



RCCS-23 User Guide

Table of Contents

1. Introduction	3
1.0 What is RCCS?	3
1.1 What is a Revit Curtain Wall?	3
1.2 What is a Nested Curtain Wall?	4
1.3 When to use a Nested Curtain Wall	5
1.4 When to Split an RCCS Curtain Wall	6
2. Getting Started	7
2.0 Starting a new RCCS project	7
2.1 Creating & Using the RCCS Host Curtain Wall (RCCS-HW)	7
3. Curtain Wall Panels	7
3.0 What is a Revit Curtain Wall Panel?	8
4. 2D Mode & 3D Mode	9
4.0 What is RCCS 2D Mode?	9
4.1 What is RCCS 3D Mode?	10
5. The RCCS Ribbon Toolbar	11-17
6. Recommended RCCS Workflow	18
Step 1 : Sketching Your Design with 2D Lines	18
Step 2 : Snap & Place Curtain Grids	19
Step 3 : Execute Relevant AI Function	20
Step 4 : Fine Tuning & Linking Your RCCS Model	21
7. RCCS-23 User Guide Summary	22

1. Introduction

1.0 What is RCCS?

Realtime Custom Cabinetry System is a revolutionary cabinetry modeling system developed by **Advanced BIM Systems**, that provides a superior alternative method for designing storage systems in real time, by minimizing the removal of the user from the main design interface. Traditionally a designer had to rely upon searching through endless online sources, or purchasing, or creating complex libraries of individual cabinetry components. Even after establishing a cabinetry library, users still have to search for, load and place individual cabinetry components awkwardly together without any parametric relationship between other adjacent cabinetry components.

RCCS changes all that by integrating seamlessly into Revit's own native curtain wall tool set. Each **RCCS** component is hosted within a Revit curtain wall cell (panel), and therefore has a direct parametric relationship to each adjacent **RCCS** component via the adjustable Revit curtain grid system.

Each **RCCS** component within an **RCCS** curtain wall can easily morph into any number of cabinetries, framing or appliance options without the designer having to leave the main interface to search for the right part for their particular storage design.

All **RCCS** cabinetry components can be easily accessed at any time, directly from the **RCCS** toolbar, without the need to search for anything!

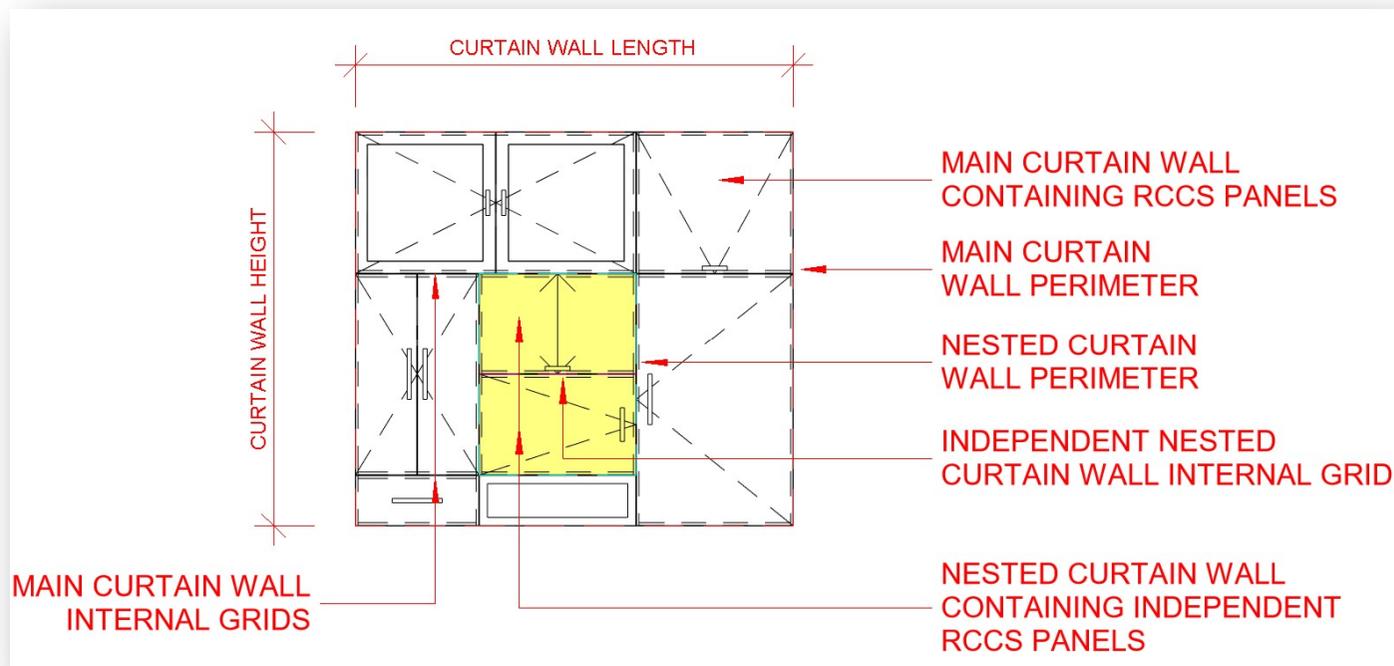
1.1 What is a Revit Curtain Wall?

A curtain wall in Revit consists of a main adjustable external perimeter which defines the wall's extents both in length and height as well as the wall shape in elevation (much the same as any other wall type in Revit). What makes curtain walls so unique is that they can host individual internal cells called "panels", that are separated by orthogonal grids, both horizontally & vertically.

The internal grid system can define or host two different parametric geometry types, that being **Curtain Wall Mullions** and **Curtain Wall Panels**. **RCCS** works within the Revit **Curtain Wall Panel** system. The horizontal and vertical size of each **RCCS** curtain panel is determined by the internal grid spacings within the host **RCCS** curtain wall. Revit curtain wall cells can not only host curtain panels but also nested walls, including nested curtain walls.

