Guide and manual for

ArchiVISION OFFICE for REVIT

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All archives, price lists, projects, and bills of quantities delivered at the same time with the software will always be considered files as didactic and demonstrative examples.

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Chapter A

Introduction

The purpose of this manual is to provide the User with the necessary support to acquire adequate conceptual and practical knowledge of the procedure, as a valid integration to the multimedia videos supplied with the software.

The specific features of the program will be described, supplemented, if necessary, by appropriate examples and illustrations.

The information regarding the installation of the program is reported in chapter 2.

A.1 ArchVISION OFFICE for REVIT solution

The ArchVISION OFFICE for REVIT solution intends to allow fast, dynamic, and reliable quantity take-offs by interfacing with Office and Revit;

ArchVISION OFFICE for REVIT is a simple but very powerful tool that helps the technician in the generation of bills of quantities of a completed project.

An operator who is familiar with the features of Revit will find in ArchVISION OFFICE for REVIT an extraordinary tool to create, in a simple and very fast way, quantity take-offs of projects carried out with Revit.

A.2 ArchVISION OFFICE for REVIT, Office, and Revit

The ArchVISION OFFICE for REVIT solution has the objective of addressing the Quantity Take-off-Project topic in an extremely simple, innovative, and powerful way.

The computation of an architectural project or a simple CAD drawing has always entailed problems in terms of speed, reliability, and unique link between the drawn entities and those computed.

In particular, by modifying the graphical elaboration, a misalignment of the calculation was generated with the need for complex and costly manual revisions in the latter.

Furthermore, manual revisions to the calculation often lent themselves to incorrect interpretations, with the consequent obtaining of incorrect or incomplete evaluations, measurements, and computations.

ArchVISION OFFICE for REVIT has a series of tools developed specifically to add to Revit a series of features and utilities specifically dedicated to this problem.

Good knowledge of Revit and Office is required to appreciate ArchVISION OFFICE for REVIT and to fully exploit its functionalities.

Although ArchVISION OFFICE for REVIT can independently prepare everything necessary for the creation of a complete bill of quantities it should be noted that to produce the calculation document it is necessary to connect to Office.

It should be noted that ArchVISION OFFICE for REVIT can work even if Office is not installed on the computer. In this case, all the functionalities of preparing the bill will be allowed (creation, editing, and modification of Price List Items, measurements with formulas containing variables dependent on graphic objects, etc.), the summary of the calculation prepared and changes to any associations between measurements and graphic entities.

However, it will not be possible to export and generate the actual calculation.

The export will always be available and possible in Office

A.3 ArchVISION OFFICE for REVIT: Concepts and Philosophy

Warning!

Before tackling demanding and important projects, it is advisable to familiarize yourself with the product by exploring it thoroughly in all its functions in the 2D, 3D, and Computing field, simulating the concrete design and computation of a project, perhaps already completed and computed in precedence with traditional systems.

The concepts and simple, innovative, and revolutionary idea of ArchVISION OFFICE for REVIT are summarized and implemented in this introduction that we recommend that you always keep in mind which basic "Concept and Philosophy" to familiarize yourself with.

ArchVISION OFFICE for REVIT in brief:

• A project generated by ArchVISION OFFICE for REVIT is a 100% Revit project.

• The connection between the Office "Price List Items" and the Revit entities takes place in two specific ways, through direct associations on the entities present in the graph (Instances) or associations to Revit entity families. (extremely productive and advisable mode)

• The "Family" represents a set of graphic information, of technical and descriptive characteristics, of customizable parametric information.

• The "Families" can also contain and refer to one or more items in the Price List and be associated with one or more graphic entities present in the drawing.

• Each Revit entity or family can be associated with one or more Price List Items with a simple Drag & Drop operation.

• Each graphic entity containing one or more computation associations will always be identifiable by its "unique Id".

• The use of the "ArchVISION OFFICE for REVIT - Entity Id" family will also allow you to view and print labels containing the unique Id of the individual instances.

• The univocal link will allow dynamic and reliable computations through a family or utilizing a direct connection; after modifying a graphic entity, the calculation generated will also be immediately updated by simply pressing a button.

• ArchVISION OFFICE for REVIT creates a unique link by connecting price list items or families to the graphic entities (to which it is possible to link Price List items back) allowing a huge saving of time and high productivity.

• Making associations to the families of graphic entities are preferable (if possible) to make the work more productive, to assign them both a series of graphic characteristics, and the appropriate Price List Item with a single operation.

• ArchVISION OFFICE for REVIT is a very powerful tool to aid in the design and computation, topics that are often extremely complex and full of problems.

A good understanding of the program's features will make your work much easier and more productive.

It is therefore advisable to carefully consult the documentation supplied with the product (manual and multimedia films available on the program CD-ROM or the MCS Software YouTube channel).

Attention!

MCS Software does not assume any liability regarding the content of the processes obtained, the data contained in the tables, and the computations generated.

Chapter B

Installation (File downloadable from Internet)

ArchVISION OFFICE for REVIT program consists of the following parts:

- Quick Start (pdf);
- Installation software (exe) containing:
- Program (exe and dll);
- User Manual (pdf);
- Some sample price lists (xlsx)
- Some example Revit projects (rvt)
- Some complete Example Computes (xlsx, docx)
- Loadable family "ArchVISION OFFICE for REVIT Id Entità" (rfa)
- Product brochure (pdf)
- Some documents and reference tables (pdf)
- Order form (pdf)

To install ArchVISION OFFICE for REVIT you must be an Administrator of the machine or be a User with Administrator privileges to proceed with the installation of the Program (see § 2.2);

The following paragraphs describe in detail the operating methods for installing the program that is identical even for the versions downloaded from the internet.

B.1 System requirements

ArchVISION OFFICE for REVIT can only be used with the hard disk configuration, it cannot be used on a USB key.

Attention!

The requirements listed below are purely indicative as they can be modified due to any hardware and software evolutions. The user is required to check for any changes by consulting the site:

https://bim.mcs-software.it/en/

In any case, the minimum system requirements required for ArchVISION OFFICE for REVIT to work are the same as those required by Autodesk for Revit to work.

The prerequisites for the functioning of the program are indicatively the same as those required by the Revit software

• Autodesk Revit 2017 in Italian, English, and Spanish and subsequent release.

• To take full advantage of the calculation functions (Drag & Drop, style associations, entities, etc ...) Microsoft Office.

B.2 Software installation

The installation of the software on the hard drive is performed automatically by doing the following:

• turn on the computer and wait for Windows to start;

Attention!

Before proceeding with the installation make sure:

- that any other application in use is closed;
- that you have accessed the system with "Administrator" privileges;
- to have temporarily disabled any Antivirus software in execution;
- that you have installed and started Revit at least once.
- *if installed, you have started Office at least once.*
- We recommend configuring UAC user control at the minimum level (never notify)
- Start the installation as "System Administrator"

• CD-ROM owners can insert the program CD-ROM in the appropriate reader and wait for the installation program to start;

• Those who have the version downloaded from the Internet can select the downloaded executable file with a double click

Attention!

If the installation program DOES NOT start, please select the Run option in the Windows Start button menu and type: X: \ SETUP.EXE in the dialog box that opens. Please note X is the letter that identifies your CD-ROM drive.

Pressing the OK button of the dialog starts the installation program.

• press the Next button in the first window ("Welcome ...") of the installation program to move to the next window;

• proceed by carefully following the instructions provided by the installation program, all the dialog boxes proposed during installation will be illustrated below.

Attention!

During installation, you can change the folder proposed for installing the program (C: \ Program Files \ ArchVISION OFFICE for REVIT).

It is recommended NOT TO MODIFY the folder proposed for installing the program (C: \ Program Files \ ArchVISION OFFICE for REVIT).

In case you decide to install the program in a different folder, possibly choose an empty folder created specifically, for example, "D: \ QTO \ ArchVISION OFFICE for REVIT"

B.2.1 License to Use Header

ArchVISION OFFICE for REVIT program is available in demonstration mode and can be downloaded for free from the Internet directly from the manufacturer's website, each installation will subsequently be customized. This customization consists of writing a unique serial number linked to the location where the installation was performed within the program.

While using the program, the generated "Installation Code" will be displayed, it will allow any purchase at any subsequent time and the Company's data and the proposed Installation Code must be specified only when requesting the activation code.

Important!

To receive the Installation Code, the prepared form must be downloaded from the MCS website by completing it and subsequently sending it to MCS with at least the following data:

- Company name;
- Address ZIP code City Province;
- Telephone E-mail;
- Any reseller of the Program or if downloaded from the Internet,
- Reference name;
- VAT number or tax code;

Refer to the website (https://bim.mcs-software.it/en/) for further information

To continue with the installation, just press Next and carefully follow the instructions provided by the installation program.

Below will be listed, purely as an indication, the individual screens relating to the installation procedure, identical for both the versions on CD and those downloaded from the internet.

The initial introduction screen:

Installation ArchVISION OFFICE for REVIT 21.0				
SOFTWARE	Installation of ArchVISION OFFICE for REVIT 21.0			
	The installation procedure is starting:			
	ArchVISION OFFICE for REVIT 21.0			
	To start the procedure press 'Next>'			
	< Back Next > Cancel			

The license of the software recommended being read to be accepted in full by pressing "Yes":

Installation ArchVISION OFFICE for REVIT 21.0					
License Agreement Please read the following license agreement carefully. SOFT					
Press the PAGE DOWN key to see the rest of the agreement.					
PROGRAM USE LICENSE CONDITIONS	^				
Document updated on 22 September 2020					
Version 21 compatible with Revit in Italian, English and Spanish and with configurable user interface in Italian, English, Spanish, French and German					
The functioning of this program is foreseen in three distinct ways.					
A first 'DEMO' mode provides for its free use only for demonstration purposes with the	only 🧹				
Do you accept all the terms of the preceding License Agreement? If you choose No, setup will close. To install ArchVISION OFFICE for REVIT, you must accept this agree	the ment.				
< Back Yes	No				

Some important information for the correct operation which we recommend reading:

Installation ArchVISION OFFICE for REVIT 21.0	×
Important information for users.	SOFTWARE
Read the following text carefully before continuing with the installation.	
IMPORTANT ! Document updated on 22 September 2020 Version 21 compatible with Revit in Italian, English and Spanish and with configurable user interface in Italian, English, Spanish German and French MCS SOFTWARE DOES NOT ASSUME ANY LIABILITY REGARDING TH CONTENTS OF ANY ARCHIVES (PRICES, PRICE LISTS, ETC.) PROVID WITH THE PROGRAM ArchVISION OFFICE for REVIT.	HE ED
InstallShield Kext >	Cancel

Selecting the installation path:

Installation ArchVISION OFFICE for REVIT 21.0	×
Choose Destination Location Select folder where Setup will install files.	SOFTWARE
Setup will install ArchVISION OFFICE for REVIT in the follo	owing folder.
To install to this folder, click Next. To install to a different fo another folder.	older, click Browse and select
Destination Folder C:\MCS\ArchVISION OFFICE for REVIT	Browse
< Bacl	< Next > Cancel

Attention!

During installation, through this window, it will be possible to change the folder proposed for installing the program (C: \ MCS \ ArchVISION OFFICE for REVIT).

It is recommended not to change the folder proposed for installing the program (C: \ MCS \ ArchVISION OFFICE for REVIT \).

If you decide to install the program in a different folder, possibly choose an empty folder created specifically, for example, "D: \ MCS \ ArchVISION OFFICE for REVIT"

Summary of information and installation parameters:

If they exist, Office software detected and Revit detected will be indicated.

Installation ArchVISION OFFICE for REVIT 21.0	×
The configuration is finished. The installation will be started.	SOFTWARE
The current configuration parameters are listed	
If they are correct press 'Next>' to start the installation.	
Current Settings:	
The operating system is a 64 Bit ArchVISION OFFICE for REVIT will be installed in: C:\MCS\ArchVISION OFFICE for REVIT	
Autodesk Revit 2020 has been detected in: C:\Programmi\Autodesk\Revit 2020\Revit.exe	~
<	>
InstallShield	Cancel

Important!

ArchVISION OFFICE for REVIT can work even without the presence of any Microsoft Office software, however, it is recommended to use it only in the presence of Office software, only in this case it is possible to generate dynamic calculations in real-time.

