of checked parameters by clicking the **Group selected parameters** button to the right of the Parameters list field.

🚺 Format Wizard	?	Х
Layout Content Fields		
Parameters		
Records to display one-by-one A Edit Record:		
✓ ✓ Group of records 01-09		
O1 Element type Pagebreak: None		$\sim$
☑ 02 Story Name / Viewpoint Name		
☑ 03 Layer Name		
✓ 04 User ID		
✓ 05 Library Part Name Ungroup selected parameters		
✓ 06 Thickness/Size		
≥ 07 Height		
≥ 08 Surface Area		
V 09 Volume		
✓ Grand Total ✓ 01 Element type		
✓ 01 Element type		
General element list layout		
Preview < Back Next > Cancel	Do	one

The result is identical with the Group & Count function of Text Lists.

Choose the desired option from the **Pagebreak** pop-up to properly organize records on pages.

### Format Wizard: Fields Tab Page

The Fields tab page is very similar to the **Edit Page Item** dialog box described above.

See Edit Page Item.

Parameter & Record:			1	Apply Header Format
Record: Element type		~		Default Text Format
Record Type:				Picture
Custom		~	Total Width:	0.0
Rows: 1	Columns:	1	Total Height:	0.0
Field to Edit: 1	* *	1 *	Width:	0.0
Text Field:			Height:	0.0
		0	Offset:	0.0
<		>		0.0
Insert	<ul> <li>Element type</li> </ul>	~		Text Format
Insert		~	All values in mm.	Borders

The Parameters selected in the Content tab page appear in the **Parameter & Record** pop-up list.

You can select a predefined Record type for all parameters or you can edit existing ones. Predefined types are available from the **Record Type** pop-up. When editing predefined Record types, the pop-up will switch to **Custom**.

See also Step By Step Examples.

# **Step By Step Examples**

### **A: Calculation Examples**

# Example 1: Zones with all included object types summarized (subtotal by zones)

- 1. Open the Set up List Schemes the dialog box.
- 2. Duplicate one of the Zone list schemes and name it, e.g., "Objects by Zones".

🔊 Duplicate	List Scheme	?	×
Name:	Objects by Zones	(	ОК
		Ca	ncel

- **3.** In the first tab page (Zones), be sure to set filters appropriately: if you want to list all zones, check all stories, all zone categories, etc.
- 4. In the second tab page (Properties & Parameters):
- set None in the Components, Descriptors and Library Part's Additional Parameters pop-up menus;
- enable objects (click the chair icon) in the Enable Listing of Related Elements box;
- set All Elements in the Linked Property Objects pop-up menu;
- check Zone Name and Zone Number in the **Zone Parameters** list.

Zones	Properties & Parameters	Related Elements	List Format
Keys:	Default Set Kostenermittlung Kostenermittlung ArchiCAD_Library	All	Enable Listing of Related Elements Types: All Comparison of the second
Comp	onents:		an Opening is larger than 1.00 m <sup>-</sup> .
None	!	~ :	Zone Parameters:
Descri	ptors:		Zone Story Name
None		~	Zone Category Name
Library None	r Parts' Additional Paramete	ers:	☑ Zone Name ☑ Zone Number ✓

- 5. In the third tab page (Related Elements):
- Set None in the Components, Descriptors and Library Part's Additional Parameters pop-up menus;
- Check Library Part Name in the Global Element Parameter list.

Zones	Properties & Parameters	Related Elemen	ts List Format	
Keys:	Default Set	🗌 All	Global Element Parameters: Skin/Component Area Thickness/Size	^
> _ > <b>_</b> > <b>_</b>	<ul> <li>Kostenermittlung</li> <li>NewDatabase</li> <li>ArchiCAD_Library</li> </ul>		Composite Thicknesses Height Cubray Part Name Associated Property Object Property Object Part(s) by Criteria Base Elevation Associative Label	~
Comp	onents:		Extra Parameters of the Selected Types:	
None	2	~		$\sim$
Descri	ptors:			
None	2	$\sim$		
Library	/ Parts' Additional Paramete	rs:		
None	•	~		