1.2 What is a Nested Curtain Wall?

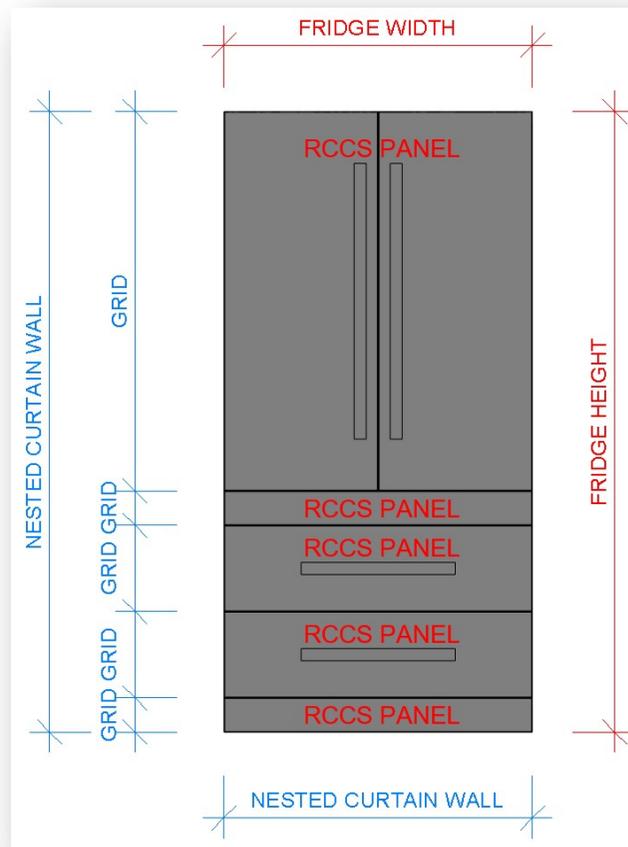
A nested curtain wall is a curtain wall that is hosted within any cell inside the main host curtain wall, just like a standard curtain panel. Each of these nested curtain walls has an external perimeter whose height & width is controlled by the host curtain wall's internal grid layout (as with any standard curtain panel). Nested curtain walls can also host their own internal grid system which generally acts entirely separately to the main host curtain wall's internal grid system. (see Diagram below).



1.3 When to use a Nested Curtain Wall



A nested curtain wall is generally recommended for moderately complex regions of an **RCCS** design to help prevent curtain grid clashes within the main **RCCS** model. Curtain grids within nested curtain walls can be more easily edited as they are independent from the main curtain wall grids. Nested curtain walls are ideally suited for creating compound elements that require more than one **RCCS** component to fully describe them. An appliance such as a large refrigerator may have several individual parts such as separate drawers and doors. This type of appliance may be created using this method if contained within the main **RCCS** model. *(see diagram below)*



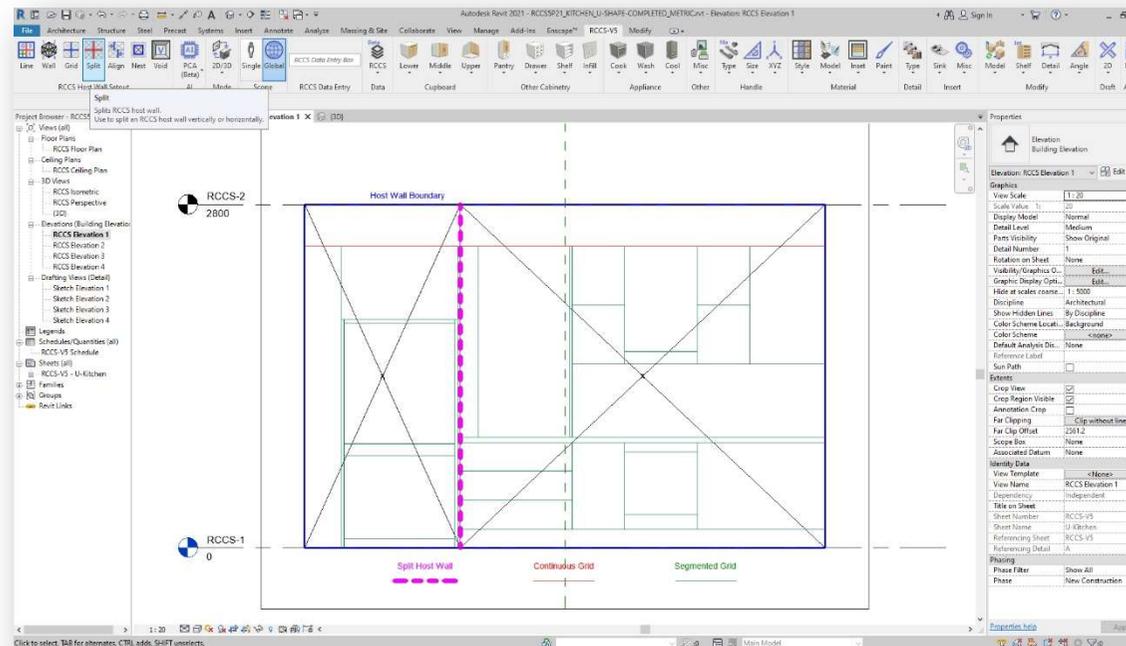
1.4 When to Split an RCCS Curtain Wall



The Revit curtain wall system is one of the most powerful modeling tools within Revit, but it is not entirely without issues. These issues can be readily avoided with both practice and planning prior to starting your **RCCS** model. If a given part of a design is to contain many smaller parts, then a nested curtain wall may not suffice. In this case, it is advisable that the **RCCS** curtain wall is split into separate walls, either vertically or horizontally, depending on the nature of the design.

Splitting should be performed prior to starting your RCCS design to avoid any potential problems that may arise from editing a completed model.

Splitting off a potentially complex area of an **RCCS** curtain wall prior to starting your model will ensure that undesirable errors are much less likely to occur. As you become more experienced in the use of the Revit curtain wall system, you will begin to appreciate the true benefits of using **RCCS** and how it can save you time and make your design experience significantly more satisfying and error free.



2. Getting Started

2.0 Starting a new RCCS project



The **RCCS-23** installation package contains everything you will need to start creating **RCCS** based designs within Revit 2022 (& 2023, coming soon). Upon completion of the installation process, the **RCCS-23** toolbar will appear within the Revit ribbon tabs, & can be accessed by simply clicking on the **RCCS-23** tab.

The recommended method for starting an **RCCS** project is to press the “New Project” button, which is located on the far left of the **RCCS-23** toolbar. This new project file can then be linked into your main Revit project file using Revit file linking. The Revit file linking system allows you to easily move, rotate, copy, mirror and manipulate your linked **RCCS** model within your main Revit project file, without fear of accidentally damaging your **RCCS** model, or the main Revit project model. Once you have positioned your linked **RCCS** project file within your main project file, you can set up views as required and fully document your **RCCS** design within your main project file.

RCCS supports both metric units & Imperial units. Metric units **MUST** be set to millimeters & all metric values **MUST** be entered in millimeters. Imperial values **MUST** be entered in decimal inches, **WITHOUT** the inches symbol, to avoid any error messages.

2.1 Creating & Using the RCCS Host Curtain Wall (RCCS-HW)



Upon starting your new **RCCS** project via the “New Project” button, you will be greeted with a sheet view containing standard plan, elevations, and 3D views, as well as 4 x **RCCS-HW** blank curtain walls, arranged in a square formation. The **RCCS-HW** curtain wall is a custom curtain wall that has been set up specifically for creating and hosting **RCCS** based designs. The **RCCS-HW** curtain wall behaves the same as any other standard system curtain wall within Revit. You may consider “Elevation-1” as the main general starting point for your **RCCS** design, with the remaining elevations as optional, depending on your design needs.