For more information about Office refer to the site of the manufacturer Microsoft. (www.microsoft.com)

Notice to the user asking to proceed only with Office and Revit regularly closed:

Informatio	n	Х
i	Before proceeding with the installation make sure you do not have Revit running.	
	ОК	

Notice for completed installation:



Final summary after installation:

Installation ArchVISION OFFICE for REVIT 21.0						
MCS SOFTWARE	Product installed! The installation has been completed successfully, now you can restart Revit and start ArchVISION OFFICE for REVIT from the menu item 'Additional modules' On website www.mcs-software.it you can view our tutorials.					
	To remove ArchVISION OFFICE for REVIT it will be sufficient to choose the "Install applications" option from the control panel or alternatively restart this installation again. Thank you for choosing a product from MCS Software					
	< Back Finish Cancel					

Important!

To remove ArchVISION OFFICE for REVIT you can restart the installation again or choose "Add applications" from the control panel of your operating system and then "Remove programs" by choosing ArchVISION OFFICE for REVIT.

B.3 Software updates

MCS provides the following types of program updates:

Version Updates: Version updates are subject to a fee and MCS software will inform its users of their availability and distribution methods.

Service Pack: small updates of the same version of the program that are made available free of charge to users on the MCS software website (<u>https://bim.mcs-software.it/en/</u>), without setting up and shipping costs in this case, just select the Updates from the Internet icon in the ArchVISION OFFICE for REVIT toolbar to connect to the site page from which you can receive more information on the update;

Important!

Availability of Updates, Service Packs, and other important communications are published in preview on the Mcs software website (www.mcs-software.it) which it is advisable to visit periodically.

B.4 User manual

This Installation Manual and the User Manual are provided in PDF format and can be downloaded, viewed, and printed using the Acrobat Reader program or any other equivalent software.

Attention!

To consult and / or print the ArchVISION OFFICE for REVIT User Manual, a PDF viewer must be installed. ArchVISION OFFICE for REVIT is not equipped with a PDF viewer that must be downloaded by the user independently

Any updated versions of this manual and the User Manual are available on the website of the MCS site which can be accessed by selecting the Internet updates icon in the program toolbar.

Chapter C

Project Quantity Take-off

This chapter illustrates the specific functionalities and operating methods of ArchVISION OFFICE for REVIT for the creation of a dynamic quantities' take-off linked to the graphic entities of the CAD elaboration.

In particular, the steps to create a bill of quantities are described both with a direct connection with the Office program and independently.

It also illustrates how to take advantage of the powerful features made available by the Revit entity families.

It is recommended to read this chapter carefully before proceeding to create quantity take-off with ArchVISION OFFICE for REVIT to learn how to correctly operate this software feature.

C.1 Introduction and Recommendations

Although ArchVISION OFFICE for REVIT addresses and develops thematic issues related to the Bill of Quantities, it is not a computation program. The purpose of the program is to make the quantity take-off of the graphic objects of the architectural project simple and automatic.

To obtain a complete bill of quantities it is, therefore, necessary to use a specific program for the quantity take-off.

Like any software, ArchVISION OFFICE for REVIT provides results directly linked to the inputs received: an incorrect value in the imputation phase leads to incorrect results.

It is recommended to pay close attention to the values entered during the preparation of the calculation.

It is also advisable, especially in the learning phase, to check the results obtained, to ensure that the program's calculation functions are used correctly.

C.1.1 Operational notes

ArchVISION OFFICE for REVIT when creating or associating the first measurement with a Revit entity or family generates a file with the ".rrf" extension and with the same name as the Revit project (.rvt file). To compute a Revit project with ArchVISION OFFICE for REVIT it is, therefore, necessary that it is saved on disk (that is, it must have a file name and a storage path). ArchVISION OFFICE for REVIT does not write any information in the Revit project (.rvt file) but generates an external file (.rrf file) containing all the information used in the calculation phase. it is therefore essential to remember to archive the .rrf file together with the Revit project, otherwise, the calculation would be irretrievably lost. If you want to reset the calculation it is sufficient, after closing ArchVISION OFFICE for REVIT, to delete the ".rrf" file associated with the project itself.

Attention!

In case the model name has changed the measurements are not available at the next reopening of the model. This is because the association between the Revit model and the .rrf file containing all the measurements has been lost and the two files have different names. The association can be immediately restored by renaming one of the two files to have the same name.

C.2 Design and Computation of Graphic Entities

It is necessary to link any necessary information to the computation to each object drawn to obtain the quantity take-off of the ArchVISION OFFICE for REVIT project.

It is possible to associate one or more Measurements to each element (Revit Object / Instance), in this context the term Measurement indicates the coupling of a Price List item with a composition given by the relative rows of measurement (see § C.5) from quantity take-off.

A Measurement can be associated with:

- to a Family of a Revit Object (Wall, Window, Door, etc ...)
- to a drawn Revit instance.

C.2.1 Association of a Measurement to a Family

ArchVISION OFFICE for REVIT allows you to specify, in a family (see § C.4.4), in addition to the morphological and geometric characteristics (heights, thicknesses, etc.) necessary for the generation of the project (depending on Revit), also all the necessary information for the computation of the Revit object according to the family to which it belongs.

All necessary information, such as price list item data and the composition of its measure lines, is assigned to Revit families through measures.

When requesting quantity take-off, the program detects the geometric, descriptive, and economic information (price) from the drawn objects and organizes them in an Office document according to the composition of the calculation lines defined in the measurements assigned to the families.

The operating procedures for assigning a Measurement to a Family are illustrated in § C.4.4.

C.2.2 Association of a Measurement to an Instance

A measurement (price list item and composition of its measurement row) can also be assigned directly to a Revit Instance.

Of course, it is recommended to use this feature only to link the necessary measurements to a few project instances.

Otherwise assigning measurements to objects through families is much more convenient and productive.

The operating procedures for assigning a Measurement to an Entity are illustrated in § C.4.2.

The ArchVISION OFFICE for REVIT features for obtaining the calculation is extremely advantageous. Quantity take-off of the project can be obtained immediately after carrying out the simple operations of linking the measurements to families and / or individual entities. Furthermore, immediate update of the quantity take-off can be requested after any modification made to the drawing or the family of objects.

The technician can finally devote himself completely to the design once he is free from the burden of drawing up and updating the drawings and the calculation of the project.

The following paragraphs will illustrate the operating procedures for obtaining the calculation with ArchVISION OFFICE for REVIT.

C.3 OFFICE 4 REVIT 21.0 toolbar

All the commands to start the calculation functions of ArchVISION OFFICE for REVIT are grouped in the "OFFICE 4 REVIT 21.0" Toolbar which can be activated by selecting "Add-ins" in the upper menu of Revit -> " ArchVISION OFFICE for REVIT 21 "as shown in the following image.



When ArchVISION OFFICE for REVIT is activated, the "OFFICE 4 REVIT 21.0" toolbar will be displayed, including the calculation functions that can be activated using the following buttons:

File	Architecture Structure Ste	el Systems	OFFICE 4 REVIT 21.0) Insert Anr	notate Analyze Massing & Site C	ollaborate View Manage	Add-Ins Modify	•
Project data	Associate Archive Associate family Measure instance Measurements	Export Quick count count Calculation	Starts Starts Ms Excel Ms Word Drag & Drop	View View Hides ID labels Visualization	 Options, Language and Preferences Video guides and Manual Internet updates 	 License and information Support and assistance Video guides and news General utility 	E Purchase product Order online	Close ArchVISION OFFICE for REVIT

Project data

Project Data: activates the Project Data window in which it is possible to enter the general data of the project (see § C.10).



Associate Family: activates the Measurements by Family window where you can manage the measurements associated with the family of the selected entity and assign/remove measurements to the family itself.



Archive Measure: activates the window of the same name in which you can view and manage (create, modify, and delete) all the measurements of the project (see § C.4).



Associate Instance: activates the "Measurements by entity" window where you can manage the measurements that can be associated with the selected entity and assign/remove the measurements to the entity itself.



Export Count: computes the selected entities by allowing the user to choose how to export the quantity take-off.



Quick Count: calculates the units and exports the quantity take-off keeping the last used settings



Start Excel: start / close Excel and the link between the latter and ArchVISION OFFICE for REVIT.

Start Word: start / close Word and the link between the latter and ArchVISION OFFICE for REVIT.

View Hides: hide the objects that have already been measured or that have yet to be measured

Use View ID labels: create ID labels for the objects that have been measured

Options, Language, and Preferences: open the dialog for settings and preferences and to set the language the operating environment of the calculation.

- Options, Language and Preferences
- Video guides and Manual

Internet updates

Video guides and Manual: open the MCS YouTube page with useful video guides to discover the product or open the manual online of ArchVISION OFFICE for REVIT.

Internet updates: with an active internet connection, you can access the program updates page on the MCS software website (www.mcs-software.it).

- License and information
- Output and assistance

License and Information: Opens an Information Window profits on the License and the Program.

Video guides and news Support and assistance: request assistance and start a remote session

General utility Video guides and news: link to the MCS site to be updated on the latest news and to have access to the video guides



Purchase Product online order: access the form to complete the purchase of the product

Close ArchVISION OFFICE for REVIT: close the software

C.4 Archive Measure: Measurements Window



Press the Archive Measure button on the toolbar to access the homonymous window.

The Archive Measurements window is the archive of measurements of the project in which it is possible to view and manage the measurements (items in the price list and composition of the related measurement lines) assigned or to be assigned to the styles and / or entities of the

project.

In the Archive Measurements window, however, **it is not possible to assign a measurement** to a Family or Entity. A measurement can also be managed (created, and edited) not only through the Archive Measurements window but even directly in the Multi-Row phase of assigning it to one Family (see § C.4.4) or to an instance (see § C.4.2).

However, it is not possible to view and manage all measurements in these windows, but only those that can be associated with the type of entity or family for which they were created.

The Archive Measurements window, in addition to displaying all project measurements, allows you to:

• create all necessary measurements before proceeding to their association with families or project instances;

• proceed to modify all the measurements linked to one or more families or entities without having to move to the same families and / or instances;

• delete measurements from the project so they will not be counted in final quantity take-off.

Add (Empty Measurement)	[INS]
Modify	[DOUBLE CLICK]
Duplicates	
Delete	[CANC]
Starts Ms Excel	
Starts Ms Word	

On the top bar of the Measurements Window there are:

Type of Entity:		~	1
	Data Devices	^	
CODE	Doors	NT	
	Duct Accessories Duct Eittings		
	Duct Insulations		
	Duct Linings		
"Drag and Drop	Ducts	archiv	ing of the
	Electrical Equipment		
	Electrical Fixtures Eascias		
	Fire Alarm Devices		
"Drag and Drop" one	Flex Ducts	ng of	the Measure
MEASUREMENT	Flex Pipes		
Name	Floors	i Row	
Nota	Furniture Systems	tive	~
Note	Generic Models	uve	~
VOICE of PRICE LIST	Gutters		

• the Type of Entity list box where you can choose the type of Entity to which the measurements to be displayed refer to;

the Functionality button which activates the window functions menu (see § C.4.2);

Immediately below the tools described there is the grid in which the measurements relating to the type of Entity chosen are displayed.

The remainder of the window is occupied by the following sections with the fields in which the data of the measurement selected in the upper grid must be specified:

ype of Entity:	Walls		\sim			
CODE	DESCRIPTION	MEASUF	REMENT			
002.005	Facing masonry, thickness equal to a head, m	Fm-EF	P-002.005	М		
006.003	Expanded polystyrene extruded with only air in	Frm-Ef	P-006.003	М		
006.005	Water proofing membrane	Frm-EF	P-006.005	M		
021.003	Cementitious concrete of class RcK 250 prepa	Fm-EF	P-021.003	M		
008.003	Sound-absorbing interior finishing plaster based	Fm-EF	P-008.003	M		
Drag and Drop" one MEASUREMENT Name	EP voice entry from Office to add a new Measur Frm-EP-006.003	ement to the a	nchiving of th	e Measu		
Note			Positive			
			rostave			
Code	Synthetic Short Extended Enlarge					
006.003	Expanded polystyrene extruded with only air in the of dens.not less than 30 kg / m3, homogeneous s	he cells, 🔺 🕻	Un.Mea m3 Price 25,00			
OW of MEASUREME	NT					
Description	I \$NomeFam\$	0	+ - *	1		
Equal parts			()[] va	ariable		
Length	\$Lung\$					
Width	0.05					
H/Weight	\$H\$					
WBS coding	\$\$p\$WBS_01\$\$ \$\$p\$WBS_02\$\$ \$\$p\$WBS_03\$\$ \$	\$p\$WBS				
Super Categories	Thermal Insulations	\sim	Category	Manage		
Categories	Whole building \checkmark Deduction					
categorito	Ground Floor (Rough Intrados) V Exit					

In this section there is a first list box where you can choose:

Multi-Row, if the quantity take-off of the entities associated with the selected measurement must be expressed using several measurement lines (see § C.6);

Single Row, if the quantity take-off of the entities associated with the selected measurement must be expressed in a single line (see § C.6).

