# FEATURES

Modified on: Thu, 19 Aug, 2021 at 6:59 PM

### Set Default CNC Type

CNC Metal Exporter
Set Default CNC Type
Export Setup
Export Wall Frame(s)
Export Truss(es)
Export Floor Frame(s)
Export Roof Frame(s)
Calulate Number of Screws - Wall
Calulate Number of Screws - Floor
Calulate Number of Screws - Truss
Calulate Number of Screws - Roof
<ol> <li>About</li> </ol>

**Set Default CNC Type** – default configurations for exporting to the most popular CNC machines: **Howick, Metroll**, **Pinnacle, Royal C.N.C.**, (https://agacad.com/products/bim-solutions/metal-framing-cnc-exporters/overview#howick) and **Scottsdale**. You can modify them or create new ones. Configuration names can be written to the wall, floor, roof, or truss types in the project. In such cases, different elements may be exported to different CNC machines or using different settings.

R Set Default CNC Type 🛛 🗆 🗙									
Select Default CNC Type:									
	Name								
<ul> <li>Image: A start of the start of</li></ul>	Howick 4200								
	Howick CNC Configuration CSV2								
	Howick CNC Configuration								
	Metroll CNC Configuration C+C								
	Metroll CNC Configuration								
	Pinnacle								
	Royal AMS XL206								
	ScotSim								
	Close								

Note: these configurations are just sample configurations, where users can modify it according to different machines including profile sizes, commands etc.

Read more >> (https://agacad.freshdesk.com/support/solutions/articles/44002138511-set-new-of-modify-cnc-type)

## **Export Setup**

CNC Metal Exporter
Set Default CNC Type
Export Setup
Export Wall Frame(s)
Export Floor Frame(s) Export Roof Frame(s)
Calulate Number of Screws - Wall Calulate Number of Screws - Floor Calulate Number of Screws - Truss Calulate Number of Screws - Roof
(1) About

**Export Setup** – common export settings where you can predefine the exported file location. An additional setting lets you instruct that labels be printed on the reverse side of the frame, if needed. Also it allows to inverse commands in the exported CNC file.

#### Note: setup setting can be different depending on selected CNC machine.

The predefined export file location may be the same where the Revit project file is located or any other custom location:

R Export	Setup							—		$\times$
Settings	File Name									
Custo	for export of ect file locatio om location m location	CNC fil	es						Brow	se
D:\! T4	R\!Wall+ Met	al							Brow	se
Addition	al Settings —									
Inver	rse Wall Label rse Wall Com	s mands	Inverse Inverse I	Floor Labels Floor Comm	nands	Inve Inve	erse Roof erse Roof	Labels Comma	nds	
Pinnacle	Settings —									
Label d	istance 4"				]					
							Oł	<	Cano	el:

Inverse Wall, Floor, Roof Labels - labels may be printed on the reverse side of the frame.

Export Setup	_	
Settings File Name		
Location for export of CNC files		
<ul> <li>Project file location</li> </ul>		
<ul> <li>Custom location</li> </ul>		
Custom location		Browse
D:\! T4R\!Wall+ Metal		Browse
Additional Settings          Inverse Wall Labels       Inverse Floor Labels         Inverse Wall Commands       Inverse Floor Commands	✓ Inverse Roof Labels Inverse Roof Comma	ands
Pinnacle Settings		
Label distance 4"		
	OK	Cancel

## Example with a label:



Inversed label:

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Let's make one more example when a simple frame is exported:



### Inverse Labels is switched OFF:

🔡 Wall_	W-1-1.50.csv 🗵
1	UNIT;MILLIMETRE
2	VERSION, 2.0
3	PROFILE;my profile
4	FRAMESET;W-1;0001
5	COMPONENT; BP-1; LABEL_INV; L; 1000.00; C; 120.00; 50.80; 1.50; none, 0.00, 25.40, 1000.00, 25.40; LIP_CUT; 19.50; LIP_CUT; 600.00; LIP_CUT; 980.50
6	COMPONENT;TP-1;LABEL_NRM;L;1000.00;C;120.00;50.80;1.50;none,0.00,974.60,1000.00,974.60;LIP_CUT;19.50;LIP_CUT;600.00;LIP_CUT;980.50
7	COMPONENT;SS-1;LABEL_NRM;L;898.40;C;120.00;50.80;1.50;none,25.40,50.80,25.40,949.20;SWAGE;27.50;SWAGE;870.90
8	COMPONENT;SS-1;LABEL_INV;L;898.40;C;120.00;50.80;1.50;none,974.60,50.80,974.60,949.20;SWAGE;27.50;SWAGE;870.90
9	COMPONENT;VS-1;LABEL NRM;L;898.40;C;120.00;50.80;1.50;none,600.00,50.80,600.00,949.20;SWAGE;27.50;SWAGE;870.90

Inverse Labels is switched ON:

😸 Wal	_W-1-1.50.csv 🖬
1	UNIT;MILLIMETRE
2	VERSION, 2.0
3	PROFILE;my profile
4	FRAMESET;W-1;00 <u>01</u>
5	COMPONENT; BP-1; LABEL_NRM; 1; 1000.00; C; 120.00; 50.80; 1.50; none, 0.00, 25.40, 1000.00, 25.40; LIP_CUT; 19.50; LIP_CUT; 600.00; LIP_CUT; 980.50
6	COMPONENT;TP-1;LABEL_INV;L;1000.00;C;120.00;50.80;1.50;none,0.00,974.60,1000.00,974.60;LIP_CUT;19.50;LIP_CUT;600.00;LIP_CUT;980.50
7	COMPONENT;SS-1;LABEL_INV;L;898.40;C;120.00;50.80;1.50;none,25.40,50.80,25.40,949.20;SWAGE;27.50;SWAGE;870.90
8	COMPONENT;SS-1;LABEL_NRM;L;898.40;C;120.00;50.80;1.50;none,974.60,50.80,974.60,949.20;SWAGE;27.50;SWAGE;870.90
9	COMPONENT; VS-1; LABEL INV; 1; 898.40; C; 120.00; 50.80; 1.50; none, 600.00, 50.80, 600.00, 949.20; SWAGE; 27.50; SWAGE; 870.90

Inverse Wall, Floor, Roof Commands – inverses commands in the exported CNC file.

R Export Setup -		$\times$
Settings File Name		
CLocation for export of CNC files		
O Project file location		
<ul> <li>Custom location</li> </ul>		
Custom location	Brow	vse
D:\! T4R\!Wall+ Metal	Brow	vse
Additional Settings Inverse Wall Labels Inverse Floor Labels Inverse Wall Commands Inverse Floor Commands Inverse Roof Comm	nands	
Pinnacle Settings		
Label distance 4"		
ОК	Can	cel

Example: here is a beam with commands a, b and c:



If **Inverse Wall, Floor, Roof Commands** is switched OFF then the order in CNC file is: Beam Mark, beam length, command a 100, command b 460, command c 720. If **Inverse Wall, Floor, Roof Commands** is switched ON then the order in CNC file is: Beam Mark, beam length, command c 200, command b 460, command a 820.

Let's make one more example when a simple frame is exported:



#### Inverse Wall, Floor, Roof Commands is switched OFF and then switched ON:

UNIT, MILLIMETRE PROFILE, DEFAULT PROFILE

PROFILE, DEFAULT\_ PROFILE FRAMESET, W-1,0001 COMPONENT, BP-1,LBBEL\_NRM, 1,1500.00, LIP\_CUT, 23.00, FLANGE1, 25.40, FLANGE1, 600.00, LIP\_CUT, 600.00, FLANGE1, 1200.00, LIP\_CUT, 1200.00, FLANGE1, 1474.60, LIP\_CUT, 1477.00 COMPONENT, TP-1, LABEL\_INV, 1,1500.00, LIP\_CUT, 23.00, FLANGE1, 25.40, FLANGE1, 600.00, LIP\_CUT, 600.00, FLANGE1, 1200.00, LIP\_CUT, 1200.00, FLANGE1, 1474.60, LIP\_CUT, 1477.00 COMPONENT, SS-1, LABEL\_INV, 1,898.40, FLANGE1, 25.40, SWAGE, 27.50, SWAGE, 870.90, FLANGE1, 923.80 COMPONENT, VS-1, LABEL\_INV, 1, 898.40, FLANGE1, 25.40, SWAGE, 27.50, SWAGE, 870.90, FLANGE1, 923.80 COMPONENT, VS-1, LABEL\_INV, 1, 898.40, FLANGE1, 25.40, SWAGE, 27.50, SWAGE, 870.90, FLANGE1, 923.80

