# moddex®



# Moddex Revit Content Introduction & User Guide

May 2023

This document provides an overview of the Revit content library supplied by Moddex. The parametric content is all created natively in Revit, allowing users the ability to design and document a range of railing systems, modular decking/stair systems, trolley bays and tactile indicators.

Also covered in this document is an overview of the Revit content development methodologies used by <u>IGS BIM Solutions</u> in creating the Revit assets, ensuring a consistent, robust, and reliable Revit library. Ultimately, the Moddex Revit families should require minimal, firm-specific localisation / standardisation to become the 'go-to' Revit library for these categories of products.

Should you require Moddex options outside the range of products detailed in this Moddex Revit content library, please contact Moddex about future ranges to be developed in Revit.

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# **1.0 Family Creation Considerations**

Moddex Revit families have been created to a consistent, high standard with the objective of finding a balance between complexity of use, functionality, documentation output, file size and performance in a project environment. Primary Moddex Revit content creation insights and considerations are listed below:

- Families supplied in Revit 2019 format.
- Native Revit geometry used throughout, including nested families. (E.g. no AutoCAD or SAT files etc.)
- Where appropriate, 3D geometry has been hidden in Plan views with Masking Regions and 2D line work applied to ensure documentation consistency and regeneration speed in Plan views.
- Loadable families have been created with host types appropriate to their use, this is outlined for each family type in Section 2.
- Consistent family and shared parameters have been used sparingly, allowing for Moddex attributes to be scheduled in the Revit project environment.
- Reference Planes have been applied, named, tidied, and set to the correct 'Is Reference'. Thought has been given to the likely end user requirements in placement / alignment and dimensioning of the families. The Origin Point has also been applied accordingly.
- Detail Level settings applied to 3D geometry and Plan views improving model performance.
- All Warnings have been reviewed and removed where possible.
- The families have been fully Purged and all additional Materials, Line Patterns and Fill Patterns removed.
- Logical and consistent Family and Type naming has been applied across all families.
- OmniClass and UniClass Classification has been set appropriately.
- The family file sizes have been optimised to be relatively small when the family's overall capabilities are considered, ensuring large Revit projects are not burdened by Moddex families.

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# 2.0 Revit Content Library Overview

The Moddex Revit Content library is comprised of **8** x primary product ranges. Railing system families reside in corresponding Project files (.rvt) to allow documenting Moddex railing products. Trolley Bay and Tactile indicator products have been created as loadable component families (.rfa) and contain a range of default Family Types. The Ezibilt<sup>™</sup> engineered stair, ramp and deck system has also been created as standalone loadable components for documenting fully customised solutions.

The metrics of the Revit library and intended use of each component are listed below:

#### 2.1 Assistrail<sup>®</sup> - Disability Handrails

**15** x Accessible Handrail models have been included with the provision of railing types for stair placement where applicable. These products can be documented with a variety of common mounting options (Top Mount, Face Mount and Angle Mount) using the dedicated Railing types provided.

AR10
AR20
AR110
AR30
AR120
AR40
AR130
AR45
AR140
AR50
AR150
AR60
AR160

## 2.2 Bikesafe<sup>®</sup> - Bikeway Barriers

**7** x Bikeway Barrier products have been included with preconfigured baluster, post, and railing elements. These products can be documented with a variety of common mounting options (Top Mount and Inground Mount), which have been applied to dedicated Railing types where applicable.

- BS10
- BS20
- BS25
- BS30
- BS35
- BS40
- BS45



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#### 2.3 Bridgerail<sup>™</sup> – Bridge Barriers

**5** x Bridge Barrier products have been included with preconfigured baluster, post, and railing elements. These products can be documented with a variety of common mounting options (Top Mount and Face Mount), which have been applied to dedicated Railing types where applicable.

- BR10
- BR20
- BR20M
- BR40
- BR45



#### 2.4 Conectabal<sup>®</sup> - Commercial Balustrades

**14** x Commercial Balustrade models have been included with the provision of railing types for stair placement for applicable models within the range. These products can be documented with a variety of common mounting options (Top Mount, Face Mount and Angle Mount) using the dedicated Railing types provided.



#### 2.5 Tuffrail<sup>®</sup> - Industrial Handrails

**4** x Industrial Handrail products have been included with common mounting options (Top Mount, Face Mount, Channel Mount and Angle Mount) applied to dedicated Railing types.

- TR10
- TR20
- TR25
- TR30



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# 2.6 Ezibilt<sup>®</sup> - Trolley Bays

**7** x Trolley Bay families have been provided. These components are non-hosted Specialty Equipment Families and contain default Family Types to generate a total of **18** x size and configuration combinations across the range.



# 2.7 Intac<sup>®</sup> - Tactile Indicators

**4** x Tactile Indicator families have been provided as non-hosted Specialty Equipment models. Each of these files contain default Family Types to generate a total of **9** x colour variations for both the Directional and Hazard styles of tactile indicator.



# 2.8 Ezibilt<sup>™</sup> - Modular Ramp, Deck & Stair System

**2** x loadable families have been included to allow for documenting the Ezibilt<sup>™</sup> modular solution. These are non-hosted Specialty Equipment models which have been created as standalone platform and stair modules. Default Family types have been defined to allow for documenting the various walkway/tread material options, as well as specifying the region (AUS/NZ) to ensure compliance when placing a ramped platform module.