Attention!

The Single Row option must be used ONLY in combination with certain variables (see § C.6).

In the second list box you can choose:

Positive, if the entity associated with the measurement must be calculated positively (see § C.6);

Negative, if the quantity of the entity associated with the measurement must be deducted; when the entity is calculated "negatively", the associated measurement data in the grid are shown in red.

Voice of price list, in which the data of the measurement Price List item are shown (see § C.4.1).

Row of measurement, in whose fields the composition of the entity measurement lines in the calculation must be defined by inserting texts, numerical values, variables, and formulas (see § C.5).

At the bottom right of the Archive Measurement window there are:

• The yellow buttons for entering the variables (see § C.5) and mathematical operators for the definition of any formulas in the fields of the row of measurement section.

- The buttons for managing categories and WBS coding
- The Save button saves the selected measurement making it non-editable.
- The Exit button that closes the measurement by canceling all unsaved changes made in it.

The operating procedures for creating and editing a measurement in the Measurements Archive are shown in § C.4.1.

C.4.1 How to Create a Measurement in Archive Measurements



Access the Archive Measurements window (see § C.4) by pressing the button of the same name on the toolbar.

In the Archive Measurements window, you can create a measurement by specifying the data of its price list item:

• by dragging in the window (with a Drag & Drop operation), the item taken from your reference price list in the Office format;

or

• manually.

A) Creating a Measurement with a Voice by Price List of Microsoft Office

To create a new measurement that has, an entry of its reference list in the Excel / Word format like an entry in the Price List, just carry out the following operations:

1) In the Entity type list box, select the type of entity to which the measurement to be created refers.

2) Start Excel / Word by selecting the Start Excel / Word option from the menu that opens by pressing the Functionality button and, in this, open your reference list (see § C.4).

3) Drag, with a Drag & Drop operation, the Price List item of the price list onto the grid of the Archive Measurements window; this operation inserts the line of the new measurement in the grid and proposes

the fields for the specification of its data in the lower part of the window; in the new measurement, all the data of the dragged Price List item are already reported.

ARCHIVE Measu	rements		- 0	×	Clipboard 5	a Font Fa Alignment Fa Number Fa Styles Cells Editing I deas
Type of Entity:	Wals	~		13	A3	* i × ✓ fr 002.001
	CODE	DESCRIPTIO	N		A	8
	002.005	Facing masonry, thickness equal to a head, made w	th solid bricks and bastard mortar, straigh	м		ArchVISION - Example excel price list - Drag the selection in the measurements dialog to associat
	006.003	Expanded polystyrene extruded with only air in the o	ells, of dens.not less than 30 kg / m3, ho	M	1	
	006.005	Water proofing m	embrane	M	Code	Description
	021.003	Cementitious concrete of class RcK 250 prepared v	th cement type 325 and aggregates of s	M	2	
	008.003	Sound-absorbing interior finishing plaster based on v	ermiculite and inorganic binders, resins a	M	002.001	25x25x8 cm perforated brick partition and M1 type premixed mortar. Partition thickness 8 cm
	002.001	25x25x8 cm perforated brick partition and M1 type	premixed mortar.Partition thickness 8 cm		-	Exclose mesons: this inservation a hard with called birds and bacted modes, statishtics sured and statish birds including the hurden of classing
					002.005	point and wherever ties is necessary of early out the work in a workmainte manner with anothetical down biols (55/12/2). More study of environs of an order biol study of the
					6 006.003	Expanded polystyrene extruded with only air in the cells, of dens. not less than 30 kg / m3, homogeneous single layer in class 1: thickness 50 mm
MEASUREMENT	"Drag and Drop" one EP v	oice entry from Office to add a new Measurement to the archivi	ng of the Measure		7 007.001	Raw or rustic plaster, or float, spread by hand and consisting of a first layer of rough coat and a second layer drawn in a rustic trowel, applied with predispose thickness of about 20 mm: for exteriors on vertical walls : with slaked lime mortar and sand composed of 500 kg of lime for 1.00 m3 of sand
Name			Multi Row	~	007.004	External civil plaster made with thermal insulating plaster by applying a product based on polystyrene, hydraulic binders and additives, applied by spray, include
Note	Post		Positive	~	5	smoothing with a product based on cement and aggregates, thickness of 34 cm. With application of the product in two coats. Sound shorthing interior finishing narket based on useminulity and increasing binder, serior and chemical additive, not containing whether or other fiber.
OICE of PRICE LIST					9 008.003	concrete substrates, in a thickness of 2 cm
Code	Synthetic Short Extended	Enlarge in and M1 type premixed mortar. Partition thickness 8 cm	Partition Bicinese E.cm. Un.Mea m3		010.002	Floor of natural satin terracotta, laid fresh on fresh on a bed of sand and cement after dusting with cement type 32.5 with joints connected to white or colores scraps; the treatment carried out by thorough washing with buffered acid, subsequent passage of impregnating agent and then spreading of paste was with
OW of MEASUREM	ENT		9 Price 21,27		010.003	Floor of natural satin terracotta, laid fresh on fresh on a bed of sand and cement after dusting with cement type 32.5 with joints connected to while or colorect scraps, the treatment carried out by thorough washing with buffered acid, subsequent passage of impregnating agent and then spreading of paste was with
Description	1		<u> </u>		2 012.004	Internal wall cladding with single-fired red-paste glazed ceramic tiles, compliant with UNI 159 group Bill standards, with smooth or semi-gloss surface applied to prenared substrates, including growting the joints with suitable watergrooting growth. Tinal classing and the special pieces: 20/20 cm, splid color.
Equal parts Length Width	[() [] var	ables 1	013.001	Extensi acceler entrance solo, with two of more folds, of any span, consulting of a mater frame immuma 12:6 only find to the massion with shurph happeon immiuma 10:6 on and connected by intermediate bands of equal section, venereed on the two sides for a total finds the thinkness of 4.5 cm with any asharp compensated in the price for intermal and external enhibitions, frames, heny bass hinges, two study posts, safely lock with 3 or more throws, key, deadbadl, chromed metst, fut dorvers and aptiming eist necessaria by other two with interfame in a avoitamalitie manner; on its exclusion granting. Douglas for
H/Weight				1	013.003	Internal wooden door with hollow-core movable door and veneered edges, complete with master frame in veneered blockboard with a thickness of 8/11 mm, and all the hardware necessary for fixing, with the exception of the handles and any glass , movement and closure, with standard dimensions of 210 x 60-70-80 natural oak
WBS coding	\$\$p\$WBS_01\$\$ \$\$p\$WB5_02\$\$ \$\$p\$	WBS_03\$\$ \$\$p\$WBS_04\$\$ \$\$p\$WBS_05\$\$		1	5 016.002	Painting with water-based paint on surfaces with three coats to cover, excluding the preparation of the same: on internal surfaces: with breathable water-base
Super Categories	None		 ✓ Category M. 	inage 1	6 018.003	Excavation with forced section, up to a depth of 2 m, including the extraction and anchoring of any water, up to a maximum head of 20 cm, the load on means of the excavated material up to a maximum of 5000 m: in tuff
Categories	None		V Deductio	n .	- 019.001	Backfilling with debris coming from excavation, including the approach of the materials, the compacting of the materials used in layers until the existing groun
Sub Categories	None		 ✓ Exit 	1	1 210,001	prescribed compaction. Including all charges Static how of the torus Ex B 18 K for uninforcement of campatic consistance including all code for units and outling to the size including crass, change
	Free at			1	8 021.001	accent in using one cype reliance, reliance a to removement or senioris congromerate including all costs for work and cutting to size, including scraps, single workmaniske manner with the necessary satemings
	Apply to Phase (Super Cat	egories): Construction/Creation Demolition	Save	1	9 021.003	Cementitious concrete of class Rok 250 prepared with cement type 325 and aggregates of suitable particle size applied dry for the construction of a wave wall or including the burden of formwork and vibration and any necessary burden and magisterium

4) In the appropriate fields of the Measurements section enter the name of the measurement and any Notes.

Note!

The Name and / or the notes of the measurement may be reported in the description field of the measurement line of the calculation (see below).

5) In the list box to the right of the Name field, select the Multi-Row option if, in the calculation, a measurement line must be reported for each of the entities subsequently associated with the measurement; if all the entities associated with the measurement must be calculated in a single measurement line of the calculation, the Single Row option must be selected.

Attention!

The Single Row option must be used ONLY in combination with certain variables (see § C.6).

6) In the list box to the right of the Notes field indicate if the entities that will be associated with the measurement must be calculated positively or negatively (in deduction).

7) In the fields of the Row of Measurements section, define variable numerical values and formulas by inserting texts and, the composition of the measurement lines of the entities that will be associated with the measurement in the calculation (see § C.5).

8) Press the Save button to save the measurement.

A saved measurement is also made not editable.

To be able to modify a measurement it is necessary to make the fields of its data editable again by simply double-clicking on the item in the grid.

The measurement selected in the grid can also be made editable by selecting the Edit option in the Function button menu.

Add (Empty Measurement)	[INS]
Modify	[DOUBLE CLICK]
Duplicates	
Delete	[CANC]
Starts Ms Excel	
Starts Ms Word	

To Delete or Duplicate the measurement selected in the grid just select the Delete [DEL] or Duplicate options from the Function button menu.

B) Creating a Measurement by Manually Specifying the Voice Data of Price List

To create a new measurement in the Archive Measurements window whose Price List entry must be specified manually, just do the following:



Press the Functionality button and, in the menu that opens, select the Add (empty measurement) option; this creates the new measurement staff in the window grid.

- In the Voice of Price List section, specify all the data of the P.L. measurement.
- Carry out the operations referred to in points 4), 5), 6), 7) and 8) of case A) previously illustrated.

C.4.2 How to Associate a Measurement with an Instance

To create and associate a measurement to a drawn entity (e.g. a Wall) at the same time, the following operations must be performed:



Start Excel / Word by pressing the Start Excel / Word button of the OFFICE 4 REVIT 21.0 Toolbar (see § C.3) and open your reference price list (see § C.8).



• Select the instance you want to associate the measurement with Press the Associate instance button of the Toolbar.

Associate instance

• Drag, with a Drag & Drop operation, the Price List item of the price list onto the grid of the Measurements by Entity window; this operation inserts, in the grid, the line of the new measurement and proposes in the lower part of the window, the fields for the specification of

its data; obviously in the new measurement all the data of the dragged Price List item are already reported.