To create **RCCS-HW** curtain walls within a custom Revit project file, simply press the “Wall” button to automatically create 4 x **RCCS-HW** blank curtain walls in a square configuration on “Level 0” or a user designated level name (for user designated, please enter the **EXACT** case-sensitive level name into the RCCS Data Entry Box prior to creating walls). You can then proceed to delete any unwanted walls & only retain the walls needed for your design. The remaining walls can then be resized to suit your sketch design.

If you are new to using curtain walls within Revit, then it is **highly recommended** that you take part in some form of training to learn how to use the Revit curtain wall system prior to starting with **RCCS-23**. Please contact CAD Training Online for in-person training: rick.feineis@cadtrainingonline.com or balkanarchitect.com for pre-recorded, tutorial based training.

3. Curtain Wall Panels

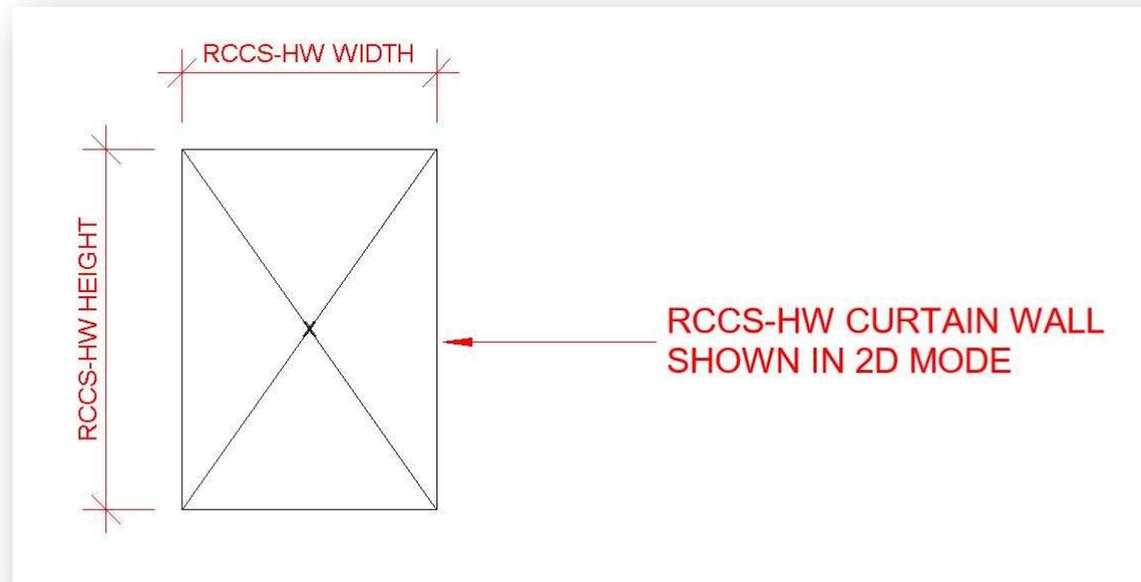
3.0 What is a Revit Curtain Wall Panel?

There are 2 types of curtain wall panels within Revit: **System Panels** and **Family Panels**.

1. **System Panels** : are built into every Revit project and are simply a default panel that Revit uses when no external Family Panel exists within the project.
2. **Family Panels** : on the other hand, are created within the Revit Curtain Wall Panel family template and imported separately into a project.

System Panels and Family Panels can only exist within a Revit project as hosted objects within a curtain wall. Their height and width dimensions are controlled exclusively by the internal grid spacings within the host curtain wall.

RCCS uses a highly specialized Revit Family Panel that **should never** be altered or edited in any way, as this may cause the entire **RCCS** system to stop functioning.



4. 2D Mode & 3D Mode

4.0 What is RCCS 2D Mode?

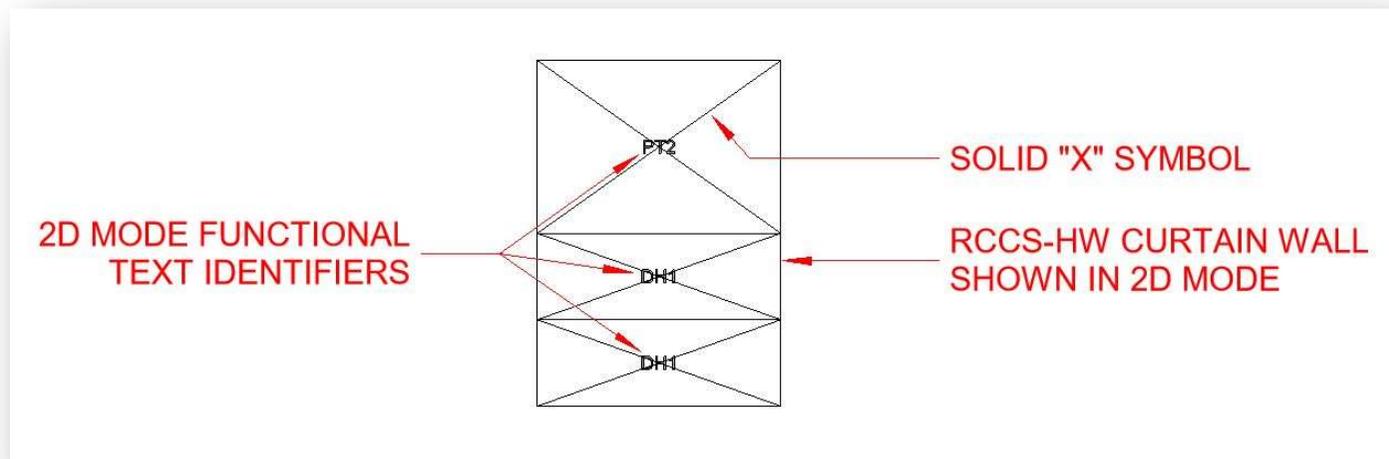


RCCS 2D Mode is the default mode for creating and editing **RCCS** designs, and is the startup mode when beginning a new project **RCCS** from the toolbar. **2D Mode** is a two-dimensional only mode that focuses on fast creation and editing of designs without having to wait for 3D (three dimensional) geometry to update as the design progresses.

2D Mode essentially operates with the use of 2D **RCCS** proxy panels that are “place holders” for 3D **RCCS** models. The 2D **RCCS** proxy panels in **2D Mode** have been specially developed for fast design & editing, and retain all the 3D model information if the user chooses to revert back to **2D Mode** from **3D Mode** for further editing.