- 6. In the fourth tab page (List Format):
- Select Text List;
- Set Group & Count Identical in the **Elements** pop-up menu; be make sure that the following parameter list is at the bottom:

Zones Propertie	s & Parameters Related Elements	List Format	
• Text List	Graphic Temp	late	
Elements:	Group & Count Identical 🛛 🗸	Separators:	Show Column Headers
Components:	Quantity only 🗸	Column:	_
Descriptors:	Short Text only 🗸	Row: -	Mark for 'None': /
1	Parameter:	Use & Def	fine Custom Headers:
01 🗘 :	Zone Story Name		<u>^</u>
02 🗘	Zone Category Code		
03 🗘	Zone Category Name		
04 🗘	Zone Number		
05 🗘	Zone Name		
06 💠	Zone Floor Level		
07 💠	Zone Height		
08 🗘	Measured Area		Ý

7. Click **OK** and choose the saved Object by Zones list scheme in **Zone Lists**. You will get a list something like this:

Zones / Obje	ects by Zones] ×	2										
tegory Code	Zone Category Name	I	Zone Number	Zone Name	1.3	Zone Floor	Level	Zo	ne Height	Mea	sured Area	Library Part Name
					1-							
1	Education & Culture	1	05	Gallery	L.		-0.10	1	3.20		25.78	1
I	Education & Culture	1	01	Exhibition space	1		-0.10	1	2.76		63.30	
1	/	1	1	17	Ι.,	/		17		1		Chair Layout 18
1	/	1	1	17	Ι.,	/		17		1		Piano 18
1	/	1	1	17	Ι.,	/		17		1		Piano Bench 18
1	/	1	1	17	Ι.,	/		17		1		Stair 1
1	Technical Equipment	1	03	WC	L.		-0.10	1	2.54		2.04	
1	/	1	1	17	Ι.,	/		17		1		WC 18
1	Technical Equipment	1	04	Washroom	L.		-0.10	1	2.54		3.83	
1	/	1	1	17	L.	/		17		1		Basin 18
1	Communication & Access	3	02	Entrance	L.		-0.10	1	2.54		7.74	1
					1-							
i		- i			i.			i.			102.69	

### Example 2: Grand total of object types for the entire project

- 1. Open Set up List Schemes.
- 2. Duplicate one of the Element list schemes and name it, e.g., "Objects total".
- **3.** In the first tab page (Elements), be sure to set filters appropriately, i.e., check Objects (chair icon) under "by Types", check all stories, etc.

- 4. In the second tab page (Properties & Parameters):
- set None in the Components, Descriptors and Library Part's Additional Parameters pop-up menus;
- check Library Part Name in the Global Element Parameter list.

Keys:       All       Global Element Parameters:         Befault Set       Volume         Skin/Component Area       Skin/Component Area         MewDatabase       Thickness/Size         Composite Thicknesses       Composite Thicknesses         Property Object Part(s) by Criteria       Property Object Part(s) by Criteria         Components:       Extra Parameters of the Selected Types:         None       Morph Receive Shadow (on/off)         Morph Receive Shadow (on/off)       Morph Ploor Plan Perimeter	lements	Properties & Parameters	List Format		
□ Default Set       □ Volume         > □ More Kostenermittlung       □ Skin/Component Area         > □ NewDatabase       □ Thickness/Size         > ☑ ArchiCAD_Library       □ Composite Thicknesses         □ Ubrary Part Name       □ Ubrary Part Name         □ Components:       Extra Parameters of the Selected Types:         None       □ Morph Surface/Solid (on/off)         □ Morph Receive Shadow (on/off)       □ Morph Floor Plan Perimeter	Keys:			Global Element Parameters:	
Components:     Extra Parameters of the Selected Types:       None          □ Morph Surface/Solid (on/off)         □ Morph Cast Shadow (on/off)         □ Morph Receive Shadow (on/off)         □ Morph Floor Plan Perimeter		<ul> <li>Default Set</li> <li>Kostenermittlung</li> <li>NewDatabase</li> <li>ArchiCAD_Library</li> </ul>		Volume Skin Volumes Kin/Component Area Thickness/Size Composite Thicknesses Height Ultibrary Part Name Associated Property Object Property Object Part(s) by Criteria	~
None        Descriptors:     Image: Construction of the second seco	Compon	ients:		Extra Parameters of the Selected Types:	
Descriptors:	None		~	Morph Surface/Solid (on/off)	$\sim$
None  V  I Morph Floor Plan Perimeter	Descript	ors:		Morph Cast Shadow (on/off) Morph Receive Shadow (on/off)	
	None		~	Morph Floor Plan Perimeter	
Library Parts' Additional Parameters:	Library P	Parts' Additional Parameter	s:		
None v	None		~		~