A MEASUREMENT	IS BY ENTITY (ID: 390149)		~	34	04.10.1972	Wooden railing made up of worked elements with supports and handrails, including three coats, o
ENTITY:	Furniture V	[6	35	040.001	Normal iron profiles (round, flat, square, angular) for railings in normal profiles with straight lines
CODE	DESCRIPTION	MEASUREMENT		36	040.002	Normal iron profiles (round, flat, square, angular) for railings in normal profiles with curved lines
100.009	General purpose chairs for customers	MENDOREMENT		37	06.08.2005	Internal wooden staircase
				38	08.10.1970	Skirting board in porcelain stoneware made up of strips 25 cm long and 8 cm high.
	•			39	100.001	Internal ATMs for branches complete with labor installation
				40	100.002	Entrance door with sensors
"Drag and Dr	op" one EP voice entry from Office to add a new M	leasurement to the single ent	ity	41	100.003	Desk for branch operator
MEASUREMENT		as de Deux		42	100.004	Complete workstation for public cashier operator
Name		Positive	~	43	100.005	Partition walls for the public cash desk
VOICE of PRICE LIS	г	- Column		44	100.006	Executive table for meeting room
Code	Synthetic Short Extended Enlarge	arch		45	100.007	Interior walls mixed plasterboard and semi-transparent glass
100.009 P	General purpose chairs for Curtomers	Price 45.00		46	100.008	Promotional posters for display
ROW of MEASUREM	ENT			47	100.009	General purpose chairs for customers
Description	I	<u>P + - *</u>	/ ^	48	100.010	Medium-sized office cabinet for branch
Equal parts			aules	49	100.011	Large office cabinet for branch
Length		P Stratifical	tion	50	100.012	External curtain wall with opaque glazing complete with uprights and assembly
Width		P multiplic. f	actor	51	100.013	Branch operator chair
H/Weight		P		52	100.014	Partition doors for internal areas
WBS coding	Not Assigned	P		53	100.015	Chest of drawers for small branch
Super Categories	None	✓ P Category M	anage	54	100.017	Magazine table for branch
Categories	None	V P Deducti	on	55	100.018	Complete group of customer waiting area

	by ENTITY	(ID: 310	529)						\times
ENTITY:	Walls		∼ Ba	sic Wall: Interio	or - 138mm P	Partition (1	L-hr)	G	
CODE		DES	CRIPTION			MEASU	REMENT		
100.012	External cu	rtain wal	with opaque	glazing com	p	Fm-E	P-100.012		M
100.007	Interior wal	s mixed p	plasterboard a	and semi-tran	s	Fm-E	P-100.007		М
002.001	25x25x8 cr	n perfora	ted brick part	ition and M1	t	Frm-E	P-002.001		M
002.002		gener	ic wall - 300m	m		Frm-E	P-002.002		M
"Drag and Droj	o" one EP vo	oice entr	v from Office	to add a n	ew Measur	ement t	o the sinal	e entity	
MEASUREMENT			,					,	
Name	Frm-EP-100.	012					Multi Rov	V	\sim
Note							Positive		\sim
VOICE of PRICE LIST									
Code	Synthetic	Short	Extended	Enlarg	ge				
100.012 P	External cu uprights ar	irtain wa id assem	ll with opaque bly	e glazing com	plete with	$\hat{}$	Un.Mea m ² Price 12	2	
ROW of MEASUREME	NT —								
Description	I \$NomeF	am\$				0 P	+ -	* /	^
Equal parts	\$Area\$					Р	()[]	variab	les
Length						Р	Strat	tificatior	1
Width						Р	multip	lic. fact	or
H/Weight						P			
WBS coding	\$\$p\$WBS_0	1\$\$ \$\$p\$	\$WBS_02\$\$ \$	\$ p \$WBS_03	\$\$ \$\$p\$WE	BS. P			
Super Categories	None					~ P	Categ	ory Mana	age
Categories	None					~ P	De	duction	
Sub Categories	None					~ P		Exit	
Apply to Phase (Supe	er Categorie	s): 💿	Construction	/Creation	ODemo	lition	1	Save	

Note!

The Measurements by Entity window is like the Archive Measurements window (see § C.4) and differs from this because only the measurements relating to the type of belonging of the Entity selected in the drawing are proposed.

If the Activate / Deactivate Filter button is pressed, in the grid of the Measurements by Entity window, the measurements associated with the selected entity are shown in yellow, the grid also displays all the measurements relating to the type of membership of the Entity selected in the drawing but not associated with it in white.



When the Activate / Deactivate Filter button is not pressed, only the Measurements associated with the entity are displayed

• In the Measurement section of the window, type the name of the measurement and any Note that it will be possible to include in the description of the relevant measurement in the calculation (see § C.5).

Note!

The Voice of Price List section shows the data of the Price List item dragged from the price list and selected in the grid of the Measurements window; the entry data can also be edited at this stage.

• Enter the data that will make up the entity measurement line in the calculation in the fields of the Row of Measurement section; in each field, it is possible to insert: any text in the description field or a numeric value and/or a variable relating to a characteristic of the graphic entity to which the measurement is being associated.

The methods for entering data in the fields of the Row of Measurement section are described in § C.5.

Example!

As an example, assume that the graphic entity to which the measurement is to be associated is a masonry. The following values can be entered in the fields of the Row of Measurement section to define the measurement line in which this masonry will be calculated:

Description: \$NmMs\$, this string is the variable relating to the Name of the Measurement and allows you to return the string specified in the Name field in the "Measurement" section in the Description field of the measurement line of the calculation;

Length: \$Length\$, this string is the variable relating to the length of the masonry; the length of the masonry detected in the drawing will automatically be shown in the Length field of the measuring line of the Office calculation;

Width: 0.30, the numerical value of the thickness of the masonry;

H / Weight: 2.80, the numerical value of the thickness of the masonry.

The operating procedures for entering variables in the fields of the Row of Measurement section are illustrated in detail in § C.5.

• Press the Save button at the bottom right of the window to associate the measurement entered with the entity.

Once saved, the measurement associated with the entity is not editable. The methods to modify a measurement associated with an entity are illustrated in § C.4.3.

It is also possible to associate a measurement already present in the grid of the Measurements by Entity window to the entity previously selected in the drawing.

Note!

Please note that, in the Measurements by Entity window, in addition to the measurements associated with the selected entity, all the measurements of the same type already assigned to other entities or already created in the Archive Measurements are also proposed.

To associate another measurement already present in the grid of the Measurements by Entity window to the selected entity.



Make sure that the Enable / Disable Filter button in the window is pressed to display the measurements (blank fields) of the same type already entered but not associated with the entity selected in the grid.

• In the grid, select the measurement to be associated with the selected entity.

Press the Functionality button and select the Assign Measurement option in the menu that opens.

Note!

The last two operations can also be performed by right-clicking on the measurement to be associated and selecting the Assign Measurement option in the dedicated menu.

The features of the Measurements by Entity window for managing measurements and for their association with the entity selected in the drawing are present in the menu that opens by pressing the Functionality button, at the top right of the window itself.

The menu options of the Features button are:

Add (Empty Measurement) Modify Duplicates	[INS] [DOUBLE CLICK]
Delete	[CANC]
Starts Ms Excel Starts Ms Word	
Remove Measurement	[SHIFT + MOUSE(SX)]

Add (empty measure) [INS]: Insert a new staff (measure) in the grid; the measurement data, including those of Price List, must be specified in the sections below.

Edit [DOUBLE CLICK]: makes the data of the measurement selected in the grid editable.

Duplicate: Duplicates the selected measurement in the grid.

Delete [DEL]: Deletes the selected measurement in the grid.

Start Excel: starts the Excel program; this option is not enabled if Excel is already open.

Remove Measurement [SHIFT + Left Mouse Button]: removes the association between the entity selected in the drawing and the measurement selected in the grid. If the selected measurement is not associated with the selected entity, this option turns into the following option.

Assign Measurement [SHIFT + Left Mouse Button]: associates the measurement selected in the grid to the entity selected in the drawing. If the selected measurement is already associated with the selected entity, this option changes to the previous option.

C.4.3 How to Modify a Measurement Associated with an Instance



To change a measurement associated with an Instance of the drawing, just do the following:

• Select the entity whose associations with the calculation measurements you want to change.

Press the Associate instance button on the Toolbar.

• In the Measurements by Entity window, make the desired changes.

In the Measurements by Entity window you can:

- Associate new measurements to the selected entity in the manner illustrated in § C.4.2.
- Modify measurements already associated with the entity.

A previously saved measurement is also made not editable. To be able to modify a measurement it is necessary to make the fields of its data editable again by simply double-clicking on the item in the grid. The measurement selected in the grid can also be made editable by selecting the Edit option in the Function button menu.

• Remove the association of one or more measurements from the selected entity. To remove the link between a measurement and the selected entity, just do the following:

• In the grid, select the measurement line (fielded in yellow) that you want to disconnect from the entity selected in the drawing.



Press the Functionality button and select the Remove Measurement option on the menu.

C.4.4 How to Associate a Measurement with a Family

It is possible to associate Measurements to Families of objects in the same way as for the individual Entities.

With this operational methodology, it is possible to link Measurements directly to the Family of objects by ensuring that when the calculation is requested, the object itself is calculated according to the information and criteria specified in the Family to which it belongs. The advantage of this operating mode lies in the fact that you will no longer have to worry about associating the Measurement to each Entity but it will be directly ArchVISION OFFICE for REVIT which, when exporting the calculation, will use the Measurements by Family by computing each object. according to the formulas associated with the Family itself and using the dimensional values of the object belonging to the Family.

Important!

The measurements associated with the family will automatically be used for all objects or entities belonging to the family.

The use of the family is strongly recommended for the computation of objects of the same type.

Please note that the set of information necessary for the computation of an object or entity (price list item and composition of the row of measurement) is conventionally called "measurement".

The methods for inserting a measurement in a family are illustrated concerning the Revit Wall object.

To insert a measurement in a Wall Family you need to do the following:



• Select the wall whose family you want to link the measurement to; Press the Associate family button in the OFFICE 4 REVIT Toolbar. This operation opens the Measurements by Family window, similar to the Measurements by Entity window (see § C.4.2).

Important!

In the grid of the Measurements by Family window, only the measurements relating to the types of Wall present in the Archive Measurements (see § C.4) (associated or not associated with other wall families or simple Wall entities) are displayed.



Leave the Enable / Disable Filter button pressed to view all the measurements relating to the Masonry already present in the Measurements Archive in the window grid (see § C.4).

If in the grid there is the measurement of the masonry to be associated with the selected style, to proceed with the association just:

• in the grid select the measurement to be associated with the family; the selection of the measurement displays the related data (price list item and composition of the measurement line) in the remaining part of the window;



select the Assign measurement option in the menu that opens by pressing the Functionality button. The row of measurement assigned to the "centerline" of the wall style is filled in yellow in the grid;

• repeat the previous operations to associate any further measurements to the wall.

If, on the other hand, the measurement to be associated with the wall family is not present in the grid of the Measurements by family window, you must insert a new measurement to be assigned to the wall family by performing the following operations:



Start Excel by selecting the Start Excel option in the Features button menu and from here open your reference list (see § C.8).

• Drag, with a Drag & Drop operation, the appropriate Price List item (Masonry ...) into the grid of the Measurements by family window.

• In the Measurement section of the window, type the Name of the measurement and any Notes that can be reported in the description of the relevant measurement in the calculation (see § C.5).

Note!

The Voice of Price List section shows the data of the Price List item dragged from the price list and selected in the grid of the Measurements window; the entry data can also be edited at this stage.

• Enter the data that will make up the measurement line in the calculation in the fields of the Row of Measurement section; in each field, you can enter any text (in the description field), a numerical value, and/or a variable relating to a characteristic of the graphic entity to which the measurement is being associated.

It is also possible to insert formulas in which numerical values and variables are correlated by the usual mathematical operators (+, -, *, / and ^).

The methods for entering data in the fields of the Row of Measurement section are described in § C.5.

• Press the Save button at the bottom right of the window to associate the measurement entered with the wall family.

In the grid, the line of measurement associated with the family is filled in yellow.

A measurement associated with the family is not editable. The ways to modify a measurement associated with a family are illustrated in § C.4.5.

With methods similar to those illustrated above, it is possible to associate one or more measurements to a family of Entities.

C.4.5 How to Edit a Family Measurement



To edit a measurement previously associated with a family, e.g. a wall family, just carry out the following operations:

Press the Associate Family button in the OFFICE 4 REVIT 21.0 Toolbar.

This operation opens the Measurements by Family window with the list of measurements associated with the wall family. At this stage, the measurements associated with the family are not editable.

Note!

Notice that the staves of all the measures in the grid of the Measures by Family window are shaded in yellow. By default, only the measurements already associated with the selected family are proposed in this window.



When the Activate / Deactivate Filter button in the window is pressed, all the measurements associated with the selected family in the Measurements Archive are also displayed in the grid (see § C.4).

• Double click on the measurement to be modified to make the data editable in the lower part of the window; the measurement selected in the grid can also be made editable by choosing the Edit option from the Function menu button.

• Modify the measurement data appropriately (item in the Price List and / or composition of the row of measurement).

The methods for composing the measurement line are given in § C.5.

Obviously, in this phase, it is also possible to associate new measurements to the family (see § C.4.4) or to remove the association of one or more measurements.

To remove the association of measurement from the wall family, simply select the measurement in the grid and select the Remove Measurement option in the Function menu button. The same option is available in the local window grid menu.

Important!

The Remove Measurement function only removes the association of the measurement to the family but does not delete the measurement itself that remains available in the Measurements Archive. To delete the measurement just select it and press DEL from the keyboard.

C.5 Row of Measurement Content

A Measurement consists of a group of significant information: a name and notes, a Voice of Price List, and a set of formulas that make up the Row of Measurements. The row of measurement follows the setting of the Excel / Word measurements.

The Row of Measurement section, in the lower part of the Archive Measure (see § C.4), Associate instance (see § C.4.2) and Associate family (see § C.4.4) windows, is dedicated to the composition of the staff selected measurement in the upper grid.

Therefore, the data, values, and variables that make up the measurement and that will be used by ArchVISION OFFICE for REVIT in the computation phase must be entered in the fields of this section.

Instead of specific data (eg a certain numeric value), it is possible to insert a "Variable" in each field of the Row of Measurement section.