Each 2D **RCCS** panel is automatically assigned a text identifier once its function has been established by the user. This text identifier is located in the center of each 2D **RCCS** panel in **2D Mode** to remind the user of its assigned function during **2D Mode** design & editing.

All 2D **RCCS** panels also contain a solid "X" symbol drawn from corner to corner. This "X" symbol acts as a visual reference to help show **RCCS** panel separation and to assist panel selection.



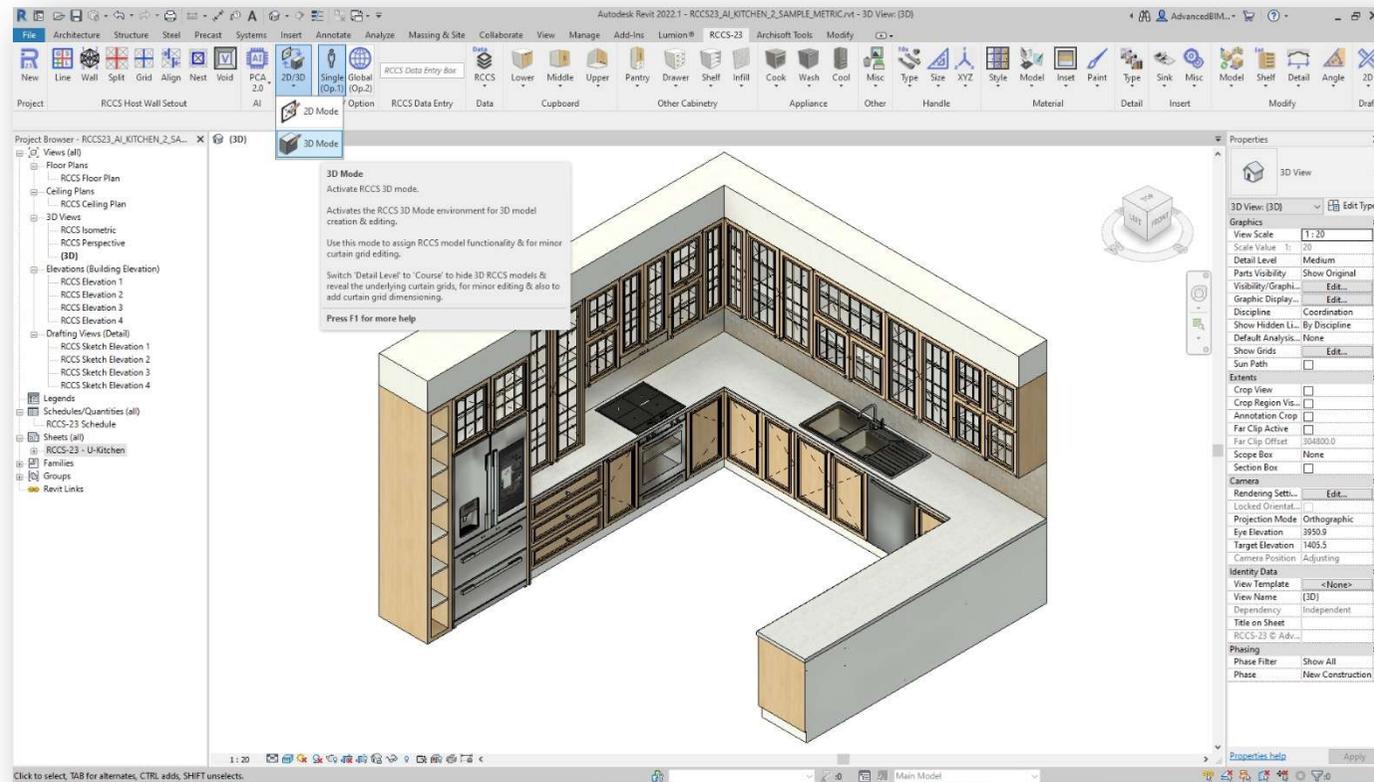
4.1 What is RCCS 3D Mode?



Upon execution, **RCCS 3D Mode** can either create 3D **RCCS** models (based on the assigned usage type given to the 2D **RCCS** proxy panels in **2D Mode**), or can create blank 3D **RCCS** panels that can be assigned a particular cabinetry type after entering **3D Mode** (i.e. usage types can be assigned in either 2D or 3D modes).

It is **highly recommended** that only basic editing and design is conducted in **3D Mode**, such as assigning materials or changing the assigned function of an **RCCS** panel (e.g. changing a cupboard to a shelf), or changing handle sizes/types & locations offsets etc.

Once a design has been finalized, then additional geometric details can be added to your model in **3D Mode** such as door detailing, sinks etc. You can also join adjacent **RCCS** components while in **3D Mode**, provided they share the same material assignments.



5. The RCCS Ribbon Tool Bar

PLEASE NOTE : THE RECOMMENDED MINIMUM SCREEN RESOLUTION FOR VIEWING THE ENTIRE RCCS-23 TOOLBAR IS 1920 X 1080 PIXELS (1080p)



SPLIT : CAN BE USED TO SPLIT RCCS-HW CURTAIN WALLS EITHER VERTICALLY OR HORIZONTALLY

GRID : CREATES STANDARD REVIT CURTAIN GRIDS THAT ARE USED TO SEPARATE RCCS COMPONENTS

WALL : CREATES 4 x RCCS-HW HOST CURTAIN WALLS IN A SQUARE FORMATION IN A NEW RCCS PROJECT

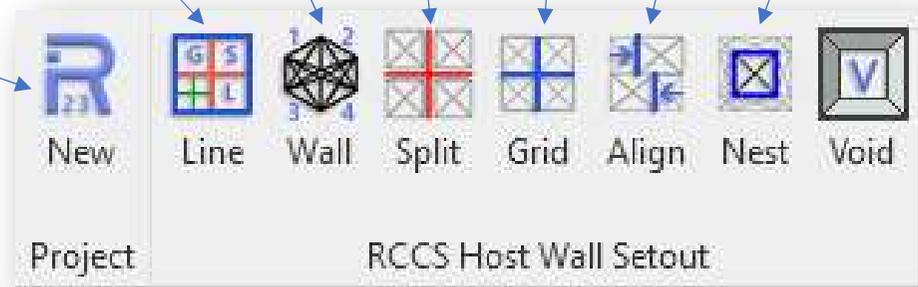
ALIGN : CAN BE USED TO ALIGN INTERNAL RCCS-HW CURTAIN GRIDS (AS WELL AS OTHER ELEMENTS)