- 5. In the third tab-page (List Format):
- select Text List;
- set Group & Count Identical in the Elements pop-up menu;
- 6. Click OK and choose the Objects total list scheme in Element Lists. You will get a list showing the grand total for each object type:

×

딴 [0. Ground Floor]	[Elements / Objects total]
Library Part Name	
3   Ceiling Lamp 18	
2   Deciduous Trees 18	
1   Pendant Lamp 18	
1   Piano 18 1   Piano Bench 18	
2   Rail Wired 18	
1   Shrubs 18 1   Stair 1	
4   Tree Plan 18	
1   WC 18	

# Example 3: Zones with all included object types summarized (subtotal by zones) and the total number of each object type (grand total)

This example describes a complete listing environment that produces the result of the previous two list schemes within one list

#### Phase 1: Create the "Object Counter" Property Object

- 1. Use the **New Properties** command to open a blank Library Part Window.
- 2. Click Properties to open the Property Script window.
- 3. Copy the following two lines into the Property script:

dummy = REQUEST ("Name\_of\_Listed", "", name)

COMPONENT name, 1, "", 1, name

See the <u>"GDL Reference Guide" in ARCHICAD Help</u>.

4. Save the Property Object as, e.g., "Object Counter".

**Note:** This object will generate a separate column for the Quantity (number) of each object type (name)

#### Phase 2: Link "Object Counter" to the objects

#### Alternative 1: through individual link

- 1. Select all objects to be included in the list.
- 2. Open the Object Settings dialog box.
- 3. Go to the Listing Panel.

**Note:** This panel is not visible by default. To enable it in any construction element's settings, go to Options > Work Environment > Tool Settings Dialog Boxes.

- 4. If checked, uncheck the Link Property Objects By Criteria box, and check the Individually box below.
- 5. The Link Property Objects dialog box opens.

Link Property Objects	?	Х
Choose Manually Search by Keywords		
Available Property Objects in all loaded Libraries		
Drawing		^
🗎 Object Counter		
🖹 CWall12 20		
CWall11 20		
🖹 CWall10 20		
🖹 CWall09 20		
🖹 CWall08 20		
🖹 CWall07 20		~
Property Object Preview		
Onfirm your selection by clicking Link, or click Cancel to skip linking any Property Object.	Ca	ncel
	Li	nk
To manage Property Objects, use the commands of the "Calculate" theme. (To customize your interface to show these commands, use Options > Work Environment > Menus.)		

- 6. Select "Object Counter" in the list and click Link (make sure that the "Object Counter" is under the checkbox as you return to the Object Settings dialog box).
- 7. Click OK to establish the link.

Note: Any Objects placed afterwards will have to be linked individually.

#### Alternative 2: through dynamic link by criteria

1. Use the Link Properties to Criteria command.

Link Property Objects	to Criteria			- • •
Show Links in:	ArchiCAD_Library	~		
New Link	Delete	Enable Use mo	Property Objects of all re specific Criteria only	l links Y
Edit Cr	iteria		Link	Property Object
If an element matches t	hese criteria			use this Property Object
Туре	Fill	Composite	Width/Size	Object Name
	Common Brick	-	= 190	WPOOFmas 20.g \land
	-	Stud Partition	-	CWall12 20.gsm
B		-	-	PROPWindow 20
F	-	-	-	PROPDoor 20.gsm
<u></u>	-	-	-	PROPobject 20.g
Ś	Structural Concrete	-	-	🖹 SP02F00 20.gsm
(A)	-	Flat Roof	-	🖹 CRoof01 20.gsm
				~
<			د	,

- 2. Select a Database Set in the Show Links in pop-up menu.
- 3. Click New Link, then click Edit Criteria, the Criteria Selector opens up.
- 4. Set the Find Elements: pop-up menu to Of Type>>, and select Object (chair icon) in the pop-up palette on the right.

