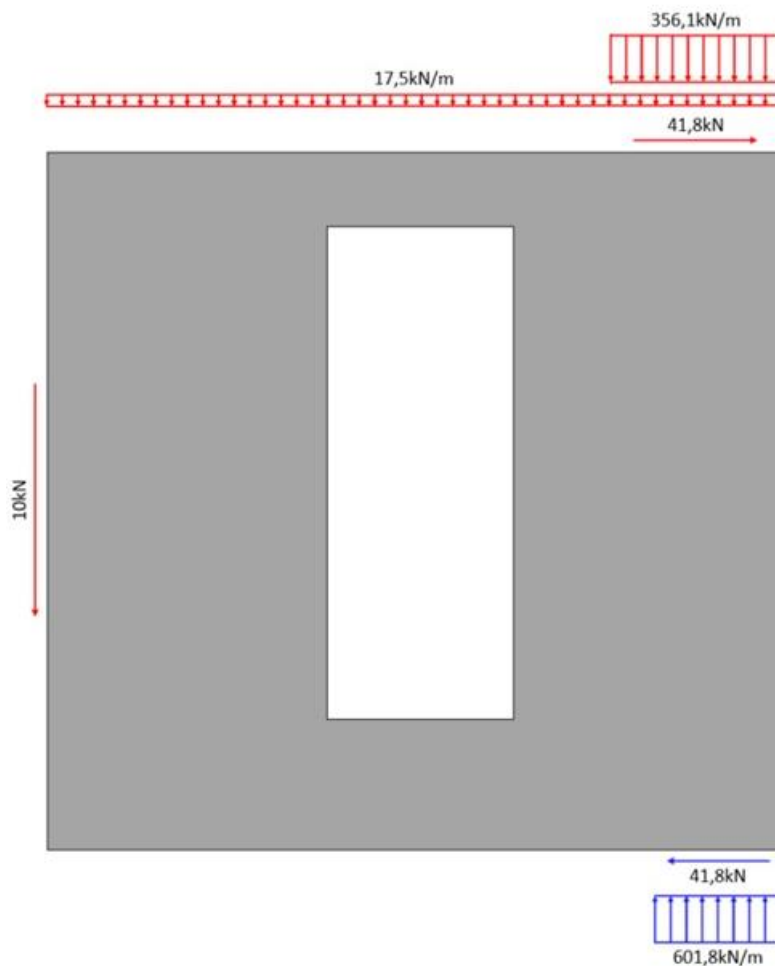
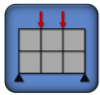


## PolyStringer API Template – Introduction



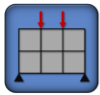
### Introduction

In this example the opportunities with PolyStringer API template will be explained. The template is used as a starting point to develop a customized template, which is specialized to create stringer models of walls with uniformly distributed loads, as the wall shown above.



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## How to Start

1. Download and install PolyStringer from [www.PolyStringer.com/Download](http://www.PolyStringer.com/Download)
2. Make sure you have a PolyStringer API license or contact us at [Contact@PolyStringer.com](mailto:Contact@PolyStringer.com) to inquire about license options.
3. For first time PolyStringerAPI user in Excel please follow the guide in section "Setup PolyStringer API for Excel VBA" in "PolyStringer API – Documentation" found on [www.PolyStringer.com/PolyStringerAPI](http://www.PolyStringer.com/PolyStringerAPI) to setup your Excel application to use PolyStringerAPI.
4. Open PolyStringerAPI Template.xlsm

## PolyStringerAPI Template

The file "PolyStringerAPI Template.xlsm" contains two sheets "Input" and "Results". From the input sheet it is possible to insert all input parameters such as coordinates, load combinations, loads, supports etc. The button "Export to PolyStringer" will then run a macro which insert all input values to PolyStringer and opens the model.

It is also possible to open a model created through the PolyStringer program. When the model is created with PolyStringer go to file -> Save As -> Save the file as a "PolyStringer compatible file (\*.pstrAPI)". The saved file can then be opened in PolyStringerAPI template by clicking on the button "Open PolyStringer API file". If the file was saved with calculation results then the reactions, stringer forces and shear forces can be seen in the Excel sheet "Results".

