

CS468710

# RebarCAD 3D: A BIM Tool for 3D Rebar Detailing and Revision Management in Revit

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## Learning Objectives

- Learn how to prepare a rebar intent markup from design results, and how to model the design reinforcement and enhance it to a practical 3D rebar model
- Learn how to work collaboratively within a federated model in BIM 360, and produce 2D fabrication drawings from the 3D model
- Learn how to automate rebar modeling using CADS Rebar Extensions, and Prepare Bar Bending Schedules Manage revisions in BBS
- Learn how to prepare custom Excel reports, and production output files for automated rebar fabrication

## Description

RebarCAD 3D provides an excellent and comprehensive set of tools to perform the crucial task of placing and detailing reinforcement in a Revit model, staying true to the BIM philosophy. We'll demonstrate an efficient workflow: Start with a structural model; create design reinforcement; mark up the model with design intent; and end with a detailed rebar model, fabrication drawings, rebar schedules, and production output files from RebarCAD 3D. We'll also demonstrate the revision management in rebar schedule and automated rebar modeling using CADS' Rebar Extensions.

## Speaker(s)

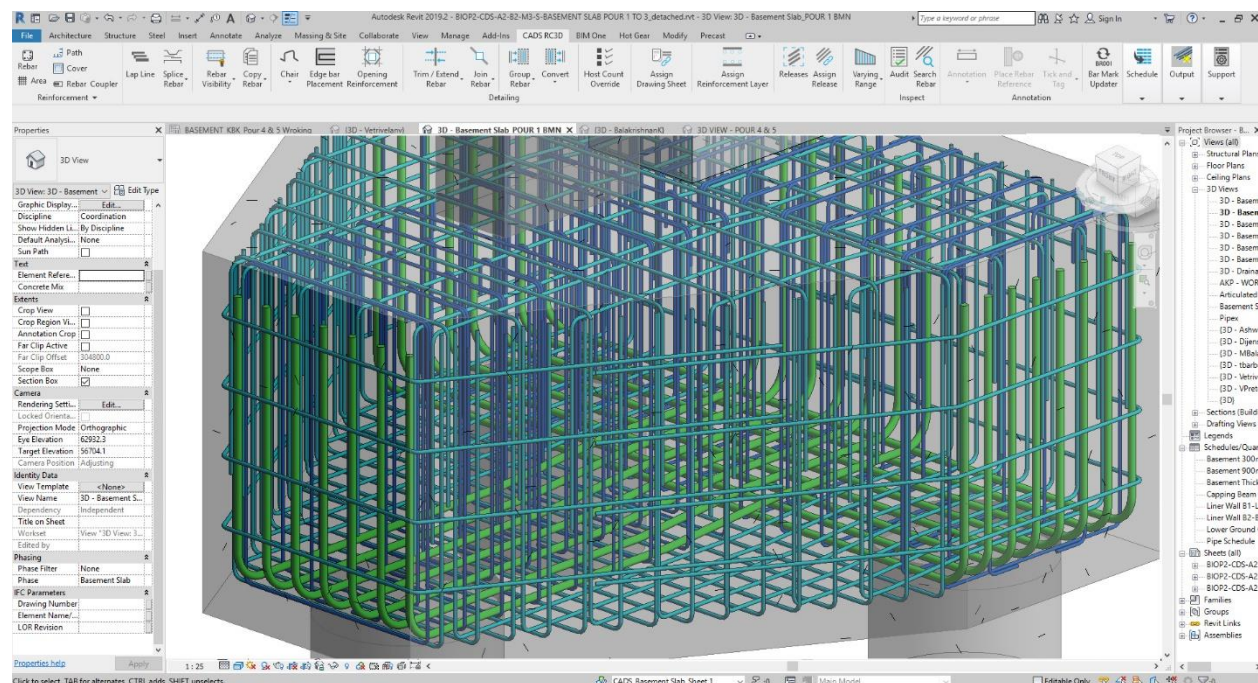
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## Introduction

RebarCAD 3D for Revit has been designed to enhance the placement, annotation and bar marking of rebar in 3D structures. The software provides functionality to create 2D detail drawings and bar bending lists to acceptable standards.