A Variable is a string of the type \$Lung\$ that will be automatically replaced by the program during the calculation export phase (see § C.5.1) with the appropriate data or numerical value detected by the geometric and descriptive characteristics of the object/entity drawn.

ROW of MEASUREME	NT		
Description	I \$NomeFam\$	Ρ	+ - * / ^
Equal parts	\$Area\$	Ρ	() [] variables
Length		Р	Stratification
Width		Р	multiplic. factor
H/Weight		Ρ	
WBS coding	\$\$p\$WBS_01\$\$ \$\$p\$WBS_02\$\$ \$\$p\$WBS_03\$\$ \$\$p\$WBS	P	
Super Categories	Interior furnishings \sim	Ρ	Category Manage
Categories	Interiors ~	Ρ	Deduction
Sub Categories	Finished Ground Floor, Sub Category Project $$	Ρ	Exit
Apply to Phase (Sup	er Categories): O Construction/Creation O Demoli	tion	Save

The data substituted for the variables of the measurement line of an Object / Entity can be geometric data detected directly from the drawing or can be descriptions and / or values detected by the family or by the measurement associated with the entity or its family.

It is necessary to define the content of only the data fields necessary for the computation of the object/entity to define the row of measurement.

It is necessary to specify all the data of the Voice of Price List in the relevant section of the window to create a new measurement.

The data of a Price List item can be reported in the measurement with a simple Drag & Drop operation from an Excel/Word list (see §§ C.4.1, C.4.2, C.4.4) or they can be entered manually.

Important!

ArchVISION OFFICE for REVIT does not allow you to archive a measurement without a Row of Price List and there cannot be different Price List Items with the same Code.

In case of insertion of a Price List Item with a Code already stored, a check is made on the other characteristics of the Item (Description, Unit of Measurement and Price) and, in case of discrepancy, it is asked if you want to keep the Item already previously-stored or if you want to overwrite it with the new one you just entered.

A measurement can be filed when at least the data of the Voice of Price List have been entered (even if they are useless for the calculation as an empty line will be calculated if no values or formulas are entered in the measurement line). The EP entry data are:

Code: an alphanumeric string that uniquely identifies the item;

Description: text string for the description of the measurement, corresponds to the Price List Short Description;

Price: a numerical value that defines the unit price of the Item;

Unit of Measure: an alphanumeric string that identifies the unit of measurement with which the computed quantities of the Item are expressed.

Attention!

ArchVISION OFFICE for REVIT computes all the dimensions of the graphic entities by automatically converting them into meters.

In the summary or the export (see § C.7), depending on the unit of measurement set in the drawing and regardless of the unit of measurement of the EP Voice, the program automatically carries out the appropriate conversions to express linear measurements in m, surfaces in m2 and volumes in m3.

After entering the Voice of Price List data, the measurement can be archived by pressing the Save button. In this case, the measurement is empty as only the data of the Voice of Price List have been entered.

Saving the measurement ArchVISION OFFICE for REVIT also checks if it has been assigned a Name. If the program does not find the Measurement Name (the NAME field is empty) it automatically generates a name like:

Frm-EP-01.0145C, where:

• the first part "Frm-EP-" indicates that a formula (without a name) associated with the Voice of Price List has been created;

• the second part is the tariff code (01.0145C) of the item.

The name of the measurement can always be changed at any time by making the measurement editable again with a double click on the relevant staff in the window grid.

Let's see now how to define the Measurement Line to compute correctly an entity/family.

In the Row of Measurement section of the Archive Measurements windows (see § C.4), Associate instance (see §

C.4.2) and Associate family (see § C.4.4) the following five fields are available in which the criteria and formulas of the actual calculation are to be set:

Description: it is the field in which it is possible to compose the text string that will constitute the description of each measurement line. In the Description field, you can enter a text and/or certain descriptive variables (eg, variables related to the name and ID of the measurement). The content of this field will be shown in the export as a description of the measurement lines of the measurement associated with the entity/style.

Parts Equal: it is the field in which it is possible to insert numerical values, variables, and/or a formula to define the content of the field

"Equal parts" of the measurement lines are exported in the calculation of Excel / Word.

Length: this is the field in which numeric values can be entered, variables, and/or a formula to define the content of the field "Length" of the measuring lines exported in the calculation of Excel / Word.

Width: this is the field in which numeric values can be entered, variables, and/or a formula to define the content of the "width" field of the measurement staves exported in the calculation of Excel / Word.

H / Weight: this is the field in which it is possible to insert numerical values, variables, and/or a formula to define the content of the "height/weight" field of the measurement lines exported to the Excel / Word calculation.

It is possible to freely type a text in the description field and the remaining fields it is possible to type any number.

The values needed to fill in these fields can be acquired directly from the Revit parameters. Click on the P button to the right of the field to tap into the Revit parameters.

ROW of MEASUREME	NT		
Description	I \$NomeFam\$	Ρ	+ - * / ^
Equal parts	\$Area\$	Ρ	()[] variables
Length		Ρ	Stratification
Width		Ρ	multiplic. factor
H/Weight		Р	

After clicking, a menu opens and allows you to choose whether to use an instance or type parameter thanks to the two tabs at the top.

By default, the option to exclude non-compiled parameters is enabled.

A List of Instance and Type parameters available						
Warning! The 'Revit' values of the selected parameters add, if necessary, a division factor, for	s will not be automatically converted into meters or example in mm: (\$\$p\$Length\$\$ / 1000)					
INSTANCE parameters TYPE parameters						
Parameter 🔺	Example value	^				
Angle	0.00°					
Area	91 m²					
Base Constraint	Level 1					
Base is Attached	No					
Base Offset	0					
Category	Walls					
Comments	ld: 310035					
Cross-Section	Vertical					
Design Option	-1					
Enable Analytical Model	No					
Contain Mall						
Exit Found 36 Instance parameters and 22 Type						

On the other hand, a variable can be inserted into a field by making the following operations:

• Place the cursor in the field.

• Press the yellow Variables button to the right of the field. This operation opens a menu with the list of available variables for the entity/object in question.

ROW of MEASUREME	ENT				
Description	I \$NomeFam\$	Ρ	+ -	* / ^	
Equal parts	\$Area\$	Ρ	()[]	Compressed Summation	@SumC()
Length		Ρ	Strat	Extended Summation	@SumE()
Width		Ρ	multip	Entity Number	@Count
H/Weight		Ρ		Square Root	@Sqrt()
WBS coding	\$\$p\$WBS_01\$\$ \$\$p\$WBS_02\$\$ \$\$p\$WBS_03\$\$ \$\$p\$WBS_	Ρ		Identity ENTITY'	\$IdEn\$
Super Categories	Internal forniture	Ρ	Catego	Type ENTITY'	\$NTip\$
Categories	Interiors \checkmark	Ρ	De		\$NimeFams
Sub Categories	Finished Ground Floor, Sub Category Project \sim	Ρ		Note MEASUREMENT	\$NtMs\$
Apply to Phase (Sup	er Categories): O Construction/Creation O Demoliti	ion	5	Door Width	\$Larg\$
				Door Height	SHS
				Area	\$Area\$
				Sill height from the level	\$HDav\$

• Select the variable you want to insert in the field. This operation inserts a string of the type \$ Lung \$ into the field.

Example!

Suppose you want to obtain, for the entity/object in question, the following data in the measurement lines of the calculation:

• the name of the measurement and the ID (identification code) of the object/entity drawn in the Description field (of the calculation);

• the length of the entity/object drawn in the Length field of the calculation.

To obtain the data described for the entity/object in the measurement lines of the calculation, just perform the following operations:

• position the cursor in the Description field of the Row of Measurement section;

• Click on the Variables button and, in the menu that opens, select the Measurement Name variable; this operation inserts, in the field, the variable \$NmMs\$ relating to the name of the measurement;

• after the inserted variable (\$NmMs\$) type "-" (space hyphen space) as separator and leave the cursor after the typed string (optional operation);

• Click again on the Variables button and select the Identity Entity variable from the menu; this operation enters, in the field, the variable \$IdEn\$ relating to the ID of the entity/object drawn;

place the cursor in the Length field;

• Click on the Variables button and select the Length variable in the menu; this operation inserts the \$Lung\$ variable relating to the length of the entity/object drawn in the field.

In fields Equal parts, Length, Width, and Height / Weight it is also possible to insert mathematical formulas.

The parameters of these formulas can be variables and / or simple numerical values correlated to each other by the classic mathematical operators +, -, *, / and ^ (exponentiation), which can be entered by typing or by pressing the appropriate buttons yellow to the right of the fields.

It is also possible to insert parentheses in formulas. Such operators allow, as in any formula, to establish the "precedence" in the calculation of the part of the formula enclosed between them.

However, it is necessary to specify that the round brackets "()" have a different function from that of the square brackets "[]".

Example!

Below are some examples of formulas in which both square and round brackets are used with the relative export result in the calculation:

3+ (4 * 3-5 * (2 + 4)) - 3 will be exported as: 3+ (4 * 3-5 * (2 + 4)) - 3 3+ (4 * 3-5 * [2 + 4]) - 3 will be exported as: 3+ (4 * 3-5 * 6) -3 3+ [4 * 3-5 * (2 + 4)] - 3 will be exported as: 3-18-3 [3+ (4 * 3-5 * (2 + 4)) - 3] will be exported as: -18

Attention!

If a type of masonry is associated with a wall family (see § C.4.4) (for example the bricks that compose it) which must be calculated in m3, it would be incorrect to assume the thickness specified in the family as the wall thickness.

This thickness also includes, for example, the thickness of the internal plaster, the insulation layer, and the external plaster.

In this case, it is necessary to specify, in the Width field of the measurement associated with the wall, the actual thickness of the masonry adopted.

In the example shown in the Width field, just enter the formula:

\$Sp\$ - (2 + 4 + 3)

where \$Sp\$ is the variable relating to the overall thickness of the wall and 2, 4, and 3 are, respectively, the thickness (in cm) of the internal plaster, of the insulation, and, the external plaster.

Alternatively, it is possible to carry out the measurement by materials simply by clicking on the stratification button and select which layer to apply the measurement to. In this way, the software will calculate the exact thickness of the layer and apply the measurement to it. This measurement will then be associated with the material.

	S by FAMILY		— 🗆	×		
FAMILY:	Walls Valls	l-140p	[6		
CODE	DESCRIPTION	MEASU	REMENT			
002.005	Facing masonry, thickness equal to a head, m	Fm-EP-lo	dMat(\$1263\$)			
006.003	Expanded polystyrene extruded with only air in	Fm-EP-lo	dMat(\$1269\$)			
015.052	Vapour retarder, membrane	Frm-EP-lo	dMat(\$1268\$)			
021.003	Cementitious concrete of class RcK 250 prepa	Fm-EP-lo	dMat(\$1246\$)			
008.003	Sound-absorbing interior finishing plaster based	Frm-EP-I	dMat(\$568\$)			
"Drag and [Drop" one EP voice entry from Office to add a ne	w Measureme	nt to the family	·		
MEASUREMENT	Frm_EP_IdM=t(\$1246\$)		Single Dow	~		
Name			Single Row	~		
Note	Strato nº 4 di 5 con spessore di 0,14 cm su 0,304 d	tm in totale	Positive	\sim		
VOICE of PRICE LIST						
Code MEP	Synthetic Short Extended Enlarge		u			
021.003 P	Cementitious concrete of class RcK 250 prepared cement type 325 and aggregates of suitable part	ticle size	Price 156,64	+		
ROW of MEASUREME	NT					
Description	I (\$NMat\$) = Concrete Masonry Units	0 P	+ - *	/ ^		
Equal parts	= NET calculated value	P	()	Select the	part to compute the NET VOLUME - (\$Vol\$)	
Length		P	Strat			
Width		P	multip	C	UTSIDE of the wall	
H/Weight		P		1 - Brick,	Common - Finish1	(0,102)
WBS coding	Not Assigned	P		2 - Cavity	Fill - Insulation	(0,05)
Constant in				3 - Vapou	r Retarder - Membrane	(0)
Super Categories	None	~ P	Catego	4 - Concr	ete Masonry Units - Structure	(0,14)
Categories	None	~ P	De	5 - Gypsu	m Wall Board - Finish2	(0,012)
Sub Categories	None	~ P		,,,,,,		(-//
Apply to Phase (Sup	er Categories): Construction/Creation) Demolition	S		VSIDE of the wall	

The row of measurements can be filled in with additional information regarding WBS coding, categories, and phases.