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# 2.9 Virtual Showroom / QA Project File

A sample Revit project has been created that contains all families and types laid out side by side. This project contains sample Floor Plans, Elevations, Sections, 3D perspectives and a preconfigured Schedule allowing Revit users to quickly assess the families' performance in a project environment.

These Revit assets can be 'Copied & Pasted' into another Revit project as an alternative workflow to loading the separate families and/or railing types into your project.



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## 2.10 Contextual Project-Based Guide

To increase understanding and usability of the Moddex Revit railing systems, several common stair railing arrangements have been provided within a Project based user guide within the Virtual Showroom file to illustrate the progressive steps of the modelling process and provide contextual instructions.

Text prompts and colour-coded detail lines exist in a dedicated Plan View (**04 Ground Floor -User Guide**) to show how the various railing elements have been drawn without the necessity to manually edit and interrogate each instance.



Colour-coded model lines can also be viewed in a 3D view to provide vital insight into how the railing sketches are generated for each of the railing types. When combined, these overlaid railing types create the overall assembled system.



The railing documentation processes outlined in the contextual user guide are specific to the stair types and configurations used in the example project. There may be a requirement to adapt the outlined workflow to satisfy project specific variables.

It is recommended that both this document and the contextual user guide be used in conjunction with the Moddex Guide to Handrail Compliance document. It provides further insight into limitations and the correct application of specific railing types and is available to view or download at <u>https://offers.moddex.com/thank-you-handrail-compliance-ebook-download</u>.

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# 3.0 Technical Details

## 3.1 Type Catalog Families

To minimise unnecessary types being loaded into a Revit project, the Moddex Ezibilt platform family has been created with an accompanying Type Catalog file. When an Ezibilt platform is loaded into a Revit project, the 'Specify Types' dialog opens. Properties can be filtered at the top of the table to narrow down the selection giving full control over the family types that will be loaded into the project based on region, size, or walkway type.

nily:	Types:								
Module_Platform_Moddex_E 🔺	Туре	Region	ModuleWidth	Model	Type Comments				
		(all)	(all) 🗸	(all) 🗸	(all)				
	Timber Decking - 600w - AUS (EB-PF-600)	(all)	600.0	EB-PF-600	Ezibilt - Platform Module - 600mm - Timber Decking				
	Timber Decking - 1200w - AUS (EB-PF-1200)	Australia	1200.0	EB-PF-1200	Ezibilt - Platform Module - 1200mm - Timber Decking				
	Timber Decking - 1800w - AUS (EB-PF-1800)	New Zealand	1800.0	EB-PF-1800	Ezibilt - Platform Module - 1800mm - Timber Decking				
	Timber Decking - 2400w - AUS (EB-PF-2400)	Australia	2400.0	EB-PF-2400	Ezibilt - Platform Module - 2400mm - Timber Decking				
	Concrete Walkway - 600w - AUS (EB-PF-600)	Australia	600.0	EB-PF-600	Ezibilt - Platform Module - 600mm - Concrete Walkway				
	Concrete Walkway - 2400w - AUS (EB-PF-2400)	Australia	2400.0	EB-PF-2400	Ezibilt - Platform Module - 2400mm - Concrete Walkway				
	Concrete Walkway - 1800w - AUS (EB-PF-1800)	Australia	1800.0	EB-PF-1800	Ezibilt - Platform Module - 1800mm - Concrete Walkway				
	Concrete Walkway - 1200w - AUS (EB-PF-1200)	Australia	1200.0	Ezibilt - Platform Module - 1200mm - Concrete Walkway					
	FRP Walkway - 1200w - AUS (EB-PF-1200)	Australia	1200.0	EB-PF-1200	Ezibilt - Platform Module - 1200mm - FRP Walkway				
	FRP Walkway - 1800w - AUS (EB-PF-1800)	Australia	1800.0	EB-PF-1800	Ezibilt - Platform Module - 1800mm - FRP Walkway				
	FRP Walkway - 2400w - AUS (EB-PF-2400)	Australia	EB-PF-2400	Ezibilt - Platform Module - 2400mm - FRP Walkway					
	FRP Walkway - 600w - AUS (EB-PF-600)	Australia	600.0	EB-PF-600	Ezibilt - Platform Module - 600mm - FRP Walkway				
	Grated Walkway - 1200w - AUS (EB-PF-1200)	Australia	1200.0	EB-PF-1200	Ezibilt - Platform Module - 1200mm - Grated Walkway				
	Grated Walkway - 1800w - AUS (EB-PF-1800)	Australia	1800.0	EB-PF-1800	Ezibilt - Platform Module - 1800mm - Grated Walkway				
	Grated Walkway - 2400w - AUS (EB-PF-2400)	Australia	2400.0	EB-PF-2400	Ezibilt - Platform Module - 2400mm - Grated Walkway				
	Grated Walkway - 600w - AUS (EB-PF-600)	Australia	600.0	EB-PF-600	Ezibilt - Platform Module - 600mm - Grated Walkway				
	Timber Decking - 600w - NZ (EB-PF-600)	New Zealand	600.0	EB-PF-600	Ezibilt - Platform Module - 600mm - Timber Decking				
	Timber Decking - 1200w - NZ (EB-PF-1200)	New Zealand	1200.0	EB-PF-1200	Ezibilt - Platform Module - 1200mm - Timber Decking				
	Timber Decking - 1800w - NZ (EB-PF-1800)	New Zealand	1800.0	EB-PF-1800	Ezibilt - Platform Module - 1800mm - Timber Decking				
	Timber Decking - 2400w - NZ (EB-PF-2400)	New Zealand	2400.0	EB-PF-2400	Ezibilt - Platform Module - 2400mm - Timber Decking				
	Concrete Walkway - 600w - NZ (EB-PF-600)	New Zealand	600.0	EB-PF-600	Ezibilt - Platform Module - 600mm - Concrete Walkway				
	Concrete Walkway - 2400w - NZ (EB-PF-2400)	New Zealand	2400.0	EB-PF-2400	Ezibilt - Platform Module - 2400mm - Concrete Walkway				
*	Concrete Walkway - 1800w - NZ (EB-PF-1800)	New Zealand	1800.0	EB-PF-1800	Ezibilt - Platform Module - 1800mm - Concrete Walkway				