Criteria Selector		x
Find Elements:	👫 Object	× •
Fewer Choices		
More Choices		
		Apply

- 5. Click Apply and return to the Link Property Objects to Criteria dialog box.
- 6. Close the dialog box and save the criteria when prompted.
- 7. Select all objects to be included in the list.
- 8. Open the **Object Settings** dialog box. Go to the Listing Panel.

**Note:** This panel is not visible by default. To enable it in any construction element's settings, go to **Options > Work Environment > Tool Settings Dialog Boxes**.

9. If checked, uncheck the Individually box and check the Link Property Objects by Criteria box.

**Note:** If you have other existing links for objects in the list, they may be in conflict with these criteria for a particular object. Additional links may be valid, or more specific links can be applied instead of this link.

#### Phase 3: Setting up the List Scheme

- 1. Follow steps 1 to 6 from Example 1 or duplicate the existing "Objects by Zones" list scheme and name it, e.g., "Objects by Zones + Total".
- 2. In the third (Related Elements) tab page:
- set Object Specific Items Only in the **Components** pop-up menu.
- be sure to check All above the Keys list.
- **3.** In the fourth (List Format) tab page:
- be sure that the following parameter list is at the bottom:

Zones P	propertie	s & Parameters Related Eleme	ents	List Format		
	Text List	Graphic Te	empla	ite		
Element	s:	Group & Count Identical	$\sim$	Separators:	Show Column H	eaders
Compor	nents:	Quantity only	$\sim$	Column:	]	_
Descript	tors:	Short Text only	$\sim$	Row: -	Mark for 'None':	/
	I	Parameter:		Use & D	efine Custom Headers:	_
01	÷ 2	Zone Number				<b>^</b>
02	÷ 7	Zone Name				
03	¢ (	Library Part Name				
04	÷ 1	Local component(s)				
						$\sim$ .

4. Click **OK** and choose the previously saved List Scheme from **Zone Lists**.

[0. Ground Floor]		[Zones / Objects by Zones + Total]
Zone Number	Zone Name	Library Part Name
1   01	Exhibition	space   /
1   /	/	Chair Layout 18
1   /	/	Piano 18
1   /	/	Piano Bench 18
1   /	1	Stair 1
1   02	Entrance	17
1   03	WC	17
1   /	/	WC 18
1   04	Washroom	17
1   /	1	Basin 18
1   05	Gallery	17
i i		

### **B: Graphic Template Setup Example**

- 1. Choose the **New Properties** command. Save the Property Object to the Property Data folder in your library. Name it for example "drawing".
- 2. Create the new parameters X and Y.

[ <sup>10</sup> ] [0. Ground Floor]	🔚 [Drawing]	× 🔚 [Untitled-1]	
17	New Delete	Q	
	Display Variable	Type Name Value	
묘	★ X	picture position Y 3000.00	
9	÷⊠∃BUY	FILE picture position Y 3000.00	
Details			
Parameters			
Migration			
Components			
Descriptors			
Scripts			
Master 📃			
2D			
Properties 📃			
Parameter 🛅			
Interface 🛅			
2D Symbol			
Preview Picture			
2D View			

- 3. In the Properties script window, type "DRAWING".
- 4. In the 2D script window, type:

DRAWING3 7, 270, 2 ADD2 x,y DRAWING2

See the "GDL Reference Guide" in <u>ARCHICAD Help</u>.

- 5. Save the Property Object.
- Select objects on the Floor Plan and assign this Property Object to them. In the Object Settings dialog box, on the Listing Panel, uncheck the by Criteria checkbox and check the Individually checkbox.