To associate a WBS encoding with the measurement, the user must have created specific parameters to express the encoding. Once these parameters have been associated with the element, by pressing the P key it is possible to associate them with the measurement. Pressing the P key gives a specific menu that allows you to choose the parameters to be used for WBS encoding. ArchVISION OFFICE for REVIT allows you to create an encoding that uses up to 10 parameters to generate the code.

A Manage	ment of WBS coding referred to Revit parameters 🛛 🗌	\times
	Select the Revit parameters in chronological order to compose the WBS code	
1°	\$\$p\$WBS_01\$\$ 1	X
2°	\$\$p\$WBS_02\$\$ 3	X
3°	\$\$p\$WBS_03\$\$ 2	Х
4°	\$\$p\$WBS_04\$\$ 1	Х
5°	\$\$p\$WBS_05\$\$ 2	X
6°		X
Preview:	1.3.2.1.2	!
Examples:	1.2.3.4.5 Fire extinguishers or 3.4.1.7 - Excavations	
Exit	Save	

It is possible to access the choice of the desired parameter by clicking on the number to the left of the fields, this number indicates the level of WBS to which the chosen parameter refers. By clicking on this button, you access the parameter selection menu already seen above.

A List of Instance and Type parameters available						
Warning! The 'Revit' values of the selected parameters add, if necessary, a division factor, for	s will not be automatically converted into meters or example in mm: (\$\$p\$Length\$\$ / 1000)					
INSTANCE parameters TYPE parameters						
Parameter 🔺	Example value	^				
Angle	0.00°					
Area	91 m ²					
Base Constraint	Level 1					
Base is Attached	No					
Base Offset	0					
Category	Walls					
Comments	ld: 310035					
Cross-Section	Vertical					
Design Option	-1					
Enable Analytical Model No						
Family	Custeia M/all	~				
Exclude the parameters from the list without any value						

Remember that not all parameters can be used to compile the WBS code, in particular, it is possible to know what types of parameters to use by clicking on the "!" located to the right of the "Preview" field.

ArchVISI	ON OFFICE for REVIT - Information for the operator Short list of some valid WBS codes: 1 1.1 3.4.1.5 1 Building Body A 1 - Building body B 2.1.2 Excavation and backfill 5.2.1.2 - Lighting bodies	×
	5.2.1.2 - Lighting boales	
	OK	

A useful tool to better manage the project and its quantity take-off are the **management by categories**. Management by category allows you to differentiate the different parts of a project according to criteria chosen by the user. For example, the categories allow you to differentiate and isolate the elements of furniture, or to manage a building for its functions. Three levels of categories can be set, the associable categories can be selected from a list already supplied with the software, from a list created by the user, or through the use of Revit parameters by pressing the "P" key to the right of the field.

WBS coding	\$\$p\$WBS_01\$\$ \$\$p\$WBS_02\$\$ \$\$p\$WBS_03\$\$ \$\$p\$WB	S. F	P	
Super Categories	Interior furnishings	ſ	Ρ	Category Manage
Categories	Interiors	^ F	Ρ	Deduction
Sub Categories	Finished Ground Floor, Sub Category Project	ſ	Ρ	Exit
Apply to Phase (Supe	er Categories): Construction/Creation Demo 	itio	n	Save

Through the "Category Manage" button it is possible to add, modify, and delete the single items in the list of categories in use. The user can find out which category list file is in use in the project simply by checking the path shown at the top of the dialog.

A Lis	st "Super Cat	egories" available			—	×
Active	e CAT file:	D:\ArchVISI	ON\ArchVISION OFFICE f	or REVIT.cat		
Туре	to manage:	⊖ WBS	Super Categories	◯ Categories	O Sub Cate	gories 🗸
ld	List of entri	ies "Super Categori	ies" available			^ -
1	None					
2	Interior fumi	ishings				
3	Urban furnit	ure				
4	Building ass	sistance for technol	ogical systems			
5	Wall assista	ance for complemen	ntary works			
6	Special Equ	lipment				s
7	Acoustic In	sulations				
8	Themal Ine	ulatione				_ • _
Exi	t Ad	d Edit	Delete	Reset		
Supe	er Categories	Interior furnishing	js	~ F	P Catego	ory Manage
	Categories	Interiors		~ 1	P De	duction

From this window it is not possible to modify the category list file in use, to do this the user must go to the "Options, Language and Preferences" menu and from here access the "Paths customized and sharable files (depending on the project Revit active)". From this menu, the user can choose whether to associate a different category list file.



Finally, it is possible to define which phase the measurement must be associated with, in particular, whether it is a measurement referring to the construction/creation phase or if it refers to demolition.

C.5.1 Variables

When editing a row of measurement formulas (see § C.5) it is possible to enter some variables that represent both descriptive and geometric characteristics of the entity/family in question.

By pressing the Variables button in the Archive measurements (see § C.4), Associate instance (see § C.4.2), and Associate family (see § C.4.4) windows, the menu containing all the variables available for the entity or the family being edited is displayed.

A variable is a text string characterized by the presence of a leading and trailing "\$" character. The variables in the menu are grouped by type. The first two groups of variables are common to all entities or styles.

The first group of variables, identified by the presence of the @ character, includes mathematical functions that will be illustrated in § C.5.2.

The second group contains the descriptive variables (name, type, family, and descriptions of the instance/object).

All the other variables available in the menu are proposed concerning the type of object for which the measurement is defined.

Generally, the last group of the menu offers variables related to the size of the object/instance.

Important!

The values to replace the variables relating to the dimensions of an object/instance are not always detectable by the drawing.

Often in the project, a simple instance represents a physical object that has more dimensions than those represented graphically. For example, a simple Project Line can represent a trench or a pipe. It is therefore extremely useful to have additional variables available, not directly related to the graphic representation of the CAD entity, but related to the object family, which allows the user to obtain the complete computation of the real object schematically represented in the drawing.

Name of Variable	Description	Wall	Window	Door	Floor	Roof	Stairs	Railing	Ramp	Columns	Furnishing	Greenery	Structural Column	Floor: slab edge	Room	Structural foundation	Structural frame	Structural beam system	Other
@SumC	Sum Compressed (total only)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
@SumE	Extended sum (formula)	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
@Count	Count Values - Number of instances	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
@Sqrt	Square root	х	x	x	x	х	х	x	x	x	x	x	x	x	x	x	x	x	x
\$ldEn\$	Entity ID	х	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
\$Ntip\$	Entity type	х	x	x	x	х	х	x	x	x	x	x	x	x	x	x	x	x	x
\$NomeFam \$	Family name	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
\$NmMs\$	Measurement name	х	x	x	x	x	х	x	x	x	x	x	x	x	x	x	x	x	x
\$NtMs\$	Measurement note	х	x	x	x	x	х	x	x	x	x	x	x	x	x	x	x	x	x
\$Lung\$	Lenght	х						x		x			x	x		x	x		
\$Larg\$	Depth		x	x			x		x	x			x			x			
\$H\$	Height	х	x	x		х	х					x	x		x				
\$Sp\$	Thickness	х			x	x										x		x	
\$Area\$	Area	x			x	x				x			x	x	x	x	x		
\$Prm\$	Perimeter				x										x	x			
\$SogLungE \$	Tread depth						x												
\$SogLargE\$	External sill protrusion		x																
\$SogSpesE \$	Riser Height						x												
\$HDav\$	Sill Height / Threshold / Num. of risers		x	x			x												
\$Vol\$	Room volume														x	x	x		
\$NProg\$	Progressive number of the room														x			x	
\$SpFi\$	Fixed Spacing																	x	
\$SpMa\$	Maximum Spacing																	x	
\$SpSg\$	Clearance Spacing																	x	

	S by FAMILY		_	0 X		
FAMILY:	Walls	nt		6		
CODE	DESCRIPTION	MEASU	REMENT			
100.007	Interior walls mixed plasterboard and semi-trans	MEASO Fm-F	P-100 007	ME		
"Drag and I MEASUREMENT	Drop" one EP voice entry from Office to add a ner	w Measureme	nt to the far	mily		
Name	Frm-EP-100.007		Multi Row	~		
Note			Positive	\sim		
VOICE of PRICE LIST						
Code MEP	Synthetic Short Extended Enlarge	aront A	Un.Mea m2			
100.007 P	glass		Price 120	0,00		
ROW of MEASUREME	ENT					
Description	I \$NomeFam\$	0 P	+ -	* / ^		
Equal parts	\$Area\$	Р	()[]	Compres	sed Summation	@SumC()
Length		Р	Strat	Extended	Summation	@SumE()
Width		P	multip	Entity Nu	imber	@Count
H/Weight		Р		Square R	oot	@Sqrt()
WBS coding	\$\$p\$WBS_01\$\$ \$\$p\$WBS_02\$\$ \$\$p\$WBS_03\$\$ \$	\$p\$WBS_P		Identity E	NTITY'	\$IdEn\$
Super Categories	Tatasal famitura		Catago	Type ENT	ITY'	\$NTip\$
Categories	Internal formulae		Catego	Family N	ame ENTITY'	\$NomeFam\$
Sub Categories	Einiched Cround Fleer, Sub Cotegory Preiest		De	Name M	EASUREMENT	\$NmMs\$
and survey of the	I misried Ground Hoor, Sub Category Project	~ F		Note ME	ASUREMENT	\$NtMs\$
Apply to Phase (Sup	er Categories): Construction/Creation	Demolition	4	Length		\$Lung\$
				Thicknes	5	\$Sp\$
				Height		SHS
	7600.0			Net Area		\$Area\$
4	┝ ── 			Volume		\$Volume\$

The following table lists the variables used by each entity. The "Dim. Each" and "Dim. Fam" columns indicate whether the variable acquires the value from its dimension from the object instance or the value set in the family. Besides, there is a description of how the value of each variable is calculated

		Di	Di	
Instance	Name of	m.	m.	Description
motunee	variable	Ea	Fa	Description
	<u>é</u> l szé	ch	m	
	ŞLungş	х		Wall Length
Wall	ŞSpŞ		Х	Wall Thickness
	ŞHŞ		х	Wall Height
	\$Area\$	х		Net Wall Area (subtracting gaps and intersections with other walls)
	\$Larg\$		х	Window width
Window	\$H\$		х	Window height
	\$SogLargE\$		х	Protrusion of the external sill
	\$HDav\$	х		Sill height from floor level
	\$Larg\$		х	Door width
Door	\$H\$		х	Door height
	\$HDav\$	х		Threshold height from floor level
	\$Prm\$			Perimeter
Floor	\$Area\$			Floor area
	\$Sp\$			Floor thickness
	\$Sp\$		х	Roof slab thickness
Roof	\$H\$	х		Maximum ridge height
	\$Area\$	х		Area
	\$Larg\$	х		Stair width
	\$H\$	х		Total stairs height
Stairs	\$SogSpesE\$		х	Riser height
	\$SogLungE\$		х	Tread depth
	\$HDav\$	х		Number of rises
Railing	\$Lung\$	х		Railing length
Ramp	\$Larg\$		х	Ramp width
	\$Lung\$		х	Column length
Column	\$Larg\$		х	Column width
	\$Area\$		х	Section area of the column
Greenery	\$H\$		х	Tree height
	\$Lung\$		х	Column length
Structural	\$Larg\$		х	Column width
column	\$H\$	х		Column height
	\$Area\$		х	Section area of the column
Floor: slab	\$Lung\$	х		Edge length
edge	\$Area\$		х	Section area of the edge
_	\$NProg\$	х		Room progressive number
	\$H\$	х		Room height
Room	\$Prm\$	x		Room perimeter
	\$Area\$	x		Room area
	\$Vol\$	x		Room volume
Structural	\$Lung\$	x		Length (not counted for slab)
foundation	\$Larg\$	x		Width (not counted for slab)

	\$Sp\$	х		Thickness
	\$Prm\$	х		Perimeter (not counted for isolated and wall foundation)
	\$Area\$	Х		Area (not counted for wall foundation)
	\$Vol\$	Х		Volume
	\$Lung\$		х	Length
frame	\$Area\$		х	Section area
ITallie	\$Vol\$		х	Volume
	\$NProg\$	Х		Number of rows (of beams)
Structural	\$Sp\$	Х		Centerline spacing (if set as a property - Pattern)
beam	\$SpFi\$	Х		Fixed Spacing (if set as property - Pattern)
system	\$SpMa\$	Х		Maximum Spacing (if set as property - Pattern)
	\$SpSg\$	Х		Clear spacing (if set as a property - Pattern)

C.5.2 @ Variables from Instances/Objects

By pressing the Variables button in the Archive Measurements (see § C.4), Associate instance (see § C.4.2), and Associate family (see § C.4.4) windows, the menu containing all the variables available for the instance or family being edited.