To load a Type Catalog, you must load the family through the Revit ribbon bar 'Insert Family' command and browse to the file location. Dragging and dropping the RFA file into a Revit model will cause Revit to load the family with only a single generic type ignoring the associated Type Catalog list.

- The TXT file must be in the same directory as the RFA file, with the same filename. Take care if moving files into BIM libraries or project folders.
- The RFA family must be opened from a file menu in Revit not through drag and drop.
- Only load variations you think will be needed to reduce the number of items in the list of available object types.

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## **3.2** Basic Materials Library

Basic, non-intrusive materials have been included in the Revit library.

Materials are named with the same hierarchical structure as the families: <Type>\_<Manufacturer>\_<Descriptor> to fit in with existing material libraries. All unused material assets have been deleted from the families, in addition to purging out all material assets where possible.

Material Browser - Steel_Galvanised_Moddex		? ×
Search C	Identity Graphics Appearance +	
Name	s Steel_Galvanised_Wouldex	•••
Polymer_FibreReinforced_Moddex_Vellow_Grated		
PowderCoat_Dulux_Duralloy_BlackNightSky_Satin	The formation	
PowderCoat_Dulux_Duralloy_Monument_Satin	Name Steel_Galvanised_Moddex	
PowderCoat_Dulux_Duralloy_Surfmist_Satin	Keywords Metal,Steel,materials,metal	
PowderCoat_Dulux_Duralloy_WoodlandGrey_Satin	▼ Parameters	- 1922
ProtectiveCoating_Dulux_AS2700_GoldenYellow_Y14	galvanized_small_color.jpg	
Railing_Customisable_Moddex	Roughness galvanized_small_rough.png	•
Steel_Galvanised_Moddex	Relief Pattern (Bump)	
	Cutout	
Steel_Galvanised_Moddex_Grated	Advanced Highlight Controls	
Steel_Mesh_Moddex		
Steel_Stainless_Moddex_Satin		
🛅 - 🚇 - 🗏 🔞	X	
	OK Cancel	Apply

Revit materials that use custom Image Textures will appear grey or a flat colour without the image if the image cannot be "found" by Revit. This means the process of downloading and linking the Image folder to Revit needs to be done just once. After downloading the Material Images for the selected product range, follow the steps below to "point" Revit to these images:

**Step 1** – If your office has an existing location for Material Assets, copy all associated Material Texture Images into the given folder. Alternatively, create a local folder on your computer to place all custom Material Assets into

Step 2 – Once images are in the correct location, in Revit, select 'File', then select 'Options'.

**Step 3** – In the Options dialog, select 'Rendering' then the green plus '+' sign.

**Step 4** – Paste the folder path from Step 1, or select the three dots, and navigate to that folder, then select 'OK'.

Once this has been completed, any previously opened views set to realistic will need to be changed to shaded, then back to realistic to see the changes. After the Material Images folder has been established, Steps 2, 3 and 4 do not need to be repeated for each product range, simply copy the images into the same shared folder. If multiple versions of Revit are in use, Steps 2, 3 and 4 will need to be repeated for each Revit version.

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#### 3.3 Trolley Bay Placement and Options

The Moddex library contains separate dedicated Trolley Bay family files for Single, Double and Triple Bay widths, and provides each in both a back-to-back and standard single length configuration. All Trolley Bay families contain several default Types to allow for quickly loading and interchanging between a Standard (750mm) or Wide (900mm) bay width, which will update overall component width based on the quantity of trolley bays defined the selected family.

The Multi-Bay Corral family (*TrolleyBay\_Moddex\_MultiBayCorral*) can be used for larger applications where a 4, 6 or 8 trolley bay width is desired.

All Moddex trolley bay families contain the type-based *SignBoard* parameter that can be used to toggle on/off visibility of the signage board geometry in all views.



#### 3.4 Tactile Indicator Placement and Options

The range of Tactile Indicator families have been separated out by indicator style (Directional and Hazard). A version of each indicator style exists as both a single tile that can be placed and oriented individually within the project, as well as a line-based version which allows for quickly generating repeating continuous tiles of a common type.



It is recommended that the Line-Based version of the content be placed in either a Plan or 3D view, where it is easiest to define placement conditions. Click once to select the desired startpoint, move the mouse cursor to the desired length/angle, and click a second time to specify the endpoint. This will array a common tactile tile type along the desired path, with the quantity of individual units being automatically validated to the nearest full tile width (300mm).

