

# **BIM Objects**

for

# **PECAVOID<sup>®</sup> Ground Heave Solution**

March 2018



## 1. Introduction

The BIM object for PECAVOID® have been created to comply with the NBS BIM Object Standard.

The BIM object is a REVIT floor system family, for this reason a sample of each of the products can be found within the BIM object file. The user should be able to obtain the required products from this BIM object file and add them to their project families. Refer to 1.1 and 1.2.

The thickness of the different layers that compose each product are the accurate manufactured thicknesses. Although bespoke manufactured products may also be available, please contact Max Frank LTD.

Grades should be defined by the user in accordance with concrete depth of the structural element to have ground heave protection. Refer to 1.2.2 and 1.2.3.

All parameters relating to PECAVOID® properties are 'Shared Parameters' and as such all properties of all instances of any PECAVOID® element modelled can be added to REVIT schedules. This can be of significant usefulness for take-off purposes, modelling and model management purposes. A PECAVOID® properties schedule is already created within the BIMObject file which can be copied into the user project as an example.

PECAVOID® BIM Object geometry and all parameters are consistent with building smart IFC 2x3. (IFC 2x3 coordination view 2.0). PECAVOID® BIM Object was created in REVIT 2016.

This BIMObject is to be used in conjunction with MAX FRANK Pecavoid® Technical information.

This BIMObject and all elements within are copyright and must not be reproduced wholly or in part without prior permission.



## 2. Product range and description

### Pecavoid® CB/RDB



The CB range is to be used when heave protection is required for ground beams and pile caps.

RDB is the reduced depth series and as such they can be used when shallower void is a requirement.

EPS cellular base

### Pecavoid® CL/RDS

10mm polypropylene top



The CL range is to be used when heave protection is required for concrete slabs.

RDS is the reduced depth series that is required when a shallower void is presented.

#### Pecavoid® CS/RD+



The CS range is required under concrete slabs when insulation is also needed.

RD+ is the reduced depth series and such as they can be used when a shallower void is presented and insulation is a requirement.



## 3. Notes to users

### 3.1. Grades

This Model contains a sample BIM Object of every product available in the range and grades. Available Grades (Structural Load Bearing Capacity) for the different products are contained in each product sample under 'AvailableGrade' parameter and the user should select the required grade (see note 5).

BIM objects of bespoke manufactured products may be available, please contact us for more information.

## 3.2. Inserting the objects

To incorporate any of the Pecavoid® BIM objects in your working Model select and **copy** the desired product in the BIMObject model and **paste** it into your working model using the "**Paste**" button in the "**Modify**" Quick Access Toolbar. This will place an instance in your working model (which can then be deleted) and loads the "System Family" of that Pecavoid® BIM Object into your working model (which will become available to model instances of the BIM Object). It is recommended that the parameters concrete depth and selected grade are accurately set for each element modelled to achieve accurate and complete data to be shared with design team and supply chain.



LT I	Architecture	Structure	Insert Annotate S	ite View Manage	Add-Ins Modify   Floors 💽 🕶			
<b>↓</b> Modi	y E	Paste	Cut + ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	Move Copy Rotate	Trim Align Mirror	♀・/# /・== ✎		Create Create Group Similar
Select	<ul> <li>Properties</li> </ul>	Clipboard	Geometry		Modify	View	Measure	Create



## 3.3. Grade Selection walkthrough

(This assumes that instances of Pecavoid® are already modelled).

Select the desired Pecavoid® instance and on the 'properties window', click on 'edit type'.

This should bring up the 'type properties' window.

Properties	3		
Floor Pecavoid® CS 2	125		
Floors (1)	👻 🔡 Edit Type		
Constraints			
Level	00 LEVEL DATUM		
Height Offset From Level	0.0		
Room Bounding	V		
Structural	*		
Structural	<b>V</b>		
Rebar Cover - Top Face	XC1 (C20/25,0.70,240 or R		
Rebar Cover - Bottom Face	XC1 (C20/25,0.70,240 or R		
Rebar Cover - Other Faces	XC1 (C20/25,0.70,240 or R		
Dimensions	*		
ConcreteDepth	In accordance with Struct		
Slope			
Perimeter	7200.0		
Area	2.880 m <sup>2</sup>		
Volume	0.654 m <sup>2</sup>		

Find 'Available Grade' under 'identity data' set of properties.