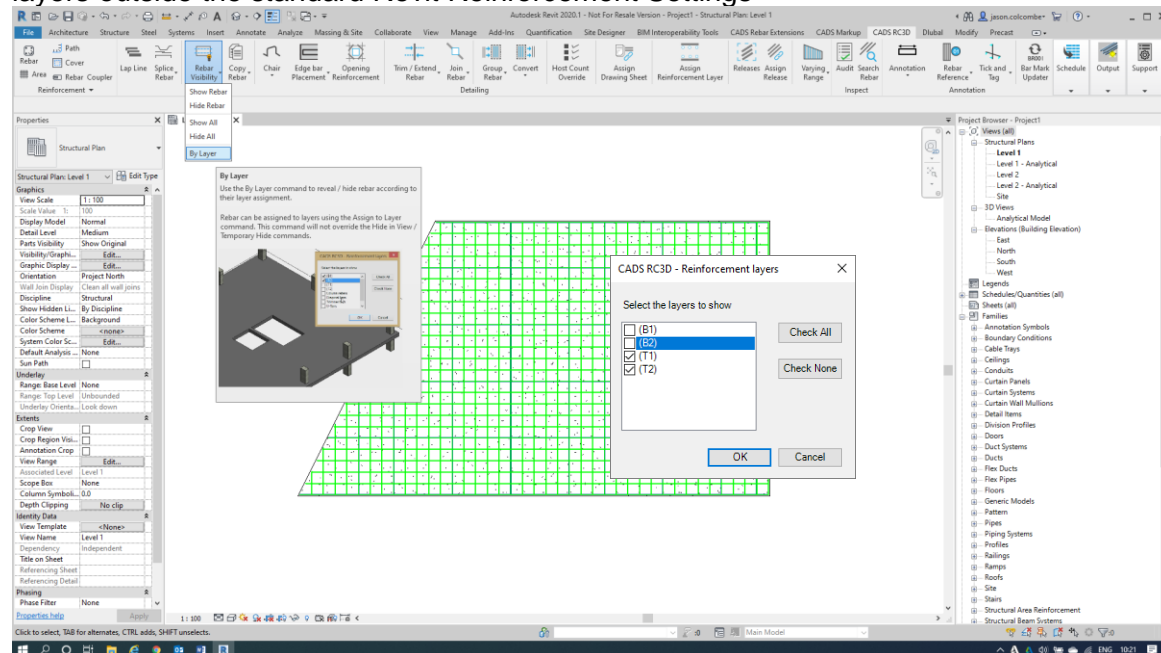
- Additional annotation functions have been created to detail tapered ranges and mark rebar ends.
- Enhanced layering tools allow rebar to be split into zones within a structure, rebar visibility can be controlled using layer assignment.
- Editing functions allow rebar to be copied from one structure to another.
- Rebar can be 'joined' together to form new bar shapes.
- Rebar can be trimmed and extended to openings, detail or model lines.
- Openings in the structure can be identified and trimming reinforcement added.
- Path placement functions allow the rebar to be placed parallel to other rebar in the structure.
- Rebar can be assigned to a structure, release and drawing sheet. Manage the rebar according to these assignments. Currently, the release of rebar for production is manually controlled.
- The Rebar Lists can be placed on drawing sheets or printed using industry standard templates. The bar list templates are easy to customise to company standards.