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roperties			×
	TactileIndicator_N Yellow (IN153)	Noddex_Intac_Directional_M	ultiples 🗸
Specialty E	quipment (1)	~ 1	🔠 Edit Type
Constraints			\$
Length		1800.0	
Offset		0.0	
Work Plan	e	Floor : Generic 150mm	
Electrical - I	Loads		\$
Panel			
Circuit Nur	mber		
Dimensions			\$
Number		6	
Identity Dat	ta		×

Each family has been populated with  $\boldsymbol{g}$  x default Family Types each, to allow for quickly loading and interchanging between the various colour options, with relevant product codes populating based on selection.



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#### 3.5 Railing Components and Assembled Systems

All Moddex Railing systems have been created to include appropriate post, baluster, and rail geometry at locations and spacings based on the corresponding fabricated product. Within the Revit project browser, the individual components used within any of the assembled railing systems are located directly under the *Railings* category as either Balusters, Posts, Panels, or Handrail/ Top Rail Types. The *Railing* subcategory located under the *Railings* parent category in the project browser is where all assembled systems are located that are used for documenting the Moddex range within the project environment. These railing types can be dragged directly into an active view window to automatically launch the *Create Railing Path* tool.

⊢−Railinα
Balustrade_Commercial_Moddex_Conectabal_Balustrade_DoubleOffsetHandrail_CB50_AngleMount
Balustrade_Commercial_Moddex_Conectabal_Balustrade_DoubleOffsetHandrail_CB50_AngleMount_Post_Single
Balustrade_Commercial_Moddex_Conectabal_Balustrade_DoubleOffsetHandrail_CB50_AngleMount_Posts
Balustrade_Commercial_Moddex_Conectabal_Balustrade_DoubleOffsetHandrail_CB50_FaceMount
Balustrade_Commercial_Moddex_Conectabal_Balustrade_DoubleOffsetHandrail_CB50_FaceMount_Post_Single
Balustrade_Commercial_Moddex_Conectabal_Balustrade_DoubleOffsetHandrail_CB50_FaceMount_Post_Single_Landing
Balustrade_Commercial_Moddex_Conectabal_Balustrade_DoubleOffsetHandrail_CB50_FaceMount_Posts
Balustrade_Commercial_Moddex_Conectabal_Balustrade_DoubleOffsetHandrail_CB50_FaceMount_Posts_Landing
Balustrade_Commercial_Moddex_Conectabal_Balustrade_DoubleOffsetHandrail_CB50_FaceMount_Stair
Balustrade_Commercial_Moddex_Conectabal_Balustrade_DoubleOffsetHandrail_CB50_TopMount
Balustrade_Commercial_Moddex_Conectabal_Balustrade_DoubleOffsetHandrail_CB50_TopMount_Post_Single
Balustrade_Commercial_Moddex_Conectabal_Balustrade_DoubleOffsetHandrail_CB50_TopMount_Post_Single_Landing
Balustrade_Commercial_Moddex_Conectabal_Balustrade_DoubleOffsetHandrail_CB50_TopMount_Posts
Balustrade_Commercial_Moddex_Conectabal_Balustrade_DoubleOffsetHandrail_CB50_TopMount_Posts_Landing
Balustrade_Commercial_Moddex_Conectabal_Balustrade_DoubleOffsetHandrail_CB50_TopMount_Stair

To maintain the most accurate representation of the selected railing type, it is recommended that adjustments not be made to the default Rail Structure or Baluster Placement type properties (outside the options outlined in Section 3.5.6):

						Family:	Railing	Type: Barner_Bicycle_No	odder_Bikesafe_	TopRol_BolustradeInfil,	JIS40_TopMou	et.	
						Main pa	Ben		(j)		11		
							Name	Baluster Family	Base	Base offse	т	top offse	Debte
						1	Pattern start	N/A	N/A	N/A	N/A	N/A	Deboose
						2	Regular baluster	Baluster_Moddex_Intermediate_Round : 16mm	Bottom Rail	0.0	Upper Rail	0.0	19
						3	Regular baluster	Baluster_Moddex_Intermediate_Round : 16mm	Bottom Rail	0.0	Upper Rail	0.0	Change .
						4	Regular baluster	Baluster_Moddex_Intermediate_Round : 16mm	Bottom Rail	0.0	Upper Rail	0.0	
						5	Regular baluster	Baluster_Moddex_Intermediate_Round : 16mm	Bottom Rail	0.0	Upper Rail	0.0	
						6	Regular baluster	Baluster, Moddex, Intermediate, Round : 16mm	Bottom Rail	0.0	Upper Rail	0.0	
						7	Regular bakaster	Baluster_Moddex_Intermediate_Round : 16mm	Bottom Rail	0.0	Upper Rail	0.0	
						8	Regular baluster	Baluster_Moddex_Intermediate_Round : 16mm	Bottom Rail	0.0	Upper Rail	0.0	
			011.1			0.000	Baluster Per Tread On	Store Beladers Per Tread: 2				Selaster Ferrily: Talat	er_Moddes_246
_	Name	Height	Offset	Profile	Material	Posts							
	Top Rail	1400.0	-158.0	Profile_Moddex_Round : Standard	Railing_Customisable_Moddex		1.1.1						
	Upper Rail	1098.0	0.0	Profile_Moddex_Round : Standard	Railing_Customisable_Moddex		Name	Baluster Family		Base	Base offset	Top	
	Bottom Rail	148.0	0.0	Profile_Moddex_Round : Standard	Railing_Customisable_Moddex	1	Start Post	RalusterPost Moddex RikeSate : RSID-TooMount	r-Start He	w2 0	0	Ten Bail	
						2	Conter Post	None	He	v2 0	0	Top Rail	
						3	End Post	BalusterPost_Moddex_BikeSafe : BS40-TopMount	e-End Ho	ost 0	0	Top Rail	
						3	End Post	BalusterPost_Moddes_BikeSate : BS40-TopMount	t-End Ho	0 5e	0	Top Rail	
						3 Conter	End Post	BalusterPost_Moddex_BikeSafe : BS40-TopMount	t-End Ho	o	0	Top Rail	