#### UNIT,MILLIMETRE PROFILE,DEFAULT PROFILE

PROFILE, DEFAULT\_PROFILE FRAMESET, N-1,0001 COMPONENT, BP-1, LABEL\_NRM, 1, 1500.00, LIP\_CUT, 23.00, FLANGE1, 25.40, LIP\_CUT, 300.00, FLANGE1, 300.00, LIP\_CUT, 900.00, FLANGE1, 900.00, FLANGE1, 1474.60, LIP\_CUT, 1477.00 COMPONENT, SP-1, LABEL\_INV, 1, 1500.00, LIP\_CUT, 23.00, FLANGE1, 25.40, LIP\_CUT, 300.00, FLANGE1, 300.00, LIP\_CUT, 900.00, FLANGE1, 900.00, FLANGE1, 1474.60, LIP\_CUT, 1477.00 COMPONENT, SS-1, LABEL\_INV, 1, 1598.40, FLANGE1, -25.40, SWAGE, 27.50, SWAGE, 870.90, FLANGE1, 873.00 COMPONENT, SS-1, LABEL\_INV, 1, 198.40, FLANGE1, -25.40, SWAGE, 27.50, SWAGE, 870.90, FLANGE1, 873.00 COMPONENT, VS-1, LABEL\_INV, 1, 898.40, FLANGE1, -25.40, SWAGE, 27.50, SWAGE, 870.90, FLANGE1, 873.00 COMPONENT, VS-1, LABEL\_INV, 1, 898.40, FLANGE1, -25.40, SWAGE, 27.50, SWAGE, 870.90, FLANGE1, 873.00

If you would like to inverse labels or commands <u>only for some element types</u> or <u>individual elements</u>, add a Yes/No Instance or Type parameter to your families (or create a Project parameter).

Parameter name – "Inverse Label" for labels, "Inverse Commands" for command reverse.

<ul> <li>✓ Duplicate</li> </ul>
Rename
Value =
*
\$
\$
d
*
*

Label distance (Special feature for Pinnacle machine) - define distance from the frame beginning till the label (mark).

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R Export Setup	_		×		
Settings File Name					
- Location for export of CNC files					
O Project file location					
<ul> <li>Custom location</li> </ul>					
Custom location		Brow	se		
C:\Users\Renata\Desktop		Brow	se		
- Additional Settings Inverse Wall Labels Inverse Wall Commands Inverse Floor Commands Inverse Floor Commands	erse Roof erse Roof	Labels Commar	nds		
Label distance 150 mm					
	c I	Can	cel		

### Result in the file:

📄 Projec	xt Name-W-6-0.88.Parts List 🔀	
1	1	~
2	N/362T125-33/0.9	
3	IN=Project Name CU=Owner GA=0.9 PR=362T125-33 PA=W-6 QT=1 MM=9	9
4	Dimple,15.9	
5	Lip,19.5	
6	-1,150.0,BP-1-U	
7	Di 1e,200.6	
8	Lip,200.6	
9	Dimple,810.2	
10	Lip,810.2	
11	Dimple,974.1	
12	Lip,974.1	
13	IN=Project Name CU=Owner GA=0.9 PR=362T125-33 PA=W-6 QT=1 MM=1	.6
14	Dimple,15.9	
15	Lip,19.5	
16	Dimple,44.5	
17	Lip,44.5	
18	-1,150.0,BP-1-U	
19	Dimple,654.1	
20	Lip,654.1	
21	Dimple,1263.7	
22	Lip,1263.7	
23	Lip,1591.5	×
<		>

**File Name** (*Special feature for Pinnacle machine*) – define exported file name. Under Available Parameters you will see possible parameters from project and element. The last value of naming is **FM Gauge** value by default.