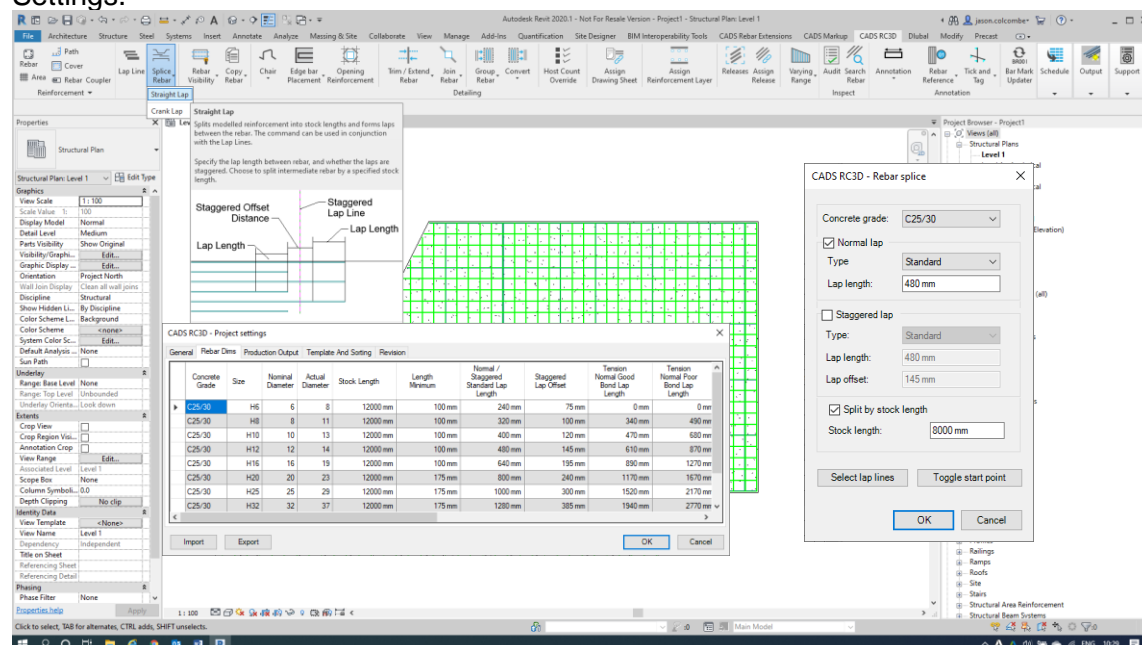


You can work on different layers using **Rebar Visibility** where and when required or create new layers outside the standard Revit Reinforcement Settings



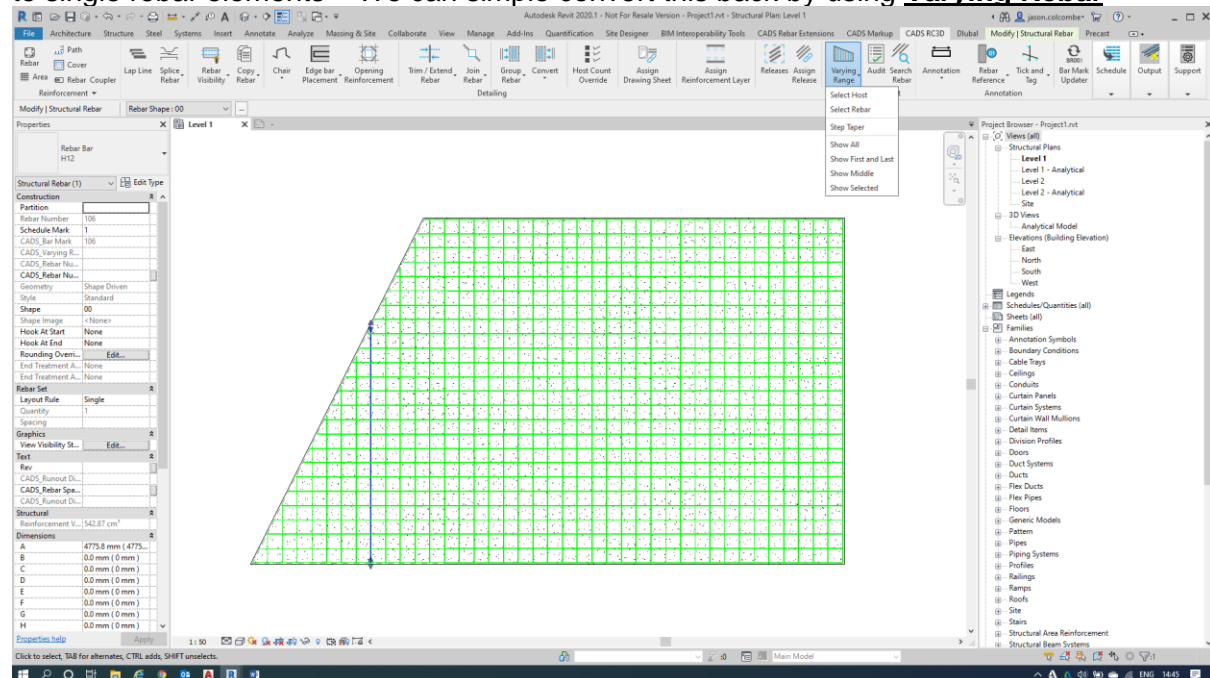
If you do need to manually apply a new Reinforcement Layer simply use the "Assign Reinforcement Layer" Tool. Select the Rebar and either pick from the drop down list or manually enter a new Layer name