## Create own Custom template

To create a custom template it is recommended to use the "PolyStringerAPI template.xlsm" as a starting point. You can then create new Excel sheets with some custom actions as shown with the file "PolyStringerAPI Template - Wall.xlsm". In this file a new sheet "Wall template" is inserted in the PolyStringerAPI template.

With these new sheets you can develop custom sheet to either create the PolyStringer Input and insert the data into the "Input" sheet or extract and post process results from the "Results" sheet. When you use the PolyStringerAPI template in this way, it is possible to use PolyStringerAPI without any need to know about VBA and Macros.

## PolyStringerAPI Template – Wall

With this template it is easy to create walls with openings, uniform loads and stringer loads.

### Settings

It is possible to set the stringer distance from edges. This parameter is used for "Wall Geometry" and "Openings" when actual geometry is chosen.

### Wall Geometry

Define the boundaries of the wall. All other input parameters in this sheet must be within this boundary.

### Openings

Door and window openings can be defined. For door openings the bottom stringer is removed if this stringer is at the bottom edge of the wall.



# PolyStringer

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## Extra Coordinates

It is possible to manually add stringers at some x- or y-coordinates. This is mainly relevant to increase the accuracy of the model for example above openings.

## Load Combinations

Define all relevant load combinations, these load combinations will be available in the dropdown lists for “Uniform Loads”, “Stringer Loads” and “Point Loads”.

## Uniform Loads

Uniform loads can be defined, the load must be vertical meaning ( $y_1 = y_2$ ) the uniform load will be divided based on equilibrium equations to all stringers in the x-range. The uniform load can be cantilevered past the last or first stringer, the load will then be transferred in equilibrium to the two relevant stringers.

## Stringer Loads

Stringer loads must be defined with stringer geometry. A stringer is inserted at the end and start of the stringer load. If the stringer loads is manually moved for example from the outer wall edge to the stringer geometry then an eccentricity can be defined. If an eccentricity is defined, then a moment corresponding to  $F \cdot e$  is applied by point loads at the stringer load start and end.

## Point Loads

Point loads must be defined with stringer geometry. A vertical and horizontal stringer is added at the location of the point load.