R Export Setup						_		×
Settings File Name CNC export file name O Default Custom								
Available Parameters:			Va	lue =				
Author : Instance	^			Parameter Name	Prefix	Suffix		
Building Name : Instance			1	Project Name : Instance		-		
Category : Instance Client Name : Instance	<	Add>	2	Mark : Instance	<u> </u>			
Comments : Instance								
ld : Instance	~							
<	>	l						
						ОК	Can	cel

FM Gauge is type parameter in the frame element which shows metal thickness.

roperties		😭 (3D)	×								
L Wall_Frame 1	Metal Stud					ne Propertie					×
3023123-33							-				
Structural Framing (Other) (	(1) 🗸 📴 Edit Type					Family:	I_Wall_Frame Met	tal Stud	$\sim$	Load	
Constraints	<u>}</u>			>	A	T				Duralizata	
Reference Level	Level 1					Type:	3625125-33		~	Duplicate	
Start Level Offset	0.63	NUM								Rename	
End Level Offset	119.38										-
Cross-Section Rotation	0.00°					Type Parame	ters				
eometric Position	*						Parameter		Value	= ^	4
Start Extension	0.00					Gap Top		0.00			
End Extension	0.00					Gap Botton	n	0.00			
yz Justification	Uniform		N 💥			Dimpler Ra	dius	0.06			
y Justification	Origin					Section Sha	ipe	Not Defined			
y Offset Value	0.00					Mechanica	1			\$	
z Justification	Center					CNC Type					
z Offset Value	0.00					Identity D:	ata			*	
Construction	*		II N			Manufactu	rer				
Lock Position						EM +f		0.03			
Aaterials and Finishes	*				7	EMd		3.63			
Structural Material	<by category=""></by>					EM bf		1 25			
tructural	*					EM Type of	Connector	Screw			
Cut Length	119.93					EM Type	connector	10			
Structural Usage	Other					FM Mile 19					
Camber Size						EM Gauge 22					
Number of studs						Assembly (	ode	55			
Enable Analytical Model						Type Image	buc				
Dimensions	*					Keynote	•				
h_True	3.63					Model					
b_True	1.25										<u> </u>
aa	0.00°				F	What do thes	e properties do?				
a1	0.59										
а	0.984808					<< Previe	w	ОК	Cancel	Apply	
Side_Offset_C	0.00										a
Side_Offset_T	12.63										
Profile Offset_T	24.00				$\searrow$					~	
Mid Slope Top	45.00°				<			/			
Mid Slope Bottom	45.00°										
Longthon Ctart	0.50		* /								

Example, file name includes Project Name (Hotel Verona) + wall Mark number (W-6) + FM Gauge value (33):

Imperial_Demo_Wall_Truss_Metal_Framing_2015_14_11_27_Walls_2021 08 11 21 31					
Name	Date modified	Туре			
Hotel Verona-W-6-33.Parts List	2021-08-11 21:31	File			

# Export Wall Frame(s), Truss(es), Floor Frame(s), Roof Frame(s)

CNC Metal Exporter				
Set Default CNC Type				
Export Setup				
Export Wall Frame(s)				
Export Truss(es)				
Export Floor Frame(s)				
Export Roof Frame(s)				
Calulate Number of Screws - Wall				
Calulate Number of Screws - Floor				
Calulate Number of Screws - Truss				
Calulate Number of Screws - Roof				
(1) About				

**Export Wall Frame(s), Truss(es), Floor Frame(s), Roof Frame(s)** – exports selected wall, floor, truss, or roof frames to the predefined CNC machine. **CNC Metal Exporter** must be used in tandem with AGACAD Metal Framing BIM software (https://agacad.com/products/bim-solutions/metal-framing-professional-suite), which creates framing elements with all the necessary geometry and information data inside the Revit project.