DETAIL LINE : CREATES STANDARD REVIT DETAIL LINES THAT CAN BE USED TO SNAP CURTAIN GRIDS ONTO

NEST : REPLACES AN RCCS COMPONENT WITH A NESTED RCCS-HW WALL FOR CREATING COMPLEX ZONES

NEW : FOR CREATING NEW RCCS-23 PROJECTS USING THE STANDARD RCCS-23 TEMPLATE

VOID : REPLACES AN RCCS COMPONENT WITH A BLANK SPACE / AREA WITHIN AN RCCS DESIGN





SINGLE SCOPE / OPTION 1 : ALLOWS FOR MODIFICATIONS TO BE PERFORMED ON INDIVIDUAL RCCS MODELS, OR FOR SELECTING DESIGN OPTION 1 (WHERE APPLICABLE)

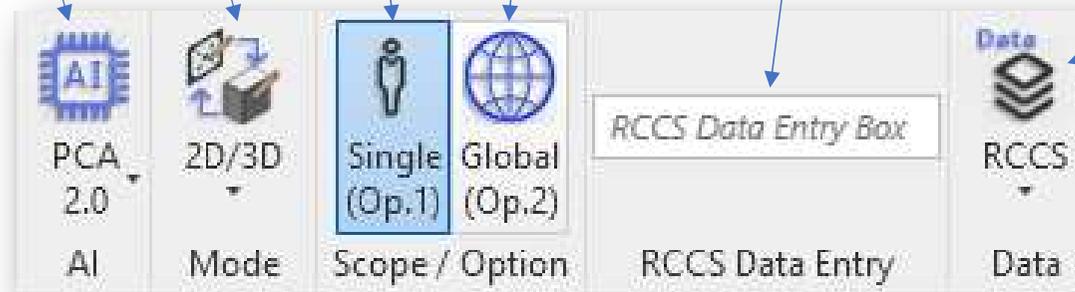
GLOBAL SCOPE / OPTION 2 : ALLOWS FOR MODIFICATIONS TO BE PERFORMED ON MULTIPLE RCCS MODELS, OR FOR SELECTING DESIGN OPTION 2 (WHERE APPLICABLE)

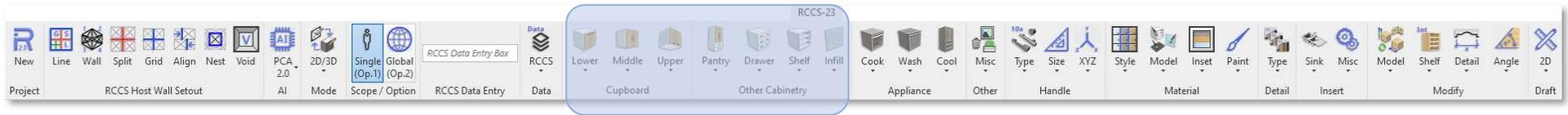
2D/3D : CONTAINS FUNCTIONS FOR SWITCHING BETWEEN 2D & 3D RCCS DESIGN MODES

RCCS DATA ENTRY BOX : ACCEPTS ALPHA-NUMERIC INPUT WHICH CAN BE USED TO PERFORM RCCS MODIFICATIONS OR DATA INPUT (SUCH AS COMMENTS).
 ***THE ENTER KEY MUST ALWAYS BE PRESSED AFTER EACH INPUT ***

PCA 2.0 : CONTAINS VERSION 2.0 AI BASED FUNCTIONS TO ASSIST IN FAST-TRACKING CABINETY DESIGN

RCCS DATA : CONTAINS FUNCTIONS TO MATCH / ENTER & LIST DATA OF RCCS MODELS, AS WELL AS UPDATE OLDER RCCS PROJECTS TO RCCS-23





UPPER : CONTAINS FUNCTIONS FOR CREATING VARIOUS UPPER CABINETRY TYPES (REQUIRES A DEPTH VALUE)

PANTRY : CONTAINS FUNCTIONS FOR CREATING VARIOUS PANTRY CABINETRY TYPES (REQUIRES A DEPTH VALUE)

MIDDLE : CONTAINS FUNCTIONS FOR CREATING VARIOUS MIDDLE CABINETRY TYPES (REQUIRES A DEPTH VALUE)

DRAWER : CONTAINS FUNCTIONS FOR CREATING VARIOUS DRAWER TYPES (REQUIRES A DEPTH VALUE)

LOWER : CONTAINS FUNCTIONS FOR CREATING VARIOUS BASE CABINETRY TYPES (REQUIRES A DEPTH VALUE)

DRAWER : CONTAINS FUNCTIONS FOR CREATING VARIOUS SHELVING TYPES (REQUIRES A DEPTH VALUE)

INFILL : CONTAINS FUNCTIONS FOR CREATING VARIOUS INFILL TYPES (REQUIRES A DEPTH VALUE)





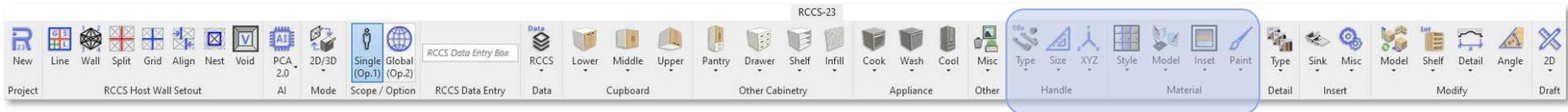
WASH : CONTAINS FUNCTIONS FOR CREATING VARIOUS WASHING APPLIANCE TYPES (REQUIRES A DEPTH VALUE)

COOL : CONTAINS FUNCTIONS FOR CREATING VARIOUS REFRIDGERATION APPLIANCE TYPES (REQUIRES A DEPTH VALUE)

COOK : CONTAINS FUNCTIONS FOR CREATING VARIOUS COOKING APPLIANCE TYPES (REQUIRES A DEPTH VALUE)

MISC : CONTAINS FUNCTIONS FOR CREATING VARIOUS MISCELLANEOUS RCCS MODEL TYPES (REQUIRES A DEPTH VALUE)





XYZ : CONTAINS FUNCTIONS FOR CUSTOMIZING HANDLE LOCATIONS & OFFSETS (REQUIRES NUMERIC VALUE)

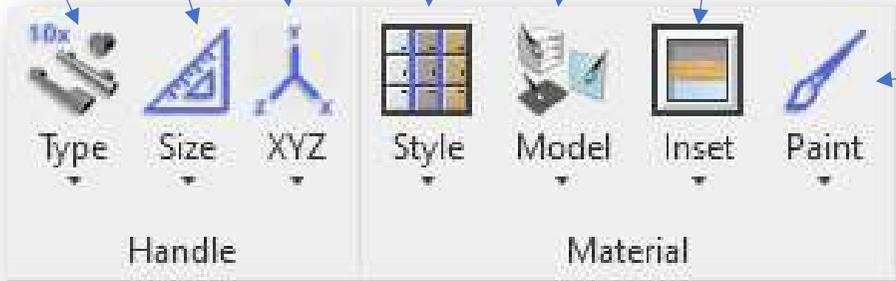
STYLE : CONTAINS VARIOUS MATERIAL PRESETS THAT APPLY TO ALL RCCS CABINETY COMPONENTS