Please note that inherent limitations of the Revit railing tool may in some instances generate unfavourable geometry. Review of the specified railing path or railing type selected might be necessary in these occurrences.

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# 3.5.1 General Railing Considerations

With certain Moddex railing types being suitable for hosting to ramps/stairs, it is possible to have a railing instance automatically adopt the angle of certain hosting elements. This can be achieved by using the Pick New Host tool and clicking the desired ramp/stair geometry to assign it as the railing host. This step can be carried out prior to drawing the railing path or retrospectively by selecting an existing railing instance.



When using the Moddex railing types, it is recommended that the chain option is active to easily specify breakpoints along the length of any instance. This is particularly applicable where the railing encounters changes in direction or slope, as the railing's sketch linework will need to reflect these altered conditions.



If the railing has been hosted to a model element, it is possible to edit the railing's path and click the arrow at either end of the sketch path to change a railing's direction.

\*Please Note – The direction of the railing path should generally always follow the slope of the hosting element from bottom to top (as shown in screenshot below left).

There may be a requirement to toggle the flip arrows to ensure correct facing direction of rails and baluster members.



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# 3.5.2 Railing Mounting Options

Dedicated types have been created for the common mounting options across the Moddex railing product ranges where applicable. The mounting option that has been applied to any of the Revit railings will feature in its Type name to assist in navigating the library.



For any Top Mount, Angle Mount or Inground Mount railings, the sketch line defined while in placement mode will dictate the position of the centre of the vertical baluster elements:



The sketch path for any Face Mount and Channel Mount railings will define the position of the back face of the mounting bracket, with balusters and rail elements offsetting automatically to ensure that the railing aligns correctly with the hosting face:



By always aligning the railing's sketch line to the outer face of the hosting element it is possible to swap between railing types of differing mounts without needing to redraw the railing path. To achieve this, it is important that any Top Mount, Angle Mount or Inground Mount railings have their **Offset from Path** parameter updated to ensure an inset from the base brackets to the edge of the hosting element. The example below shows how a railings path can be shared between varying mount types when used in conjunction with the **Offset from Path** parameter.



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#### 3.5.3 Mesh Infill Panels

Several Moddex railing types contain a mesh infill panel. A standalone railing type for the mesh panel itself has been included for the applicable product codes and mount types to allow for adding to your design where a full infill panel width is not achieved.

The railing types that this can be used are:

- CB10M
- CB20M
- BR20M

The images below demonstrate a run of Bridgerail - BR20M railing that does not satisfy the post spacing requirements to automatically have the mesh infill generated to fill the end most post spacing. This can be addressed by adding an instance of the relevant 'MeshPanel' railing type, ensuring the product and mount type within the railing type aligns with that of the railing type that it is intended to be integrated into. The location of the sketch line will be identical for both the mesh panel infill and the assembled railing, with the end points of the mesh infill able to be adjusted to fill the post spacings as required.



## 3.5.4 Wall Mounted Accessible Handrails

Several Assistrail models (AR150 & AR160) contain no post elements, with the railing and associated brackets intended for direct mounting to the face of a wall.



It is important to consider this when integrating these railing types, as the sketch linework created when drawing the railing path will not define the post centres. Instead, the sketch linework should be aligned with the face of the hosting wall to ensure accurate placement.



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#### 3.5.5 **Stair Hosted Railings**

The table below outlines all models within each of the product ranges that currently have been provided a dedicated railing type for placement on continuous stair runs of various shapes:

Assistrail	Conectabal	Tuffrail
AR45	CB10	TR20
AR130	CB30	TR30
AR140	CB40	
	CB50	

For those models that are suitable for hosting to complex stair arrangements (see table above), a range of overlaid railing types may be required to achieve the combined assembled system. Generally, no Moddex railing type will be suitable for hosting to stairs unless contained in the table above or specific reference has been made to 'stair' within its type name.

The below image shows the 3 x Revit railing types that have been used to build up a CB10 railing hosted to an L-shaped stair configuration:



The overall system consists of 2 x continuous railing elements (orange) that are drawn as separate railing instances as per below plan view:



Note that the second click point (2) for these continuous railings have been offset by a tread depth from the start of the stairs. This may be necessary to ensure the start post correctly hosts to the bottom level.





The post elements are then added by using the dedicated post-only railing types for the corresponding model. These contain the suffix **'Posts'** in their type name, and as shown below a separate type has been created for the level landing (blue) and the sloped (pink) portions of the hosting stairs:



Post-only railing types typically exist as shown in the above screenshots, where a post is automatically generated at both the start and endpoint of any sketch lines. However, for increased flexibility, a separate post-only railing type has been provided (for both sloping and landing applications) where a post is only displayed at the start point of the railing sketch. These railing types contain the suffix **'Post\_Single'** and allow for independent placement of single posts for greater customisation.