Pecavold® CLIBD Varaneters Parameter ote d facturer facturer	Value     Value     Value				
Varameters Parameter ots f vi dicturer / Commenter	Rename 20/183 Value				
Parameter ote el facturer Commente	Value E20/181 Value				
ote el facturer Composite	E20/181				
el Jacturer Comment	Description of the second seco				
ufacturer Commente	Pecavoidio CL				
Comments	Max Frank Ltd.				
Comments	High Shrinkability Potential				
	http://www.masfrank.co.uk/uk/products/formwork-technologies/pecavoid-cellular-void-for Heave Precaution to underside of foundation				
ription					
mbly Description					
mbly Code					
Mark					
ass1.4	L31 / L332				
1	112/113				
ass2015	Ss_20_80_60				
ndShrinkagePotential	Medium Shrinkage				
lostenymoex	20-40				
Contract of the second s	100				
malConductivity					
ableGrade	CONCRETE DEPTH GRADE				



Select the row and then click on the **browse button** on the far right side of the row to show the available grades and which ones correspond with your desired concrete depth.

namily:	System Pamily: Ploor					
Type:	Pecavoid @ CL 105	Duplcate				
Type Paramet	mellers.					
	Parameter	Value	-			
Keynote		E20/181				
Model		Pecavoid® CL				
Manufactur	er	Max Frank Ltd.				
Type Comn	nents	High Shrinkability Potential				
URL		http://www.maxfrank.co.uk/uk/products/formwork-technologies/pecavo				
Description		Heave Precaution to underside of foundation				
Assembly D	escription					
Assembly C	ode					
Type Mark						
Cost						
Uniclass1.4		L31 / L332				
NRM1		112/113				
Uniclass201	5	Ss_20_80_60				
GroundShri	nkagePotential	Low Shrinkage				
SoilPlasticit	yIndex	10-20				
PredictedGr	oundMovement	50				
ThermalCo	nductivity					
AvailableGr	ade	CONCRETE DEPTH GRADE				
			-			

alactic analytica				· Load
Type: Pecavoid @ CL 105				<ul> <li>Duplicati</li> </ul>
				Rename
Type Parameters	Edit Text		×	
Paramete	er			Value
Keynote	CONCRETE DEPTH	GRADE	<u>^</u>	
Model	Up to 260mm	8/12		
Manufacturer				
Type Comments	Up to 340mm	10/15		
URL	Up to 540mm	15/22	-	ducts/formwork-technologies/pecav
Description	Lin to 740mm	20/20	-	bundation
Assembly Description	Op to 740mm	20/30		
Assembly Code	Up to 940mm	25/35		
Type Mark	Lip to 1140mm	30/40		
Cost				
Uniclass1.4	Up to 1340mm	35/45		
NRM1	Up to 1540mm	40/50	-	
Uniclass2015			Þ	
GroundShrinkagePotential				
SoilPlasticityIndex		ОК	Cancel	
PredictedGroundMovement				
ThermalConductivity	-			
AvailableGrade		CONCRETE DEPTH	I GRA	DE

Then go back to the instances properties window and find 'Selected grade' under the 'identity data' row and type your chosen grade in the row, e.g. 8/12.

Modify   Floors		
Properties		×
Floor Pecavoid® C	L105	•
Floors (1)	•	🔠 Edit Type
Volume	0.331 m³	
Elevation at Top	0.0	
Elevation at Bottom	-115.0	
Thickness	115.0	
Identity Data		\$
Image		
Comments		
Mark		
Building name		
SelectedGrade	8/12	
Phasing		* ≡
Phase Created	New Constructior	n 🔤
Phase Demolished	None	
		-
Properties help		Apply



## 3.4. Alternative Grade Selection walkthrough

Assuming all Pecavoid® elements are modelled and that **'ConcreteDepth'** is accurately set to all Pecavoid® elements.