**Note:** The Listing Panel is not visible by default. To enable it in any construction element's settings, go to **Options > Work Environment > Tool Settings Dialog Boxes.** 

7. Then select the Property Object you have just created (drawing).

Link Property Objects	?	Х
Choose Manually Search by Keywords		
Available Property Objects in all loaded Libraries		
Drawing		^
🖹 Object Counter		
🖹 CWall12 20		
CWall11 20		
🖹 CWall10 20		
🖹 CWall09 20		
🖹 CWall08 20		
🖹 CWall07 20		~
Property Object Preview		
Confirm your selection by clicking Link, or click Cancel to skip linking any Property	Ca	ncel
	Li	ink
To manage Property Objects, use the commands of the "Calculate" theme. (To customize your interface to show these commands, use Options >Work Environment > Menus.)		

- 8. Open the Set up List Schemes dialog box. Select the General Element List scheme and duplicate it (US users: select Element List Set and duplicate it). Name it "My Object Inventory".
- 9. On the Elements tab page, choose Objects as the only element type to be included in the list.

Elements Properties & Parameters	List Format	
by Types:		Skip Elements without an associative label Skip Elements with an empty ID field Reduce Wall Quantities if an Opening is larger than 1.00 m <sup>2</sup> .
by Linked Property Objects:	~	List Fills and Objects Included In:
by Layers: All	· ·	by Stories: All @ Roof @ Gallery @ Ground Floor @ Foundation

- **10.** On the Properties and Parameters tab page, select None in the **Components** and **Descriptors** pop-up lists and check the following parameters on the parameter list:
- User ID
- Thickness/Size
- Height
- Library Part name
- Story Name/Viewpoint Name

lements Properties & Parameters	List Format		
Keys:		Global Element Parameters:	
<ul> <li>Default Set</li> <li>Kostenermittlung</li> <li>NewDatabase</li> <li>ArchiCAD_Library</li> </ul>		<ul> <li>Skin Volumes</li> <li>Skin/Component Area</li> <li>              Thickness/Size             Composite Thicknesses      </li> <li>             Height              Uibrary Part Name         </li> <li>             Associated Property Object         </li> <li>             Property Object Part(s) by Criteria</li> </ul> <li>             Base Elevation     </li>	~
Components:		Extra Parameters of the Selected Types:	
None	~		~
Descriptors:			
None	~		
Library Parts' Additional Paramete	rs:		
None	~		

**11.** On the List Format tab page, choose Graphic Template. Then change the order of the parameters as shown:

Elements	Properties	& Parameters	List Format			
0	Text List		Graphic Ter	nplate	Start Format Wizard	
Template	Genera	l element list			Include in List Scheme	
Version:	1.10	General elem	ent list layout		Choose Template	1
	List on Use for Par	separate level r Grouping & 1 ameter:	otal	ι	Jse & Define Custom Headers:	
01 🗹	🗹 🗘 Use	er ID				~
02	🗹 🕈 Lib	rary Part Name				
03 📃	📃 🗢 Sto	ory Name / Viev	vpoint Name			
04	🗌 🗘 Thi	ckness/Size				
05	🗌 🕈 He	ight				
						~

- **12.** Click the **Start Format Wizard/Assistant** button.
- **13.** In the appearing window, select the General Element List layout.
- 14. Click the Duplicate button. Name your new list layout: "#My Object Inventory".

Format	t Wizard	
Layout	Content Fields	
Layout	Names:	
<mark>≢My O</mark> Basic E Genera Windo Windo	bject Inventory lement i element list w schedule Type 1 w schedule Type 2	^
		~
D	Unit in the selected layout: mm. uplicate Rename Delete	

**15.** Click the **Header** button. Select the Empty Header (landscape) Record Type.

🚺 Edit Page Item			? ×
Edit:			
Header	~		Default Text Format
Record Type:			Picture
Empty Header (landscape)	~	Total Width:	265.0
Rows: 1 Columns:	1	Total Height:	1.0
Field to Edit: 1	1 🖨	Width:	0.0
Text Field:		Height:	0.0
	Ô	Offset:	0.0
<	>		0.0
Insert >> User ID	~		Text Format
Insert	~	All values in mm.	Borders
			Cancel OK

**16.** Select **Footer** from the **Edit** pop-up menu, and then select the Empty Footer (landscape) Record type.

📶 Edit Page li	tem	
Edit:		
Footer		~
Record Type:		
Empty Foot	er (landscape)	Total Width:
Rows:	1 Columns:	1 Total Height:

**17.** Select **Background** from the **Edit** pop-up menu, and enter 260 mm for the total width and 180 mm for the total height. Enter the same numbers for the width and height fields below.