SIZE : CONTAINS FUNCTIONS FOR ADJUSTING VARIOUS HANDLE DIMENSIONS (REQUIRES NUMERIC VALUE)

MODEL : CONTAINS VARIOUS MATERIAL PRESETS THAT APPLY TO SINGLE OR MULTIPLE RCCS CABINETY COMPONENTS

TYPE : CONTAINS FUNCTIONS FOR SWAPPING HANDLE TYPES & TOGGLE HANDLE VISIBILITY ON OR OFF (OPTIONAL SIZE NUMERIC VALUE)

INSET : CONTAINS VARIOUS MATERIAL PRESETS THAT APPLY TO RCCS CABINETY DOOR INSETS



PAINT : CONTAINS VARIOUS PAINT FUNCTIONS TO ACTIVATE / PAINT & LOAD RCCS MATERIALS INTO A PROJECT



SINK : CONTAINS VARIOUS TYPES OF KITCHEN SINKS & BATHROOM BASINS, THAT AUTOMATICALLY CUT OPENINGS AFTER PLACEMENT

TYPE : CONTAINS FUNCTIONS FOR ADDING & SWAPPING CABINETRY DOOR FACE DETAILING

MISC : CONTAINS VARIOUS TYPES OF MISCELLANEOUS FACE BASED DETAILING OBJECTS





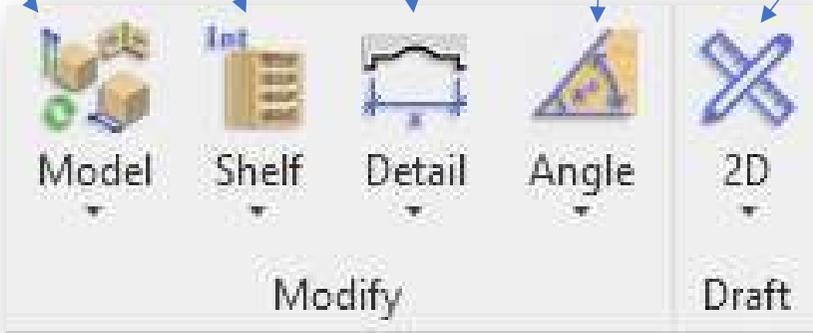
DETAIL : CONTAINS FUNCTIONS FOR EDITING OF CABINETRY DOOR DETAILING

SHELF : CONTAINS FUNCTIONS FOR GEOMETRY & INTERNAL SHELF EDITING OF RCCS COMPONENTS

MODEL : CONTAINS FUNCTIONS FOR GEOMETRY & PLACEMENT EDITING OF RCCS COMPONENTS

ANGLE : CONTAINS FUNCTIONS FOR ADJUSTING RCCS COMPONENT END ANGLES

2D : CONTAINS FUNCTIONS FOR ADJUSTING 2D DETAILING & SCHEDULING



6. Recommended RCCS Workflow

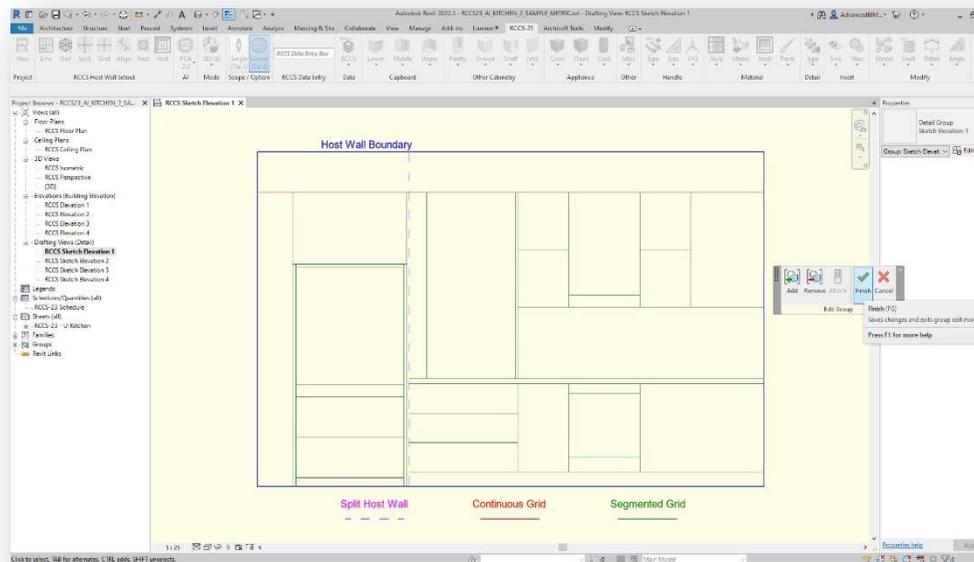
Step 1 : Sketching Your Design with 2D Lines



The most effective & reliable method for creating **RCCS** designs is to begin your workflow by sketching cabinetry elevations of your designs using 2D lines. This can be done in any number of different ways. The **RCCS** “New Project” command is a great way to start as it creates a new **RCCS** project from the standard **RCCS** template with everything you need to begin designing & modelling with **RCCS**.

The **RCCS** new project template contains 4 x pre-made Drafting views with their own unique pre-grouped 2d lines (detail groups) to begin sketching within. Simply open your preferred Drafting view & edit the detail group within. You may also wish to use the pre-defined line types that are shown at the bottom of the detail group to help differentiate between the curtain wall boundary, wall split lines, continuous grids & segmented grids. Once your sketch is complete you can then press the green tick symbol to accept & close out of the detail group editing mode. Each of the detail groups has been duplicated in the corresponding elevation view & will update automatically in that view once editing is completed.

PLEASE NOTE : It is highly recommended that detail lines are always kept grouped to improve selection capability of the underlying **RCCS-HW** curtain walls, as well as maintaining a live detail group link between the Drafting & Elevation views within the **RCCS** project.