The variables of the first group of the menu are:

@Sqrt (): function for calculating the square root; the square root of the content (value or formula) enclosed in brackets will be calculated by inserting this variable in a field, for example:

@Sqrt (20 + 5) will be exported as: (20 + 5) ^ 0.5.

@Count: a function that counts the entities to which the measurement in question is linked; this function is particularly useful if used with object families; in this case, the number of entities belonging to the family present in the drawing will be calculated.

@SumC (): summarizes the contents of the brackets (numeric value, variable, or formula) for all the entities to which the measurement in question is linked and exports only the final value calculated in the quantity take-off.

@SumE (): summarizes the contents of the brackets (numeric value, variable, or formula) for all the entities to which the measurement in question is linked and exports a formula with all the values resulting from the evaluation made in the drawing in the quantity take-off.

Example

The following example better clarifies the above.

Suppose you have drawn four walls with lengths of 2 m, 3 m, 4 m, and 5 m respectively, and that you have associated with them a measurement containing, in the "Length" field, the formula @SumE (\$Length\$). When exporting quantity take-off ArchVISION OFFICE for REVIT will search for all instances to which the measurement is associated and will find the four walls.

For each wall, the expression (Lung) will be evaluated and the length will be identified. The results of the evaluation carried out for each instance will then be added together in a single expression (2 + 3 + 4 + 5) which will be exported in the calculation. If instead of the @SumE function, the @SumC function had been used, the procedure would have been the same, but only the value 14 would have been exported, resulting from the evaluation of the expression (2 + 3 + 4 + 5).

C.6 Measurement methodologies

ArchVISION OFFICE for REVIT allows you to choose how to compute each measurement using two combo boxes located to the right of the measurement name.

In the first combo box, it is possible to choose whether to compute the measurement in multi-row or single-row mode.

In the second combo box, it is possible to indicate whether the measurement must be calculated positively or negatively.

"Drag and I MEASUREMENT	Drop" one EP voice entry from Office to add a new Measurement to the archiving (of the Measure	
Name	Fm-EP-002.001	Multi Row	\sim
Note		Positive	\sim

A measurement is normally set with the calculation in multi-row - positive modes.

Positive and Negative

The meaning of the positive/negative setting is related to how you want the measurement to be evaluated. The following example will help clarify the concept.

Suppose you want to calculate the plaster surface of a wall: in this case, you will set a measurement linked to the wall family.

Suppose you want to use a wall named "Partition 20".

You shall select a wall belonging to this family and then select the "Associate family" button.

In the Measurements by family window that opens, we will fill in the measurement by importing the Price List Item with the cost per m2 of the plaster to be used.

In the Row of Measurement section, insert the "\$Lung\$" variable in the length field and the "\$H\$" variable in the height field.

In the appropriate combo boxes, we choose to adopt the multi-row and positive measurement types.

In this way, the program will calculate the "gross surface" of the wall, which is the so-called "empty for full" also known as total volume management including dead freight.

To obtain the net surface of the wall (without the voids due to the presence of windows and doors), the surface of the windows and doors must be subtracted from the gross surface.

A measurement must be added to calculate the plaster surfaces to be deducted.

To do this we will use the window and door families.

Associate the families of doors and windows with a measurement with the same price list item as the plaster of the wall, taking care to specify that the relative measurements must be calculated in the negative.

Naturally, in the row of measurement of the negative measurement of the window/door family, we will have to insert the variable "\$Width\$" in the width field and the variable "\$H\$" in the height field.

These operations must be carried out only if the wall is not calculated by drawing from the area and volume values reported by Revit, these values are already calculated net of the deductions from the software, so adding further deductions would count them twice

Note

When a measurement is set with the "negative" calculation mode, it is represented in red in the grid of the list of measurements.

Multi-row singe-row

The meaning related to the Multi-row / Single Row setting lies in the way in which the measurement is calculated.

Multi-row measurements are more frequent and make ArchVISION OFFICE for REVIT export a row for each object/instance to which the measurement will be linked. This is the case where you want to compute each instance based on its size.

In the case of a single row, the program will export a single line for the measurement in question.

In this case, it is not guaranteed which row will be exported as the first line found is always exported based on the selection made.

The usefulness of this calculation method is closely linked to the use of summary variables.

We have seen in the previous paragraphs that ArchVISION OFFICE for REVIT provides some variables (summary functions) marked with the @ character, such as @Count and @Sum.

Using these formulas, it becomes almost mandatory to adopt the Single Row methodology.

The following example will clarify the above.

Suppose we have drawn the four walls of the example of § C.5.2.

Using the @SumE formula we have obtained a line with the formula of the sum (2 + 3 + 4 + 5) of the lengths of the walls in the quantity take-off.

With the Multi-row mode the described row of measurement would have been erroneously exported four times in the calculation: once for each instance (wall) drawn.

The formula inserted in the line of measurements would have been recalculated for each of the entities to which the measurement is associated.

However, by setting the Single Row mode for measurement, the program exports a single line with the summary equation of the lengths of the measurement lines.

Important

When using the @Count, @SumE, and @SumC functions it is necessary to check the setting of the measurement computation mode.

Generally, with these functions, it is necessary to use the Single Row mode.

Now let's see an example of measurement containing variables of the type @ in which it is useful to use the Multi-row computation mode.

Let's continue to focus on the previous example and suppose we want to calculate the incidence of the length of each wall drawn to the total length of the walls.

This methodology can be useful for calculating the incidence of the cost of a section or a detail on the total cost of an intervention.

To perform this calculation, enter the formula in the appropriate field of the measurement line: \$Lung\$ / @ SumC (\$Lung\$) and choose the Multi-row option in the appropriate combo box.

ArchVISION OFFICE for REVIT will export in the calculation as many rows as there are entities to which the described measurement is associated and staff will be reported with the ratio between the length of the wall and the total length of the walls for each wall instance.

Measurements by materials

Measurement by materials is a mode that allows you to associate a code, with not to an element but a material. This mode is available for system families: walls, floors, roofs, and ceilings. To access this mode, simply click on the "Stratification" button in the Row of Measurement and select the layer made up of the material to which to associate the measurement.

A MEASUREMENTS	by FAMILY				\Box ×				
FAMILY:	Walls	Basic Wall: Interior -	126mm Partition (2-hr))					
CODE		DESC	RIPTION		RI				<u> </u>
008.00	03	Sound-absorbing interior finishin	g plaster based on	vermiculite a	nd i		9.39		
"Drag a MEASUREMENT	ind Drop" one EP V	oice entry from Office to add a r	new Measurement t	to the family					3.50
Name				Single Row	Ť		L		2
NOTE OF PRICE LIST				POSitive	~	<u>+</u>			<u></u>
Code MEP	Synthetic Short	Extended Enlarge				6.5			
008.003 P	Sound-absorbing vermiculite and i	g interior finishing plaster based on norganic binders, resins and cher	on A mical	Un.Mea. m3 Price 11,3	78				
ROW of MEASUREMEN	vi					1.83 L 3	.73		
Description	I		0 P	+ -	* / ^			t n	ᇃᆝᄫ
Equal parts			P	()	Select the	part to compute th	e NET VOLUME - (\$Vol\$)	
Length			P	Straf					Ī
Width			P	multip	OI	UTSIDE of the wall -			
H/Weight			P		1 - Gypsur	m Wall Board - Finis	h2		(0,016)
WBS coding	Not Assigned		P		2 - (COPY)) Gypsum Wall Board	d - Finish2		(0,016)
wbb coding					3 - Metal :	Stud Layer - Structur	re d Finish2		(0,064)
Super Categories	None		~ P	Catego	4 - (COPT) 5 - (COPY)) Gypsum Wall Board	d - Finish2 d - Finish2		(0,016)
Categories	None		~ P	De	5 (COFT)	ISIDE of the well	a ranone		
Sub Categories	None		~ P		IN	ISIDE OF the wall	 f		
Apply to Phase (Super	r Categories):	Construction/Creation	ODemolition	S	ave			7	

Fields for calculating the size of the layer to be calculated are automatically filled with formulas when this mode is chosen. Leaving the fields not manually filled in is required to access this mode.

A MEASUREMENTS	by FAMILY							\times
FAMILY:	Walls	~	Basic Wall: Interio	r - 126mm Partitio	on (2-hr)	E	B
CODE			DES	CRIPTION			RI	
008.00	3	Sound-absort	bing interior finish	ing plaster bas	sed on	vermiculite a	nd i	
"Drag at	ad Drap" one EP. V	voice entry from	n Office to add (a new Measure	ment	to the family		
MEASUREMENT						co dicitantity		_
Name	Frm-EP-IdMat(\$2	0536\$)				Single Row	I	\sim
Note	Part n° 1 of 5 wi	th thickness of	0,016 cm on 0,	128 cm in tota	al	Positive		\sim
VOICE of PRICE LIST Code MEP	Synthetic Shor	t Extended	Enlar	ge	_	Lin Maa m3		
008.003	Sound-absorbin vermiculite and i	g interior finishi norganic binde	ng plaster based rs, resins and ch	i on iemical	$\left \right\rangle$	Price 11,	78	\exists
ROW of MEASUREMEN	π							
Description	I (\$NMat\$) = (Gypsum Wall B	oard	0	Ρ	+ -	* /	^
Equal parts	@SumC (\$Vol\$ *	1) = NET calcu	ulated value		Ρ	$\left(\right) \left[\right]$	variable	s.
Length					Ρ	Strati	fication	
Width					Ρ	multipl	ic. factor	
H/Weight					Ρ			
WBS coding	Not Assigned				P			
Super Categories	None				Ρ	Catego	ry Manage	3
Categories	None				Ρ	Dec	luction	
Sub Categories	None				Ρ		Exit	
Apply to Phase (Super	Categories):	Construction	on/Creation	⊖ Demolitic	n	S	ave	

The measurement is associated with the material and not to the layer, this is automatically assigned to all the layers characterized by the material regardless of the family they belong to.

C.7 Quantity take-off export

Once the appropriate measurements have been assigned to the families of objects and the drawn Entities, it is possible to request the export of the quantity take-off in the preferred Excel / Word format.

In this phase, it is possible to request to export the quantity take-off of the project by selecting the instances of which you want to obtain the computation in the drawing.

Press the Export count icon in the same toolbar to request the count of a part of the project after selecting the instances you want to calculate.

The export to Office takes place automatically if, in the Properties, the activation of the summary window is disabled.

If the summary window opens during the procedure, you must press the Send calculation to Office button in the same window to proceed with the export of the calculation.

ArchVISION OFFICE for REVIT presents a dialog for selecting the desired export mode upon activation of the export to Office:

In the dialog you can choose one of the following options:

Calculation update keeping any measurements already present in the existing calculation: the measurements already present in the calculation are updated and any new measurements are added without deleting any measurement or price list item of the quantity take-off. Measurements not exported from ArchVISION OFFICE for REVIT and entered manually are kept.

Total replacement of the previous export: a new Microsoft Office accounting document is created. If the specified document already exists, it is deleted and rewritten.

Note

ArchVISION OFFICE for REVIT in the calculation export phase automatically generates a Super Category in Office for each exported plan (whose name is that of the plan in the Revit project).

ArchVISION OFFICE for REVIT - Configure t	he desired export mode						
Select the desired export mode:							
O Update of the calculation keeping any Mea This option leaves unchanged any Mea	asurements already present in surements introduced manuall	the existing calculation y in the existing calculation	preserving the content				
Total replacement of the previous export This option DEFINITELY REMOVES an	ny Measurements introduced n	nanually and the EXISTING	ENTIRE ENTRY				
Select the desired export order (Optional prefix in	the management of Category Fi	Iters in to Office)					
Include the management of Category Filte	rs in the calculation				Excludes prefix	'Demolished' or 'Built' i	n phases
No prefix	🔿 Level - Phase	O Phase - Level	🔿 Level	⊖ Fase	Place in:	Super Categorie	s 🗸
Include in the Categories instance parameter	eter 'Cat: Edificio'	Include in the Sub Cate	gories instance paramet	er 'SbCat: Piano di	riferimento'	Excludes the	term 'None'
Management of stratification (Walls, Floors, Roof	s and Ceilings)						
Include and compute also the stratification	n (Materials) for the following s	ystem families:	Valls	Floo	ors 🔽 R	oofs 🔽 Ce	ilings
Configuration of the computed generated							
● File MS Excel ○ File MS Word		Breve	Estesa	Maximum nur	nber of backups of th	e file:	9 ~
Path and file name XLSX generated	NON PRE	EVISTO IN QUESTA APPLIC	CAZIONE				
			Enable MEP filter	🗌 Inc	lude the multiset WB	S structure	

The desired export order can be selected within this dialog; in this way, the user can choose whether to include the management of category filters in the quantity take-off. A prefix indicating the level, or the phase, or both can be added. the stratification management for walls, floors, roofs, and ceilings can be selected by enabling the quantity take-off for materials for those elements that have been measured in this way. The configuration of the generated calculation allows you to choose the format of the quantity take-off, its position, and the number of backups. Finally, it is possible to decide whether to include the MEP elements, the WBS encoding, and whether to enable the **Revit Find** option, which allows you to select a row in the quantity take-off and automatically select the instance to which it refers within the Revit model.