Copy the Pecavoid® Properties schedule into your project, select and open it.



Find the '**AvailableGrade**' parameter and click on the **browse button** on the right hand side of the cell to highlight the available grades.

	<pecavoid®< th=""><th>Properties&gt;</th><th></th><th></th><th></th><th></th></pecavoid®<>	Properties>				
1	J	К		М	N	0
CompressibleLegDepth	ThermalConductivity	Manufacturer	AvailableGrade	ConcreteDepth	SelectedGrade	Area
105		Max Frank Ltd.	CONCRETE DEPTH	In a cordance with Structural Element	Refer to Pecavo	3 m²
150	0.036 W/(m <sup>2</sup> K)	Max Frank Ltd.	CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	3 m²
100		Max Frank Ltd.	CONCRETE DEDTU	In accordance with Structural Element	Refer to Pecavo	1 m²
85		Max Frank Ltd.	CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	1 m²
90		Max Frank Ltd.	CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	3 m²
130	0.036 W/(m <sup>2</sup> K)	Max Frank Ltd.	CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	3 m²
175		Max Frank Ltd.	CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	1 m²
180		Max Frank Ltd.	CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	3 m²
225	0.036 W/(m <sup>2</sup> K)	Max Frank Ltd.	CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	3 m²
155		Max Frank Ltd.	CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	1 m²
160		Max Frank Ltd.	CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	3 m²
200	0.036 W/(m <sup>2</sup> K)	Max Frank Ltd.	CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	3 m²
250		Max Frank Ltd.	CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	1 m²
255		Max Frank Ltd.	CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	3 m²
300	0.036 W/(m <sup>2</sup> K)	Max Frank Ltd.	CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	3 m²
220		Max Frank Ltd.	CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	1 m²
225		Max Frank Ltd.	CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	3 m²
265	0.036 W/(m <sup>2</sup> K)	Max Frank Ltd.	CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	3 m²
300		Max Frank Ltd.	CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	1 m²
305		Max Frank Ltd.	CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	3 m²
350	0.036 W/(m <sup>2</sup> K)	Max Frank Ltd.	CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	3 m²



		<pecavoid®< th=""><th>Properties&gt;</th><th></th><th></th><th></th><th></th></pecavoid®<>	Properties>				
I		J	К	L	M	N	0
Compressi	-	ar - 184, 19 (8)	57	AvailableGrade	ConcreteDepth	SelectedGrade	Area
1 Edit Text			200	CONCRETE DEPTH	250	8/12	3 m²
1				CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	3 m²
1 CONCF	RETE DEPTH	GRADE		CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	1 m²
		0/40		CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	1 m²
Up to 2	260mm	8/12		CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	3 m²
1 Up to 3	940mm	10/15		CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	3 m²
1				CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	1 m²
1 Up to 5	540mm	15/22	=	CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	3 m²
2 Up to -	740mm	20/20	_	CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	3 m²
1 00 10 7	TOTIM	20/30		CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	1 m²
1 Up to 9	940mm	25/35		CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	3 m²
2				CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	3 m²
2 Up to 1	140mm	30/40		CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	1 m²
2 Up to 1	340mm	35/45		CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	3 m²
3		55715		CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	3 m²
2 Up to 1	1540mm	40/50	-	CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	1 m²
2 <			+	CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	3 m²
2				CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	3 m²
3		ОК	Cancel	CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	1 m²
3				CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	3 m²
350	; 0.030	W (III IN)	MIGA FTOTIN LLU.	CONCRETE DEPTH	In accordance with Structural Element	Refer to Pecavo	3 m²

Under 'SelectedGrade' type the grade in accordance with the concrete depth and available grades.