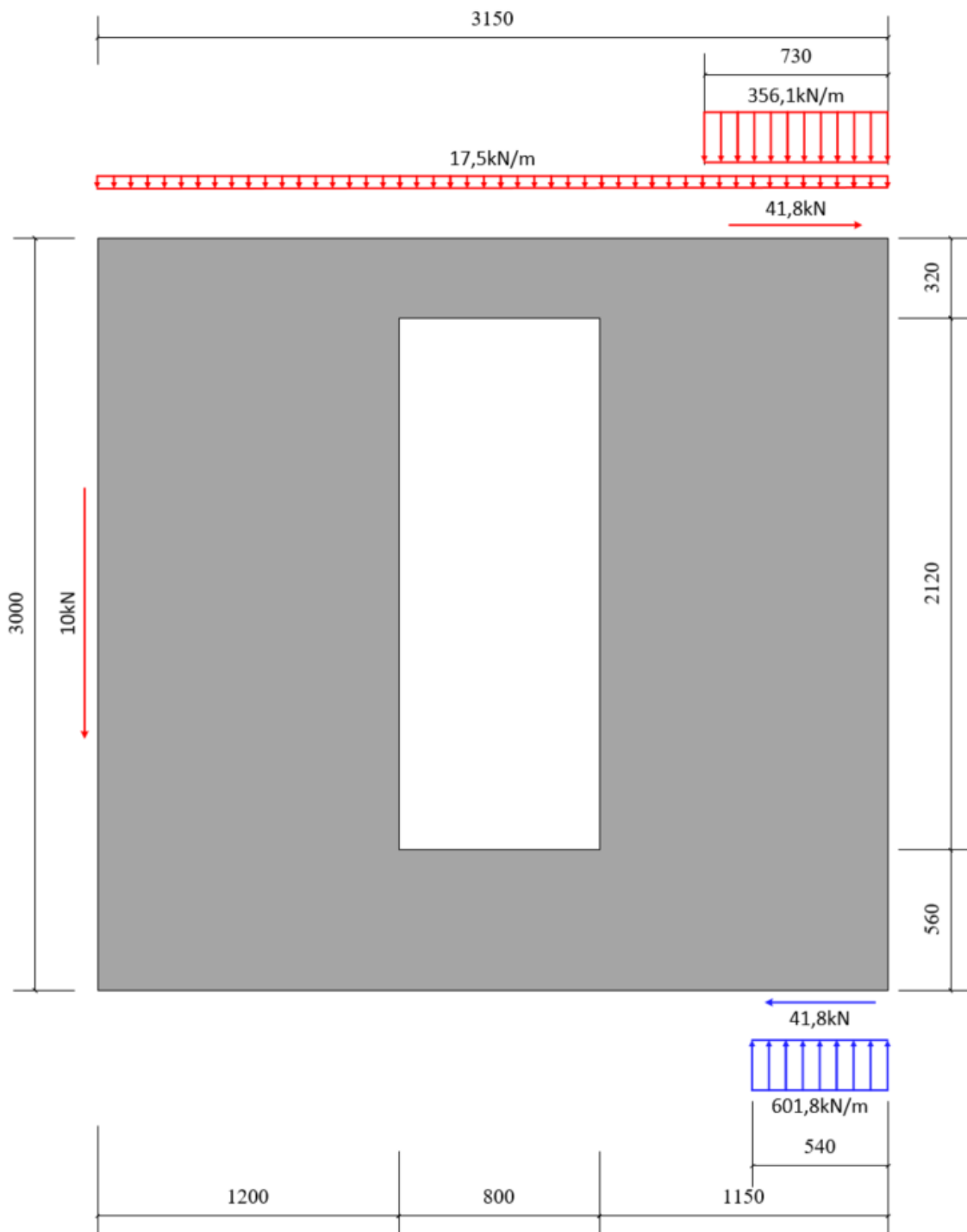
## Export Wall

When the button “Export wall” is clicked then a Macro generates the PolyStringer Input data and insert those into the sheet “Input” and runs the “Export to PolyStringer” command.

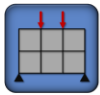


## Example

The wall shown below with an opening, uniform loads and stringer loads can be created with “PolyStringer-API Template – Wall.xlsm”.



Below is shown the input data to “PolyStringerAPI Template – Wall.xlsm”.



# PolyStringer

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	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	Export Wall																		
2	Geometry						Uniform Loads						Stringer Loads						
3	Settings						Load Combination	x <sub>1</sub> [m]	x <sub>2</sub> [m]	y <sub>1</sub> [m]	y <sub>2</sub> [m]	F [kN/m]	Load Combination	x <sub>1</sub> [m]	x <sub>2</sub> [m]	y <sub>1</sub> [m]	y <sub>2</sub> [m]	F [kN]	e [m]
4	Stringer distance from edges				0,05 m		My LC1	0	3,15	3	3	-17,5	My LC1	0,05	0,05	0,05	2,95	-10	0,05
5							My LC1	2,42	3,15	3	3	-356,1	My LC1	2,42	3,1	2,95	2,95	41,8	-0,05
6	Wall Geometry						My LC1	2,61	3,15	0	0	601,8	My LC1	2,61	3,1	0,05	0,05	-41,8	0,05
7	Geometry	x <sub>1</sub> [m]	x <sub>2</sub> [m]	y <sub>1</sub> [m]	y <sub>2</sub> [m]														
8	Actual	0	3,15	0	3														
9	Openings																		
10	Type	x <sub>1</sub> [m]	x <sub>2</sub> [m]	y <sub>1</sub> [m]	y <sub>2</sub> [m]	Geometry													
11	Window	1,2	2	0,56	2,68	Actual													
12																			
13																			
14																			
15																			
16																			
17																			
18																			
19																			
20																			
21																			
22																			
23																			
24																			
25																			
26	Extra Coordinates		Load Combinations																
27	x [m]	y [m]	Name																
28	1,6		My LC1																
29																			
30																			
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32																			
33																			
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Wall Template

InputResults

The created model opened in PolyStringer when the button “Export Wall” is clicked.