From here we can now **Splice Rebar** in the Top Major (T1) and Minor (T2) bar lengths and edit the "Stock Length" manually if they do not follow standard stock length rules in the Project Settings.

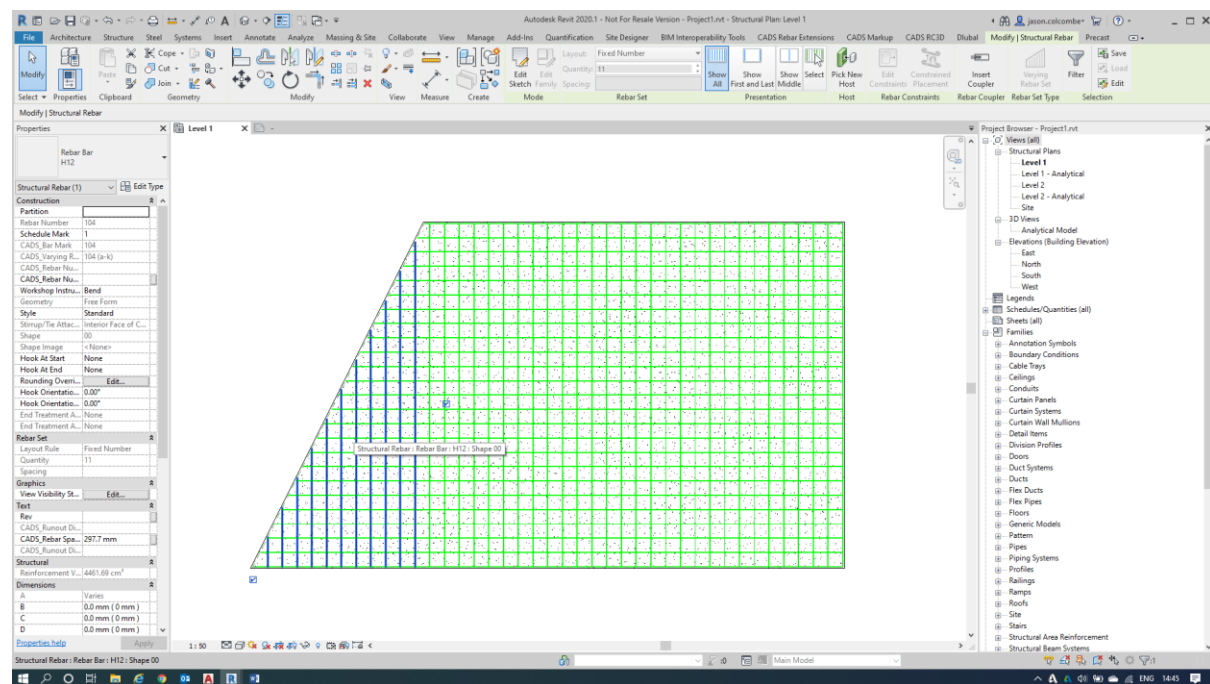


The information used in the Rebar Splice Dialogue is driven by the Project Settings > Rebar Dims. You can either use the defaults or manually edit the fields as required.