It is recommended that once all required railing components have been generated and hosted appropriately, that a review of the overall system be conducted to ensure that all posts and rail elements have been drawn in the correct direction. If any instances are incorrectly facing this can be rectified by selecting the railing instance and toggling provided flip arrows.

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#### 3.5.6 Railing End Terminations

There may be a requirement to duplicate and manipulate certain Moddex railings to achieve specific design outcomes. By default, all railing products have been created with a dedicated Start and End baluster element to achieve a complete system. It is, however, possible to duplicate these default railing types and manipulate them to satisfy scenarios where a start and/or end post is not desired.

Several examples of these railing types have been included in the Virtual Showroom file for reference and feature the suffix '\_EndTerminated' in their type names.

The below example illustrates how this workflow could be adopted to create a railing that follows a ramp and terminates at a wall. The screenshot below shows that the Assistrail AR60 Top Mount rail features an End baluster and a top rail end closure bend that interacts with the wall geometry.



To address this, first duplicate the desired railing and name to include "\_EndTerminated" as a suffix to the railing type. Open the Type Properties dialog and access the **Baluster Placement** options. Set the End Post type to 'None' using the provided drop down arrow to deactivate its visibility.

sily	: Railing	Type: Handrail_Acces	sible_Moddex	_Assistrail_S	ingleUnsetHa		A GIL_M000_	· open	
29(1	Name	Baluster Family	Base	Base	t Top	Top	Dist. fro	m us	c Delete
68	Pattern star	N/A	N/A	N/A	N/A	N/A	N/A	N	Duplicat
	Regular bal	BalusterPost_Moddex_Assistrail_Type2 : AR60-TopMount	Host	0.0	Top Rail 8	EI -48.3	2000.0	0	0 Up
5	Pattern end	N/A	N/A	N/A	N/A	N/A	0.0	N	Down
ist	ify: Beg	inning Chicess Length Fill : None	v					Pattern	n Length: 2000 Spacing: 0.0
ust	ify: Beg Jse Baluster Pe	rTread On Stairs Balusters Per Tread: 2	×			Balus	ter Family:	Balus	n Length: 2000 Spacing: 0.0 iter_Moddex_Int
ust ] (	ify: Beg Jse Baluster Pe s Name	r Tread On Stairs Balusters Per Tread: 2 Baluster Family	Base	Base	Тор	Balus Top offset	ter Family: Space	Balus C	n Length: 2000 Spacing: 0.0 Iter_Moddex_Ini
	thy: Beg Jse Baluster Pe Name Start Post	r Tread On Stairs Balusters Per Tread: 2 Baluster Family BalusterPost, Modder, Assistrail Type2 : AR60-TopMount	Base	Base offset	Top op Rail El	Balus Top offset 48.3 0.	ter Family: Space	Balus C 0.t	n Length: 2000 Spacing: 0.0 :ter_Moddex_Inf
	thy: Bey Jse Beluster Pr Name Start Post Corner Post	Tread On Stars Baluster Par Tread: 2 Baluster Family BalusterPost, Moder, Assistral, Type2: AR60-TopMount None	Base Host Host	Base offset 0.0 Tr 0.0 Tr	Top op Rail El - op Rail El (	Balus Top offset 48.3 0. 0.0 0.	ter Family: Space 0	Balus C 0.t	n Length: 2000 Spacing: 0.0 :ter_Moddex_Inf
lust osts 1 2 3	thy: Beg Joe Baluster Pe Name Start Post Corner Post End Post	rread on Stairs Baluster Per Tread: 2 Baluster Family Baluster Family Rome Composition Composition Composition Composition Baluster Family Baluster Family Composition Composi	Base Host Host Host	Base offset 0.0 Tr 0.0 Tr 0.0 T	Top op Rail El op Rail El op Rail El	Balus Top offset 48.3 0. 0.0 0. 48.3 0.	ter Family: Space 0 0	Balut C 0.0 0.0	n Length: 2000 Spacing: 0.0 ster_Moddex_Inf

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As this railing uses a Top Rail element with closure bends at both ends, it is also necessary to create an end terminated version of the Top Rail that only features the Start closure bend.

This can be achieved by selecting this newly created End Terminated version of the railing and accessing the Type Properties. Locate the 'Top Rail' parameter group and click the three dots to the right of the Top Rail Type. Duplicate the existing Top Rail type, and again include '\_EndTerminated' as a suffix to this newly created top rail. Before selecting OK, ensure that the Extension (End/Top) parameters are set to 'None' and '0.0mm' respectively. Finally, ensure the End/Top Termination type is also set to 'None' to configure this top rail to only include a post and closure bend at the bottom of the ramp (start).