📶 Edit Page Item		? ×
Edit:		Apply Header Format
Background	·	Default Text Format
Record Type:	_	Picture
Custom	Total Width:	260.0
Rows: 1 Columns: 1	Total Height:	180.0
Field to Edit: 1 🔹	Width:	260.0
Text Field:	Height:	180.0
	Offset:	0.0
< >		0.0
Insert >> User ID ~	]	Text Format
Insert V	All values in mm.	Borders
		Cancel OK

**18.** Click the **Picture** button and select None in the **Use Picture** pop-up.

M Picture		? ×	
Use Picture	Picture Position & Sca <ul> <li>Auto</li> <li>Scale Ratio:</li> <li>1: 100.00</li> <li>0.01</li> </ul> Width:         Height:         Offset:         Anchor Point:	le : 1, 100.00 % 260.0 180.0 0.0 0.0 All values in mm. + + + + + +	
Cancel OK			
**19.** Click the **Borders** button to open the **Field Borders** dialog box. Check all boxes to draw borders on each side. Click **OK** to return to the **Edit Page Item** dialog box.

📶 Field Borders	? ×
Borders Top Left Bottom Right U 1 Offset: 0.0 mm	Preview 123
	Cancel OK

- **20.** Select "Header on the first page" from the **Edit** pop-up menu, and select Empty Header (landscape) from the **Record Type** pop-up list.
- **21.** Select "Footer on the first page" from the **Edit** pop-up menu, and select Empty Footer (landscape) from the **Record Type** pop-up list.
- **22.** Click **OK** to return to the Layout tab page.
- **23.** Click the **Preview** button. (Some Objects must be placed on the Floor Plan, otherwise the preview will not display anything.) Click **Done** to close the window.



- **24.** Go to the Content tab page and uncheck all checkboxes under the **Records to display one-by-one** parameter in the Parameters list.
- 25. Uncheck all checkboxes under the Display Headlines by... parameter in the Parameters list.

26. Select all the parameters under Calculate Totals/Subtotals by (except for Grand Total) and click the Group Selected Parameters button. The result will be as shown below. The five selected parameters will become hierarchically the members of a new group called Group of totals 01-05.

M Format Wizard			?	Х
Layout Content Fields				
Parameters <ul> <li>□ Calculate Totals/Subtotals by</li> <li>□ Display Headlines by</li> <li>□ List Headline</li> </ul> <ul> <li>✓ Group of headlines 01-05</li> <li>✓ 01 User ID</li> <li>✓ 02 Library Part Name</li> <li>☑ 03 Story Name / Viewpoint Name</li> <li>☑ 04 Thickness/Size</li> <li>☑ 05 Height</li> </ul>	Edit Record: Pagebreak: Gr Ung	None oup selected parameters group selected parameters		>
General element list layout				
Preview < Back	Next >	Cancel	Do	one

- **27.** Go to the Fields tab page. In the **Parameter & Record** pop-up you have only one item: Group Of Totals 01-05.
- **28.** Set the total width to 260 mm, and set the total height to 100 mm.
- 29. Set the number of rows to 10, and the number of columns to 6.

M Format Wizard			? ×			
Layout Content Fields						
Parameter & Record:			Apply Header Format			
Group of headlines 01-05	~		Default Text Format			
Record Type:			Picture			
Custom	~	Total Width:	260.0			
Rows: 10 Columns:	6	Total Height:	100.0			
Field to Edit: 1	1	Width:	43.3			
Text Field:		Height:	10.0			
	^	Offset:	0.0			
<	>		0.0			
Insert V User ID	~		Text Format			
Insert	~	All values in mm.	Borders			
General element list layout						
Preview < Back	N	ext >	Cancel Done			

**30.** Click the **Picture** button to open the **Picture** dialog box, and select **Property Object 2D Full View** from the pop-up list.