One of the consequences of removing the “Area System” is Varying Rebar Sets are converted to single rebar elements – We can simple convert this back by using **Varying Rebar**

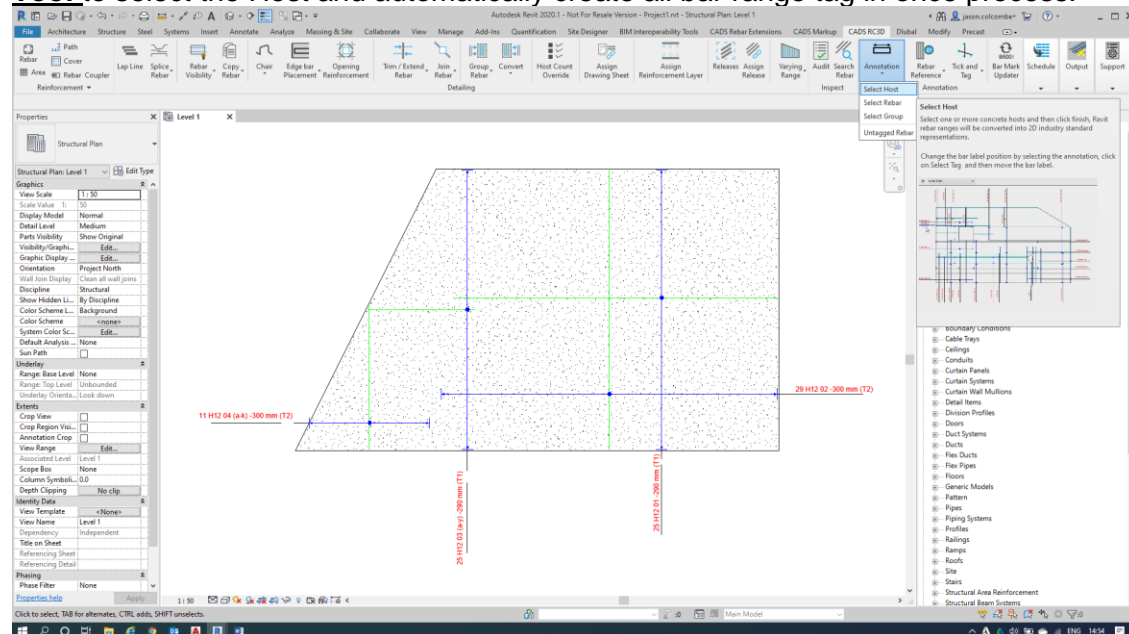


Reinforcement Settings can be found on the RebarCAD 3D Tab > Reinforcement Panel > Drop-Down Arrow  
Change the settings for Area/Path/Varying Rebar Set to meet company standards or save to a Template