Type Propert	ies			< Type Pro	operties				
Family:	System Family: Railing	×	Load	Family:	a S	ystem Family: Top Rail Type		~	Load
Type:	Handrail_Accessible_Moddex_A	$eq:ssistral_singleOffsetHandral_Kerbral_AR60\_TopMount\_EndTerminated \\ \lor$	Duplicate	Type:	T	opRail_Moddex_Assistrail_AR60_End	erminated	~	Duplicate
Type Parame	eters		Rename	Type P	arameter	5			Kename
	Parameter	Value	-			Parameter		Value	=
Construc	tion		2	Mate	erials and	d Finishes			2
Railing He	eight	1000.0		Mater	rial		Railing_Cu	stomisable_Moddex	
Rail Struc	ture (Non-Continuous)	Edit		Exter	nsion (B	eginning/Bottom)			8
Baluster P	lacement	Edit		Exten	nsion Styl	le	None		
Baluster C	Offset	0.0		Lengt	th		563.4		
Use Landi	ing Height Adjustment	0		Plus T	Tread De	epth			
Landing H	leight Adjustment	0.0		Exter	nsion (Er	nd/Top)			8
Angled Jo	ins	Add Vertical/Horizontal Segments		Exten	nsion Styl	le	None		
Tangent J	oins	Extend Rails to Meet		Lengt	th		0.0	J	
Rail Conn	ections	Weld		Term	nination	\$			2
Material	s and Finishes			Begin	nning/Bo	ottom Termination	100mm Re	eturn @ 48.3 Diameter-Steel	
Material				End/1	Top Tern	mination	None		
Ton Rail			2	Ident	tity Data	3			*
Use Top R	tail			Туре	Image				
Height		1000.0		Keyno	ote				
Type		TopRail Moddey Assistrail AR60 EndTerminated		Mode	el				
Mandaall			Ļ	Manu	ufacturer		Moddex		
What do the	se properties do?			What d	do these p	aroperties do?			
<< Previe	ew	OK Cancel	Apply	<	Preview			OK Cancel	Apply



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# 3.5.7 Railing Material Options

Being that the materials assigned to Revit railing types are defined within the nested rail and baluster componentry, all Moddex railings have been assigned the material 'Railing\_Customisable\_Moddex'. This is to allow for quickly updating the material appearance of all Moddex railing componentry within a project without needing to update or duplicate the baluster families and top/handrail system types.

By default, the appearance asset assigned to this 'Railing\_Customisable\_Moddex' material is galvanised steel, however, this can be updated by first opening the material editor and locating this material (1). Navigate to the Appearance tab (2) and select the icon to replace the existing appearance asset (3). This will open the Asset Browser from which the Document Assets can be selected (4). From here any of the appearance assets for an appropriate material residing within the Revit project can be assigned (5) to update the material appearance of all loaded Moddex railings simultaneously.



The Moddex Virtual Showroom file contains the following 7 x common material options for substitution using the steps outlined above:

- Stainless Steel Steel\_Stainless\_Moddex\_Satin
- Marine Grade Aluminium Aluminum\_MarineGrade\_Moddex\_Satin
- Black Satin Powdercoat PowderCoat\_Dulux\_Duralloy\_BlackNightSky\_Satin
- Monument Satin Powdercoat PowderCoat\_Dulux\_Duralloy\_Monument\_Satin
- Surfmist Satin Powdercoat PowderCoat\_Dulux\_Duralloy\_Surfmist\_Satin
- Woodland Grey Satin Powdercoat PowderCoat\_Dulux\_Duralloy\_WoodlandGrey\_Satin
- Golden Yellow Powdercoat ProtectiveCoating\_Dulux\_AS2700\_GoldenYellow\_Y14

This workflow can be replicated for any appropriate finish option suitable for application to the railing products. The Dulux plugin, available at <u>https://bimcontent.com/dulux-australia</u> can be used to import any alternate powder coat colours to apply to your railings.

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#### 3.6 Ezibilt<sup>™</sup> Modular Ramp, Stair & Deck System

A loadable family has been provided for both the Ezibilt<sup>™</sup> platform/ramp and stair modules. These are intended to be placed and positioned individually as would be the case on-site, providing accurate scheduling of each individual module's type and size.

Default family Types have been created for both the platform/ramp and stair components to represent the 4 primary walkway/tread material options:



#### 3.6.1 Platform/Ramp Modules

It is recommended that only Types specific to the project's location are loaded via the Type Catalog i.e Australia or New Zealand. This will not only keep the project file leaner but will also ensure that any placed ramp module always satisfies local building standards.

Being non-hosted components, the Ezibilt modules can be placed and oriented as desired within any active Revit view window. The overall platform height can be defined using the **DesiredPlatformHeight** parameter, which will validate via the **ManufacturerOverallHeight** parameter when an input value exceeds the minimum or maximum allowable height.



The provided **RampModule** parameter allows for toggling between a level platform and ramp module. By activating this instance parameter, the slope angle of the selected module will automatically validate to the maximum allowable ramp slope dictated by the regional standards to ensure compliance (Australia – 1:14, New Zealand – 1:12).

Properties	×	RampModule - OFF	RampModule = ON
Module_Platform_Moddex_Ezil Timber Decking - 1800w - AUS	bilt 5 (EB-PF-1800)		
Specialty Equipment (1)	✓ ⊞ Edit Type ★		
RampModule 🛛			
LevelModule		± ±	± ±

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To create a combined Ezibilt ramp and deck system, it is recommended to first place the topmost landing platform(s) and establish their heights using the **DesiredPlatformHeight** parameter. Once complete, place the desired size of Ezibilt module (with its **RampModule** parameter active) in the required location and orientation.

This ramped module can then be copied across multiple times, ensuring that the copied instances are aligned with the built-in reference planes of the neighbouring module.