Pressing the Continue button starts the export of the bill of materials in the chosen Office format; the export of the calculation takes place by creating a document in .xlsx or .docx format depending on the choice made by the user in the same folder as the Revit project with the name equal to the name of the

Revit project and with the chosen extension. Even if it is present in the Office system, and .xlsx or .docx file will be created exactly as it happens for Office.

In the preferences of ArchVISION OFFICE for REVIT, during the computation procedure, it is possible to request a window with a summary table of what has been computed, before proceeding to export to Excel / Word.

_ntity/Fa	amil Price	List Items			Descript.	Measures	Equal	parts	Length	۱ 	Width		H/Wei	ght
lCad	Code	Description	Un.Me	Price	Descript. Measures	Value	Equal parts	Value	Length	Value	Width	Value	H/Weigh	Value
Cord	12345	he	m	500,		Fondazio	\$Pm\$	0						
Cord	12345	he	m	500,		Fondazio	\$Pm\$	0						
Cord	12345	he	m	500,		Fondazio	\$Pm\$	0						
Cord	12345	he	m	500,		Fondazio	\$Pm\$	0						
Cord	12345	he	m	500,		Fondazio	\$Pm\$	0						
39879	34	ff	m	500,		Fondazio	\$Pm\$	0						
39870	34	ff	m	500,		Fondazio	\$Pm\$	0						
39897	34	ff	m	500,		Fondazio	\$Pm\$	0						
39888	34	ff	m	500,		Fondazio	\$Pm\$	0						
39906	34	ff	m	500,		Fondazio	\$Pm\$	0						

This table allows you to analyze the calculation before exporting it to Office.

Important

The summary window works regardless of whether the Office is on the computer you are working on. This is useful when preparing a project which will then be computed with Office by transferring the file to another computer.

It is advisable to enable the summary window at least in the early stages of work to easily compare the formulas entered with the results produced.

The summary window is disabled by default upon software installation.

C.8 Quantity take-off preferences

ArchVISION OFFICE for REVIT allows you to customize its behavior during the execution of the functions related to the calculation.

These customizations are made in the Options, language, and preferences dialog which can be accessed from the OFFICE 4 REVIT toolbar by pressing the appropriate icon.

ArchVISION OFFICE for REVIT - Preferences and options			\times
Excel Word			
When Ms Excel opens, it separates Revit and Ms Excel at 50% of the screen			
When closing Ms Excel, it shows Revit full screen			
When Ms Excel is opened, it directly opens the reference price list			
C:\MCS\ArchVISION OFFICE for REVIT\Office\Sample Excel price list.xlsx			-
✓ List summary Measurements before export to Office			
Number of decimal places in export (Influence also the computed values	ue genera	ited): 2	
Paths customized and sharable files (depending on the project Revit active)		
Language change Colors F	vit	Save	
	AIL .	Jave	,

Among the options for defining the calculation settings, the following stand out:

The tab at the top that allows you to choose whether to change the options relating to Excel or those relating to Word.

List a summary of measurements before exporting to Office: selecting this checkbox requires that the calculation summary window be proposed during the computation procedure (see § C.7).

When opening Office, it opens the reference list/calculation directly: it requires that when you open Excel / Word (using the appropriate ArchVISION OFFICE for REVIT functions) your reference list is also opened; selecting this option enables the field below. Pressing the button to the right of this field opens the dialog where you can choose the price list/calculation that will always be opened with Excel or Word.

In the field Number of decimal places in export, you must specify the number of decimal places with which you want to export the measurements in the Office document (this setting applies to all numeric values regardless of the field).

It is possible to define for certain projects customized paths for the ArchVISION OFFICE for REVIT reference files such as the .rrf file which contains all the measurements, the price list file, the categories, the calculation file created, and the WBS encryption if needed.

ArchVISION OFFICE for REVIT - Management of shared paths alternative to the default ones									
	Path Revit project (Rvt)	Path Office list (XIsx o Docx)	Path file ArchVISION OFFICE for REVIT (Rrf)	Path file ArchVISION OFFICE for REVIT (Cat)	Path computed Office (Xlsx o Docx)	Path file ArchVISION OFFICE fo REVIT (Wbs)	r		
•	D:\ArchVISION\200910_project ba	C:\MCS\ArchVISION OFFICE for R	D:\ArchVISION\200910_project ba	D:\ArchVISION\ArchVISION OFFI	D:\ArchVISION\BOM_test.Xlsx				
-									
	File of the Revit project (RVT) for which to customize the paths (Main file):			D:\ArchVISION\200910_project base_r21.vt					
Office File (XIsx o Docx) containing the reference lists:			e reference lists: C:\MCS\ArchVISION	C:\MCS\ArchVISION OFFICE for REVIT\Office\Sample Excel price list xlsx					
File ArchVISION OFFICE for REVIT (RRF) containing the Measurements:			Measurements: D:\ArchVISION\2009	D:\ArchVISION\200910_project base_r21.nf					
File ArchVISION OFFICE for REVIT (CAT) containing the Category Filters:			Category Filters: D:\ArchVISION\Arch	D:\ArchVISION\ArchVISION OFFICE for REVIT.cat					
Office File (XIsx o Docx) containing the generated and updated calculations:			ted calculations: D:\ArchVISION\BOM	D:\ArchVISION\BOM_test.Xlsx					
Fil	File ArchVISION OFFICE for REVIT (WBS) containing the multilevel WBS structure (Optional):								
This table lists the Revit projects (RVT) of which a specific path is configured for the Office list (XIsx o Docx) opened at the opening of Office, the archiving of the Measurements referred to it (RRF) the file containing the structure of the Category Filters (CAT) files of the Office calculation that will be generated from them (XIsx o Docx) and the files containing the WBS structures (WBS)									

Finally, from this menu, is you can change the language and colors used by ArchVISION OFFICE for REVIT to indicate measurements, WBS, layering, deductions, and MEP.

C.9 Measurement import from another quantity take-off

ArchVISION OFFICE for REVIT allows the import of measurements from another project.

This functionality is performed in two operating modes:

1. Import and assign measurements of this family from another project

It allows you to automatically import and assign to the selected family all the measurements already made in another project relative to the selected family.

2. Import measurements of all families from another project

It allows you to import all the measurements already made for all families from another project: in this case, no measurement will be assigned to the project families: the association must be done manually.

	by FAMILY				
FAMILY:	Walls	-140p	Y	Add (Empty Measurement)	[INS]
			Modify		
CODE	DESCRIPTION	MEASUREMENT		D. F. J	[DODDLC CLICK]
002.005	Facing masonry, thickness equal to a head, m	Fm-EP-IdMat(\$126	(3\$)	Duplicates	
006.003	Expanded polystyrene extruded with only air in	Fm-EP-IdMat(\$126	9\$)	Delete	[CANC]
015.052	Vapour retarder, membrane	Fm-EP-IdMat(\$126	8\$)		· · ·
021.003	Cementitious concrete of class RcK 250 prepa	Fm-EP-IdMat(\$124	6\$)	Starts Ms Excel	
008.003 Sound-absorbing interior finishing plaster based		Frm-EP-IdMat(\$568	B\$)	Starts Ms Word	
"Drag and D	Drop" one FP voice entry from Office to add a ne	w Measurement to the f	family	Remove Measurement	[SHIFT + MOUSE(SX)]
MEASUREMENT			,	Import and accien Measurements of this family from another project	
Name	Frm-EP-IdMat(\$1263\$)	Single R	low	import and assign measurements of this family normanother project	
Note	Strato nº 1 di 5 con spessore di 0,102 cm su 0,304	cm in totale Positive		Import Measurements of all families from another project	
VOICE of PRICE LIST					H
Code MEP	Synthetic Short Extended Enlarge				
002.005 P Facing masonry, thickness equal to a head, made with solid bricks and bastard mortar, straight or curved and at vitile face. Un.Mea m ³					
ROW of MEASUREME	NT -				
Description	Description I (\$NMat\$) = Brick, Common		* / ^		
Equal parts	= NET calculated value	P ()[]	variables		
Length		P Stra	atification		
Width		P multi	plic. factor		
H/Weight		P			
WBS coding	Not Assigned	P			
Super Categories	None	V P Categ	gory Manage		
Categories	None	P D	eduction		
Sub Categories	None	~ P	Exit		
Apply to Phase (Supe	er Categories): Construction/Creation 	Demolition	.4		

The functions for importing measurements from another project are available from the contextual menu that opens when pressing the button Functionality of the Measurements by family window (see § C.4.4).

C.10 Project Data

By selecting the "Project data" button, ArchVISION OFFICE for REVIT displays the General data dialog through which it is possible to store in the project some general information relating to the project itself. All stored general data will be automatically exported to the quantity take-off in the General Data section of the Calculation (.xlsx or .docx file) generated by ArchVISION OFFICE for REVIT

Note

Regardless of the type of calculation export set, the project data introduced in ArchVISION OFFICE for REVIT will always have priority and will replace those present in the "General Data" section in the calculation exported to Office.

ArchVISION OFFICE for REVIT - General Data —							
Author:	\$s\$						
Name of the project:	\$s\$						
Address:	\$s\$						
Project status:	\$s\$	^					
		× .					
Customer name:	\$8\$						
Building name:	\$8\$						
Organization name:	\$8\$						
Read parameters	Keep synchronized Exit Save						

Project data can be directly obtained from project data compiled through the project parameters contained in Autodesk Revit. By clicking "Read parameters" you can read and fill in the fields; by checking the box "Keep synchronized" it is possible to associate the information exported in quantity take-off to the model information so that they are always updated.

C.11 Revit Find

Revit Find is an exclusive feature of ArchVISION OFFICE for REVIT that allows you to select the instance in the Autodesk **Revit** model to which the measurement refers starting from the quantity take-off in Microsoft Excel. simply select the box containing the item ID in the take-off quantity and press CTRL + C to automatically select the item in the Revit model. To work this feature requires that the measurement is of the multi-row type (see § C.6) and that it is made by object and not by material as it requires that the ID of the element be associated with the measurement.



Summary

Warnings
Copyright
User License
Grant of license
Prohibition of copying and transfer
Confidentiality reverse engineering
Limits of warranty
Limitations of liability for direct and indirect damages
Rights provided by law
Termination of the contract
General information

Chapter A Introduction

- a.1 ArchVISION OFFICE for REVIT solution
- a.2 ArchVISION OFFICE for REVIT, Office, and Revit
- a.3 ArchVISION OFFICE for REVIT: Concepts and Philosophy

ArchVISION OFFICE for REVIT in brief

Chapter B Installation (File downloadable from Internet)

- **B.1 System requirements**
- **B.2 Software installation**
- **B.2.1** License to use header
- **B.3 Software updates**
- **B.4 User manual**

Chapter C Project Quantity Take-off

- **C.1 Introduction and Recommendations**
- C.1.1 Operational notes
- C.2 Design and Computation of Graphic Entities
- C.2.1 Association of a Measurement to a Family

- C.2.2 Association to a Measurement to an Instance
- C.3 OFFICE 4 REVIT 21.0 toolbar
- C.4 Archive Measure: Measurements Window
- C.4.1 How to Create a Measurement in Archive Measurements
- C.4.2 How to Associate a Measurement with an Instance
- C.4.3 How to Modify a Measurement Associated with an Instance
- C.4.4 How to Associate a Measurement with a Family
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- C.5 Row of Measurement content
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- C.5.2 @ Variables from Instances/Objects

C.6 Measurement methodologies

Positive and negative

Multi-row single-row

Measurements by materials

- C.7 Quantity take-off export
- C.8 Quantity take-off preferences
- C.9 Measurement import from another quantity take-off
- C.10 Project Data
- C.11 Revit Find