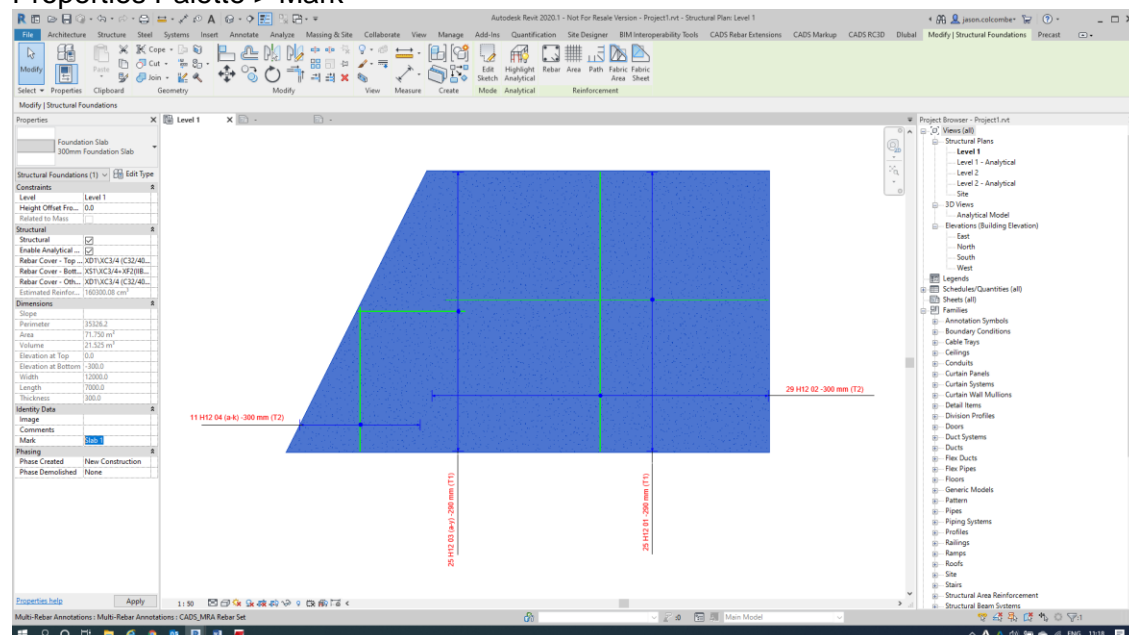
Above is an example of single rebar converted to a Varying Free Form Set using the Varying Range Tool. You can also “Step Taper” rebar from the same Tool drop-down in the CADS RC3D Ribbon

Once the bars have been spliced and spilt ranges reformed we can simply use the **Annotation Tool** to select the Host and automatically create all bar range tag in once process.



Host are Structural Elements/Families that allow the placing of rebar within the. If you select a Host and the Rebar option is not available from the Contextual Tab on the Ribbon it is more than likely not a Structural Elements/Family. In-Place Families can also allow rebar placement if the “Can Host Rebar” option is ticked in the Properties Palette during creation.

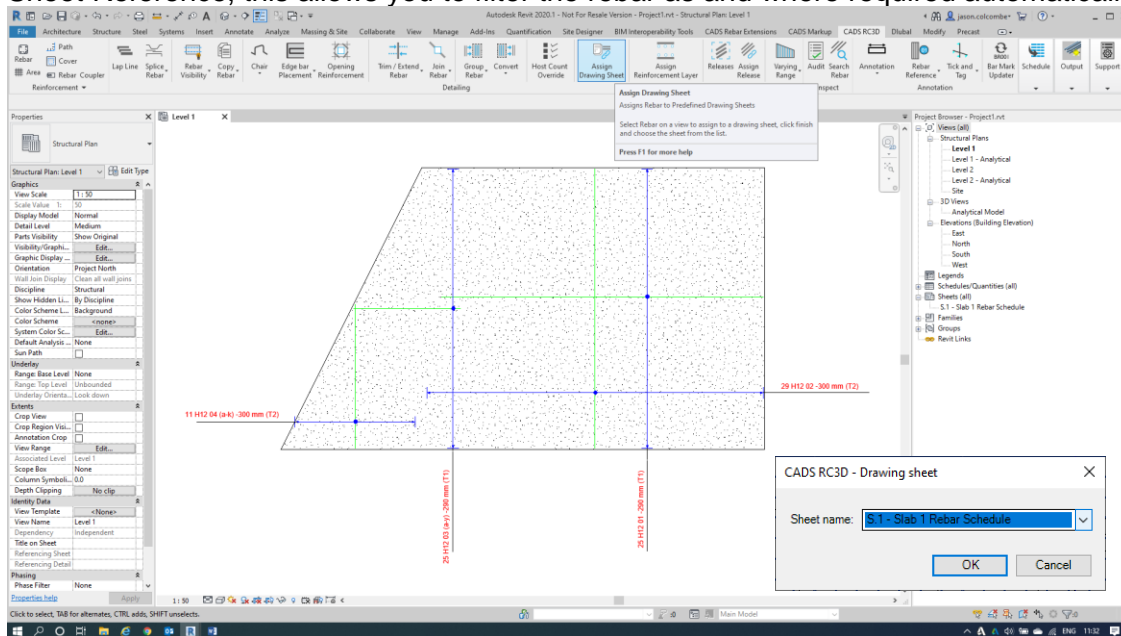
To create a Schedule we first need to assign the Host Mark to the Slab –Select the Slab > Properties Palette > Mark