Example, select a wall that has been created using <u>Metal Framing Wall (https://agacad.com/products/bim-</u> solutions/metal-framing-wall/overview):



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Example, CSV file has been created with all information from the selected wall. This file can be now pushed to the CNC machine for production:

💾 Wall	_W-2-1.00.csv 🔀	
1	UNIT; MILLIMETRE	~
2	VERSION, 2.0	
3	PROFILE; Profile name	
4	FRAMESET;W-2;Project Number	
5	COMPONENT; BP-1; LABEL_INV; 1; 7200.00; C; 89.00; 41.30; 1.00; none, 0.00, 20.65, 7200.00, 20.4	
6	COMPONENT;HP-1;LABEL_INV;1;997.60;C;89.00;41.30;1.00;none,708.70,2140.65,1706.30,2	
7	COMPONENT; HP-3; LABEL_INV; 1; 1261.30; C; 89.00; 1.00; 1.00; none, 2594.35, 2120.50, 3855.65,	
8	COMPONENT; HP-4; LABEL_INV; 1; 1302.60; C; 89.00; 41.30; 1.00; none, 2573.70, 2230.65, 3876.30	
9	COMPONENT;HP-5;LABEL_INV;1;2065.20;C;89.00;41.30;1.00;none,4384.90,2140.65,6450.10	
10	COMPONENT; SBP-1; LABEL_NRM; 1; 682.50; C; 89.00; 41.30; 1.00; none, 3835.00, 1250.00, 4517.50	
11	COMPONENT; SBP-2; LABEL_NRM; 1; 750.00; C; 89.00; 41.30; 1.00; none, 0.00, 1250.00, 750.00, 12;	
12	COMPONENT; SBP-3; LABEL_NRM; 1; 882.50; C; 89.00; 41.30; 1.00; none, 6317.50, 1250.00, 7200.00	
13	COMPONENT; SBP-4; LABEL_NRM; 1; 950.00; C; 89.00; 41.30; 1.00; none, 1665.00, 1250.00, 2615.00	
14	COMPONENT; SP-1; LABEL_NRM; 1; 997.60; C; 89.00; 41.30; 1.00; none, 708.70, 879.35, 1706.30, 8'	
15	COMPONENT; SP-2; LABEL_NRM; 1; 1302.60; C; 89.00; 41.30; 1.00; none, 2573.70, 879.35, 3876.30,	
16	COMPONENT; SP-3; LABEL_NRM; 1; 2065.20; C; 89.00; 41.30; 1.00; none, 4384.90, 879.35, 6450.10,	
17	COMPONENT;TP-1;LABEL_NRM;1;7200.00;C;89.00;41.30;1.00;none,0.00,2979.35,7200.00,29	
18	COMPONENT; BC-1; LABEL_NRM; 1; 898.00; C; 89.00; 41.30; 1.00; none, 4820.40, 1.00, 4820.40, 89!	
19	COMPONENT; BC-1; LABEL_NRM; 1; 898.00; C; 89.00; 41.30; 1.00; none, 5417.50, 1.00, 5417.50, 89!	
20	COMPONENT; BC-1; LABEL_NRM; 1; 898.00; C; 89.00; 41.30; 1.00; none, 6014.60, 1.00, 6014.60, 89!	
21	COMPONENT; BC-1; LABEL_NRM; 1; 898.00; C; 89.00; 41.30; 1.00; none, 2925.00, 1.00, 2925.00, 89!	
22	COMPONENT; BC-1; LABEL_NRM; 1; 898.00; C; 89.00; 41.30; 1.00; none, 3525.00, 1.00, 3525.00, 89!	
23	COMPONENT; BC-1; LABEL NRM; 1; 898.00; C; 89.00; 41.30; 1.00; none, 1207.50, 1.00, 1207.50, 89	~
<	> > >	

### Calculate Number of Screws - Wall, Floor, Truss, Roof

CNC Metal Exporter				
Set Default CNC Type				
Export Setup				
Export Wall Frame(s)				
Export Truss(es)				
Export Floor Frame(s)				
Export Roof Frame(s)				
Calulate Number of Screws - Wall				
Calulate Number of Screws - Floor				
Calulate Number of Screws - Truss				
Calulate Number of Screws - Roof				
<ol> <li>About</li> </ol>				

Calculate Number of Screws - Wall, Floor, Truss, Roof – calculates the number of screws needed for the selected wall, floor, truss, or roof frames.