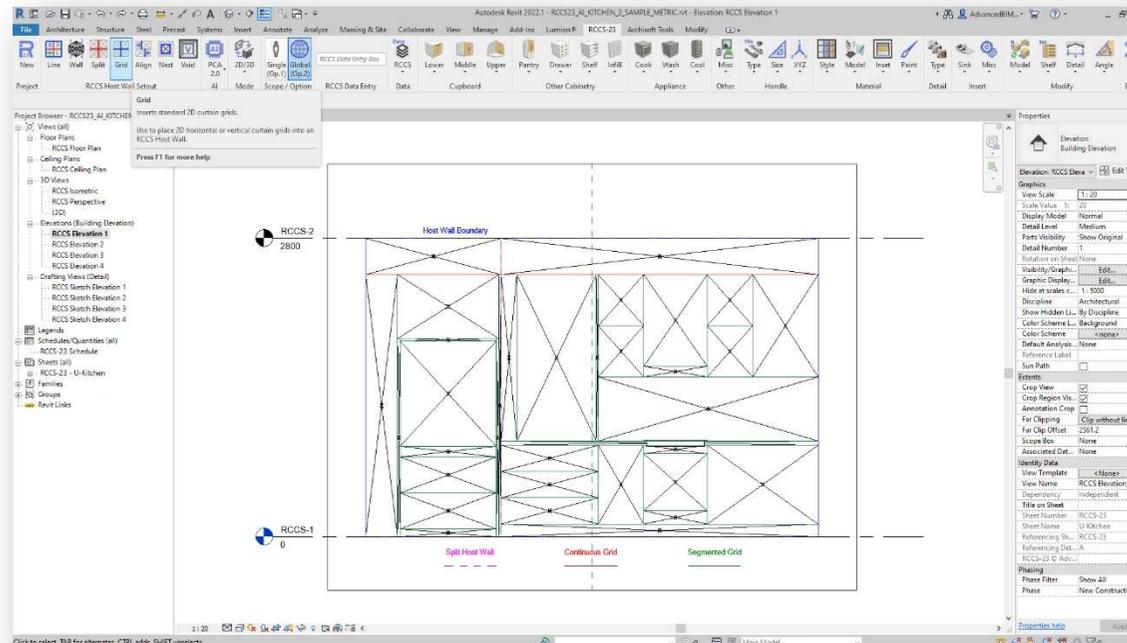
Step 2 : Snap & Place Curtain Grids



Upon completion of your cabinetry elevation sketches in **Step 1**, you can then proceed to resize the **RCCS-HW** walls to fit your sketch design. Any unwanted **RCCS-HW** walls can be deleted at this stage depending on your cabinetry design layout.

You will notice that the **RCCS-HW** walls are overlaid with the 2D detail group sketches in each respective cabinetry elevation. Open each cabinetry elevation & stretch (or align) the outer border of each **RCCS-HW** wall to match the outline of the 2D detail group sketch. Once the outer borders are aligned, you may begin adding curtain grids by simply snapping them to the corresponding detail line in your sketch design (please note that it is advisable to first split **RCCS-HW** walls prior to adding grids, if your design requires wall splitting, ref : [1.4 When to Split an RCCS Curtain Wall](#)).

Snapping grids to detail lines may be difficult in some situations where grids are closely aligned. To overcome this issue, simply add the required grid away from its intended location & use the align button :  to align the newly added grid back to its corresponding reference detail line.



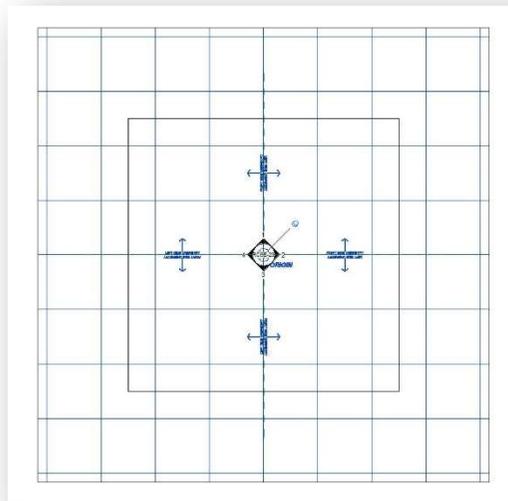
Step 3 : Execute Relevant AI Function

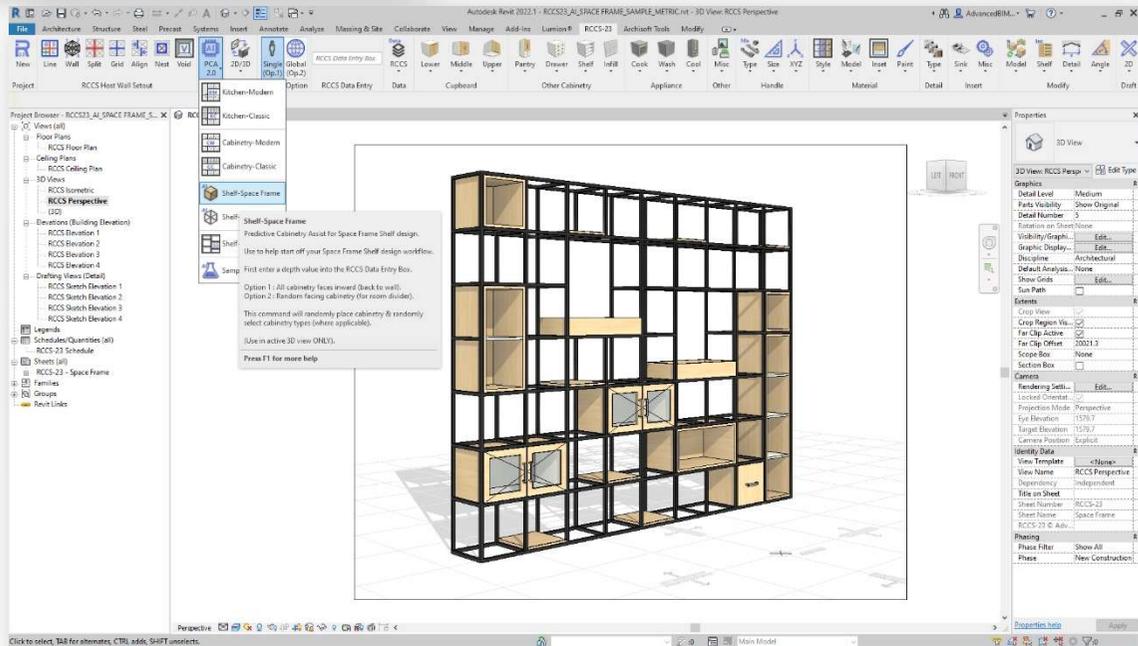
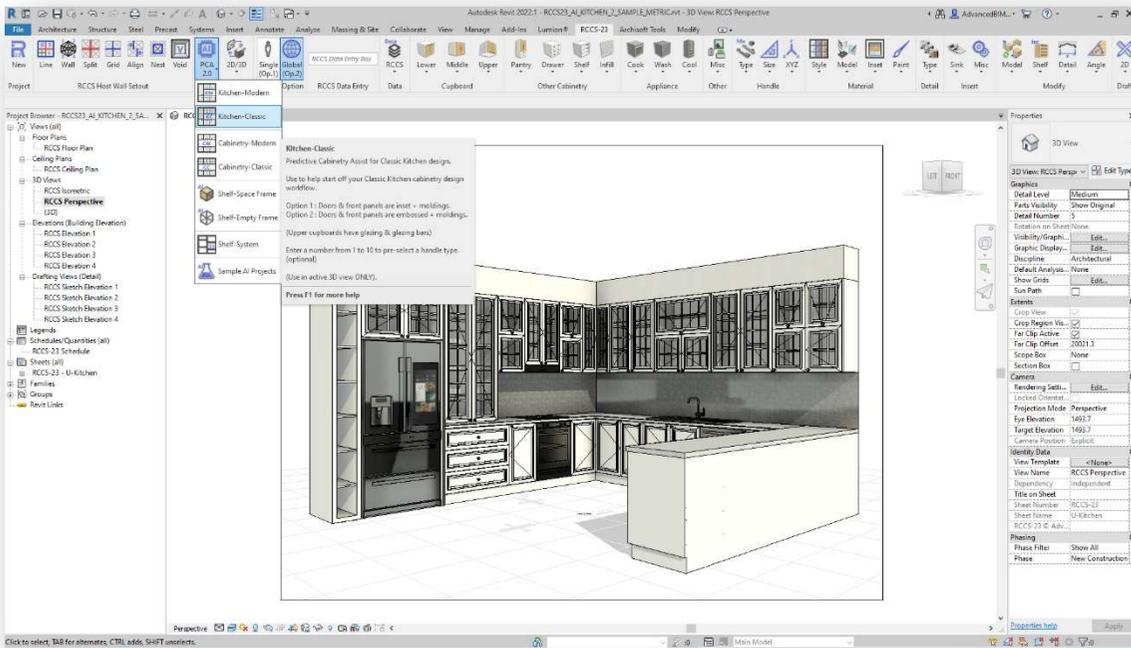