Opening a section view of the combined system is recommended to adjust the heights of each ramp module. The instance-based *ShowSectionRampLine* parameter can be activated to assist in vertically aligning neighbouring ramp modules in a continuous run.

*			
650			

Using the Align tool, first select the dashed line denoting the lower height of the top most ramp module, followed by the *PlatformHeight* reference of the second from top ramp module to create a continuous ramped walkway. Repeat this step for each neighbouring ramp module until contact with the ground level is established and the bottom wedge element becomes visible.



Once satisfied with the configuration of the ramped modules, the **ShowSectionRampLine** parameter can now be toggled off to hide the guiding linework. At this point any ramped module that directly connects to a level platform module can have its **TopRampModule** tick box parameter activated to address clashing structural members for a cleaner finish.



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Any Ezibilt module can have timber decking side and/or end walls applied using the provided **ShowSideWalls** and **ShowEndWalls** tick box parameters.



#### 3.6.2 Stair Module

When placing an Ezibilt stair module, its **DesiredPlatformHeight** parameter should be set to match that of the landing platform module to which it is intended to access. Like the platform component module (Section 3.6.2), this desired overall height will be validated via the **ManufacturerOverallHeight** parameter to limit the stair module's height to a value between the minimum and maximum tolerances.



Instance based control has been provided to nominate both a **DesiredRiserHeight** and **DesiredTreadSpacing**. Based on a stair module's vertical height, these desired values will be automatically validated via the **ActualRiserHeight** and **ActualTreadSpacing** parameters to achieve equal spacings and to also ensure that the slope limitations of the Ezibilt stair module are not exceeded.



Like the platform module, the *ShowSideWalls* tick box parameter can be activated to toggle on the visibility of timber deck walls on either side of the module's frame.





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## 3.6.3 Hosting Railings

As Revit railings require an appropriate system family to host to, several workflows have been outlined below depending on the complexity of the overall Ezibilt configuration and version of Revit that is being used. Examples of each have been provided in the Moddex Virtual Showroom file as a reference.

#### Wall Hosting

For basic configurations where all slopes within the system follow a single straight line, it is recommended that the provided wall types be used, and their profile edited to act as the railing host. There are 2 x wall types included in the Virtual Showroom that can be used depending on if the Ezibilt system has side walls visible or not.

#### Step 1

In a plan view draw the appropriate wall type from the end most point of the bottom ramp wedge to the outer most point of the connecting landing platform. If there is a connecting stair module, be sure to extend the wall beyond the bottom tread.



#### Step 2

Select the wall instance and under the **Modify** tab select the **Edit Profile** tool. In a sectional view, adjust the walls profile to align with the top face of any inline ramp, platform or stair modules.



#### Step 3

In a plan view, draw in the desired Moddex railing products ensuring their sketch path is not sitting away from the hosting wall element.



Once complete, select all lengths of railing and select the **Pick New Host** option from the **Modify** tab. At this point the edited wall created in the previous steps can be selected, with all railings automatically updating their position to align with the Ezibilt system beneath.







#### Toposurface Hosting (Revit 2019 - 2023)

For more complex Ezibilt arrangements where there are multiple changes in direction, it is recommended that the Revit site components be used as the hosting element for the railings.

#### Step 1

Select all platform, ramp and stair modules within the configured system and ensure the **ShowPlanSetoutHeight** tick box parameter is active for each. This will display the height of all modules at both ends in a plan view to more easily create the necessary Toposurface host.



#### Step 2

Under the **Massing & Site** tab, select the **Toposurface** tool and ensure that the **Place Point** option is selected. Place Toposurface points at each corner of all Ezbilit modules ensuring that the Elevation value is updated to reflect what is shown in the plan setout height labels.



#### Step 3

Once all points have been placed, click the green tick in the **Modify** tab to generate the Toposurface geometry that should now be following the slope of the Ezibilt system. Draw in the desired Moddex railing products and with them all selected use the **Pick New Host** tool to assign the newly created Toposurface element.



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#### Toposolid Hosting (Revit 2024 -)

With changes to the way that Revit 2024 generates site componentry, there is a necessity to alter the above workflow to suit the updated Toposolid tool.

#### Step 1

Launch the **Toposolid** tool from within the **Massing & Site** tab and generate boundary linework in a plan view around all outside edges of the configured Ezibilt system.



#### Step 2

With the Toposolid element selected, under the **Modify** tab find and select the **Modify Sub Elements** tool. Add a Split Line to all edges of non-ramped landing platforms that are not currently captured in the Toposolid's boundary linework. Multi-select all points/boundary lines associated with any level platform and update their Elevation value to match what is displayed in the plan setout height labels.



#### Step 3

In a plan view, draw in the desired Moddex railing products ensuring their sketch path is not sitting away from the hosting Toposolid element. Once complete, select all lengths of railing and select the **Pick New Host** option from the **Modify** tab. At this point the newly created Toposolid element can be selected, with all railings automatically updating their position to align with the Ezibilt system beneath.

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# 4.0 Closing Statement

The overarching goal in creating this Moddex Revit content library is to increase the ease in which Revit users can design, document, and specify Moddex products within the Revit environment. Moddex is committed to the continued development of this Revit content library as the industry and BIM workflows evolve over time.

We welcome your feedback and insights to ensure we can continue to accommodate your Revit content requirements.



End of Document -

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