*Example, this is a simple wall frame. The selected stud and top plate have a connection at two points from both sides. Each element will have one connection point:* 



In some cases a connection between elements can be screwed two or more times from one side. In such cases you can modify the **Screw Calculation Parameter** in element type parameters. The default value of 1 means that elements will be screwed one time from one side. This parameter value is multiplied by the defined connections.

08/09/21, 09:31 FEATURES : AGACAD 😭 {3D} Properties x × Type Properties M\_MF C+C Stud Family M\_MF C+C Stud  $\sim$ Load. [0]][0 C12051-15 CNC Metal Exporter Type: C12051-15 Duplicate..  $\sim$ ✓ Contract Value
✓ Structural Framing (Other) (1) Rename... CNC Metal Exporter Constraints \$ Reference Level Level 1 Type Parameters Start Level Offset 25.4 Parameter Value = ^ End Level Offset 974.6 Construction ۵ Cross-Section Rotation 0.00° Butt Connection Geometric Position ۵ End Gap 0.0 23.9 Start Extension End\_Extension 0.0 End Extension 23.9 Length Extension yz Justification Uniform Length Extension on Slope Screw Calculation Paramete 0.0 y Justification Origin 1.000000 y Offset Value 0.0 Dimpler Radius 1.5 z Justification Center Graphics \$ z Offset Value 0.0 Axis Line Visible  $\checkmark$ Construction 12.00 cm Materials and Finish #d \$ Build in Place Structural Material <By Category> Link to Connected Wall Structural \$ Lock Position 0.15 cm Link to Connected Wall 12.00 cm d Framing Configuration M\_C+C hf 5.08 cm CNC Part Number 1 Usage Stud CNC Dart Name W\_1 1 1.35 cm Lip Properties help 1:5 🛛 🖂 🔅 🕵 🦚 🦛 🏟 🚱 🕫 📾 🍏 🖼 🤇 on Shap Not Defined

Before using Calculate Number of Screws - Wall, Floor, Truss, Roof, renumber elements with Wall+M, Floor+M, Roof+ $M \rightarrow$  Number Elements:



Click Calculate Number of Screws - Wall.

Select a frame stud or plate  $\rightarrow$  Go to instance properties  $\rightarrow$  Under **Identity Data**, find **FM Number of Connectors** parameter with result:

Properties			X	
	M_MF C+C Stud C12051-15		•	
Structural Fr	aming (Other) (1)	🗸 🔂 Edit	Туре	
Elevation at	Bottom	Varies	^	
Identity Data	I		*	
FM HostSo	rtMark			
FM Numbe	r of Connectors	2.000000		
Image				
Comments				
Mark				
FM Module	Туре	Stud		
FM Module	Mark	W-1		
FM Module	Preassembled			
Framing M	ember Description	Stud		
Framing M	ember Volume	0.000 m³		
Framing M	ember Type	Stud		
Framing M	ember Mark	VS		
FM SortMa	rk	VS-1		
Framing M	ember	Stud		
Framing		Wall		
FM HostMe	emberSortMark	W-1		
Framing La	yer	Frame		



This parameter can be used in the schedules and summed for the total screw count for the whole wall:

<wall framing="" schedule=""></wall>							
Α	В	С	D	E			
Framing Member	FM SortMark	Count	Cut Length	FM Number of Connectors			
W-1		I					
Bottom Plate	BP-1	1	1000	3			
Service Holes	SHO-1	1	949	0			
Side Stud	SS-1	2	898	4			
Stud	VS-1	1	898	2			
Top Plate	TP-1	1	1000	3			
6	12						