Once all grids have been added & adjusted, you can either proceed manually without AI by pressing the **RCC 3D Mode** button :  or by using one of the provided **RCCS-AI** algorithms that are most relevant to your design. At the time of writing this user guide, there are currently 7 x **RCCS-AI** algorithms available for use within your cabinetry design workflow. The following table gives a brief description of each AI algorithm & their relevant sample AI projects :

AI Name	Option 1 Description	Option 2 Description	Relevant Sample AI Projects
Kitchen-Modern	Doors & front panels are flush	Doors & front panels are inset	AI Sample 1 or AI Sample 2 Kitchens
Kitchen-Classic	Doors & front panels inset + moldings	Doors & front panels emboss + moldings	AI Sample 1 or AI Sample 2 Kitchens
Cabinetry - Modern	Doors & front panels are flush	Doors & front panels are inset	AI Sample 3 Wall Unit / System
Cabinetry - Classic	Doors & front panels inset + moldings	Doors & front panels emboss + moldings	AI Sample 3 Wall Unit / System
Shelf-Space Frame	All cabinetry faces inward	Random facing cabinetry (for room divider)	AI Sample 5 Space Frame Shelving
Shelf – Empty Frame	Dark metal material	Woodgrain material	AI Sample 6 Wine Rack Sample
Shelf - System	Finish 1 material	Woodgrain material	AI Sample 4 Shelving Sample

PLEASE NOTE : The **RCCS-AI** System performs best when your cabinetry design is located equally spaced around the project origin. The center of the **RCCS** helper grid is exactly located at the project origin by default, within the **RCCS** template / sample files & when loaded into a new project :





Step 4 : Fine Tuning & Linking Your RCCS Model

After your initial 3D **RCCS** model has been generated by the **RCCS-AI** system (typically between 30 – 120 seconds creation time : **CPU dependent**), you can begin fine tuning your design with the many options available on the **RCCS Ribbon Toolbar** (ref. [5. RCCS Ribbon Toolbar](#)).

Your **RCCS** model file can be linked into your main Revit project at any stage, but it is best practice to finalize your design prior to final documentation. It is also recommended that final documentation should be performed in the main Revit project file & **not** in the **RCCS** project file.

There are many advantages to Revit file linking including the ability to easily manipulate your linked **RCCS** model without risking any errors that may occur otherwise. Moving, rotating, mirroring & of course copying are completely safe to perform on a linked **RCCS** model without damaging the **RCCS** model design.

Linked models can be documented as easily as natively hosted elements within the main Revit project file, so there is no need to feel hesitant about this approach. Dimensioning **RCCS** models is best performed by setting the current view “**Detail Level**” to “**Coarse**”, as this will hide all **RCCS** 3D geometry & allow you to dimension to the underlying curtain grids, which is the recommended approach.

Tagging linked models is also easily achieved with either the standard Revit tagging system, or you can use the “**Tag All**” button :  which will automatically & exclusively tag all **RCCS** components within an active 2D or locked 3D view.

Finally, one of the greatest advantages of file linking is of course re-usability. You can easily copy & modify any of your favorite **RCCS** linked files & use them again & again on multiple projects without having to fuss with errors that can occur when attempting to copy & paste between projects. Linked files can also be copied multiple times within a main host Revit project when designing buildings such as multi-residential developments or medical facilities, where the same cabinetry design requirements may be identical throughout the project.

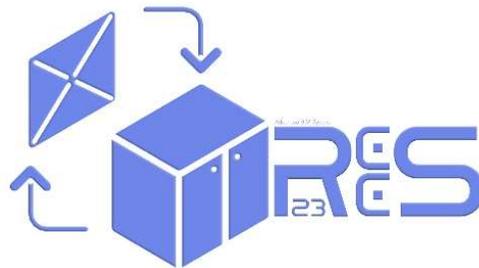
7. RCCS-23 User Guide Summary

RCCS has been designed to be the quickest way to realize a 3D cabinetry design without the need to understand, or get bogged down in the time consuming, technical complexities of trying to create your own parametric Revit cabinetry families.

As with any software system, “practice makes perfect” & the **RCCS** system is no exception to this rule. If you are new to Revit, then it is highly recommended that you spend the time to learn the basics of Revit & come to terms with all it has to offer, as well as it's limitations.

In most cabinetry design cases, **RCCS** will be able to provide you with all you need for a complete cabinetry design solution. **RCCS** can also act as a complementary tool for more complex cabinetry designs, where one-off custom design cabinetry elements can sit alongside **RCCS** models to complete an exclusive bespoke design (e.g. where some cabinetry elements may be curved).

The **RCCS-AI** system is now a more refined version 2.0 release, with ongoing development & periodic system updates as they become available. **RCCS-AI** is intended to act as a design assistant only, with the sole intention of expediting the cabinetry design process within Revit, & never to replace to expertise of talented designers!



Finally, we would like to extend our sincere gratitude to you for your purchase of this product, & we hope that it will provide you with many hours of designing pleasure. Your purchase will also help ensure that **RCCS** can continue ongoing development & improvements over time.

The Advanced BIM Systems Team