**31.** Enter 100 mm for the width and 50 mm for the height. Also enter 47.1 mm for the first (horizontal) offset and 40 mm for the second (vertical) offset.

N Picture		? X
Use Picture	Picture Position & Sca	le
Prop. Object 2D Full View	<ul> <li>Auto</li> <li>Scale Ratio:</li> <li>1: 100.00 , 0.01</li> </ul>	: 1, 100.00 %
	Width:	100.0
	Height:	50.0
	Offset:	47.1
		40.0
	Anchor Point:	All values in mm. + + + + + + + + +
	Car	OK

- **32.** Click **OK** to return to the Fields tab page of the **Format Wizard/Assistant**.
- 33. Proceed as follows: choose Row 1/Column 1, select the first parameter from the right-hand side pop-up (User ID) then select Name from the left-hand side pop-up to be displayed in the field. Repeat these steps with all the parameters in the list.

Format Wizard		
avout Content	Fields	
ayour content		
Parameter & Reco	rd:	
Group of headli	nes 01-05	
Record Type:		
Custom		
Rows:	10 Columns:	6
Field to Edit:	1	1
Text Field:		
#NAME[1]		
<		>
Insert	V User ID	~
Insert		~
Value		
Number of Inst	ances	
Name	yout	

**34.** The second row displays the actual values of the parameters. Set the Field to Edit counter to the second row and start inserting the values. Select the parameter in the right-hand side pop-up and then choose Insert/**Value** from the left side pop-up.

🚺 Forma	t Wizard					
Layout	Content	Fields				
Parame	ter & Reco	rd:				
Group	o of headli	nes 01-05				$\sim$
Record	Type:					
Custo	m					~
Rows:		10	Colum	ns:	6	1
Field to	e Edit:	2	]		5	•
Text Fie	ld:					
#VALU	E[5]					$\hat{}$
<					>	
Insert		$\sim$	Height			$\sim$
Insert.			-			$\overline{}$
Valu	e					
Total Num	ber of Inst	ances	yout			
Nam Unit	e			< Back		Nex

**35.** The third row displays the number of instances. Set the Field to Edit counter to the third row and enter into the first field: "Number of Instances". For the second field of the third row select the first parameter at the right-hand side pop-up list and choose Insert/Number of Instances.

Format	Wizard				
		Fields			
Layout	Content	Fields			
Paramet	ter & Reco	rd:			
Group	of headli	nes 01-05			`
	_				
Record	Туре:				
Custor	n				
			,		
Rows:		10	Column	5:	6
Field to	Edit		1		c .
There to	cura.				· ·
Text Fie	ld:				
#NUM	BER[5]				1
<					>
Incart			Height		
Incert		Ť	L		
					~
Value	2				
Total	har of Inst	ancar	<u> </u>		
	per or mist	unces	yout		
Num					
Name	2			< Back	_

- **36.** Click the **Preview** button to see the preview. (Some objects must be placed on the Floor Plan, otherwise the preview will not display anything.) Click **Done** to return to the **Wizard/Assistant**.
- **37.** Set the height of the letters in the **Default Text Format** dialog box to 4 mm and select centered justification.

- **38.** For each field set the borders to be displayed on the bottom of the field. Click the **Borders** button and check the **Bottom** checkbox.
- **39.** The fields of the second line could be offset vertically by 2 mm so that it looks a little tidier. The third line could be offset 5 mm vertically. Enter the offset for each field separately.
- 40. Click Done to finish.
- **41.** Select **Element Lists > My Object Inventory** to display the list.

[0. Ground Floor]	🖺 [Eler	ments / My Object Inventory]	× 🔚 [Drawi	ng]
User ID	Library Part Name	Story Name / Viewpoint Name	e Thickness/Size	Height
FU - 005	Chair Layout 18	Ground Floor	3.40	0.85

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