Host Marks are similar to Assign Member in RebarCAD/CADS RC. Revit Rebar uses the Host Mark as a direct reference and is essential for breaking Schedules down into elements lists.



Using the **Assign Drawing Sheet** you can now select the rebar you wish to be designated to Sheet Reference, this allows you to filter the rebar as and where required automatically.



There are several methods of creating Schedules:

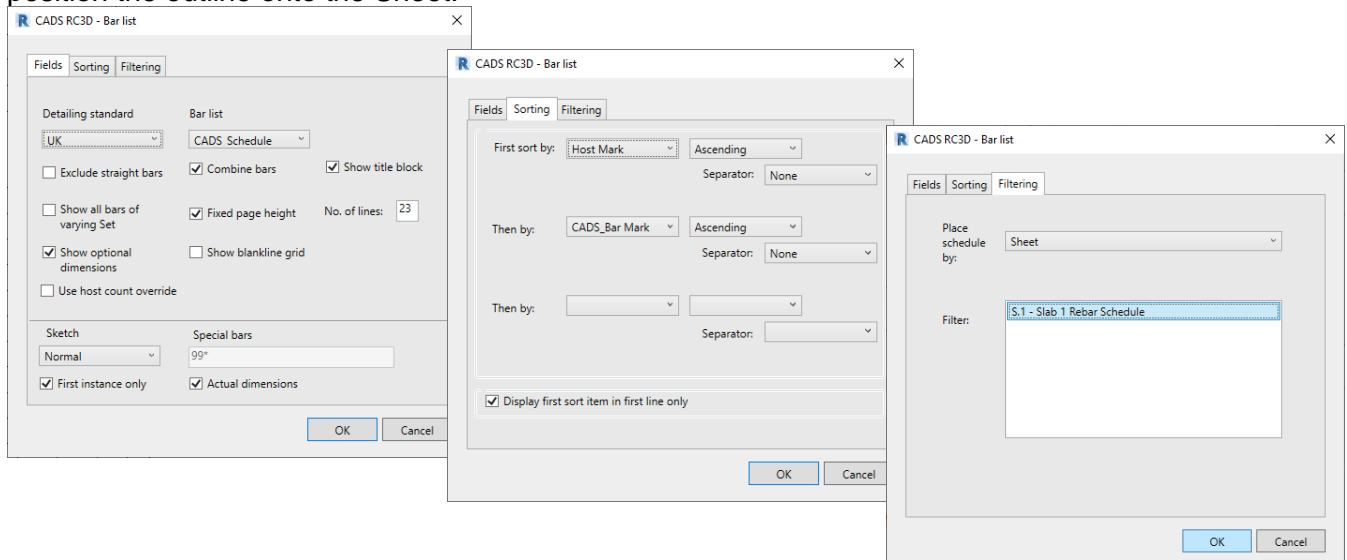
*Place* = Puts the Schedule directly onto a Sheet (created using a CADS Family Titleblock or use a predefined Titleblock)

*Excel* = Export to an Excel Spreadsheet (These can be manually edited for you needs)

*Print* = Creates a New Sheet with the Schedule in place

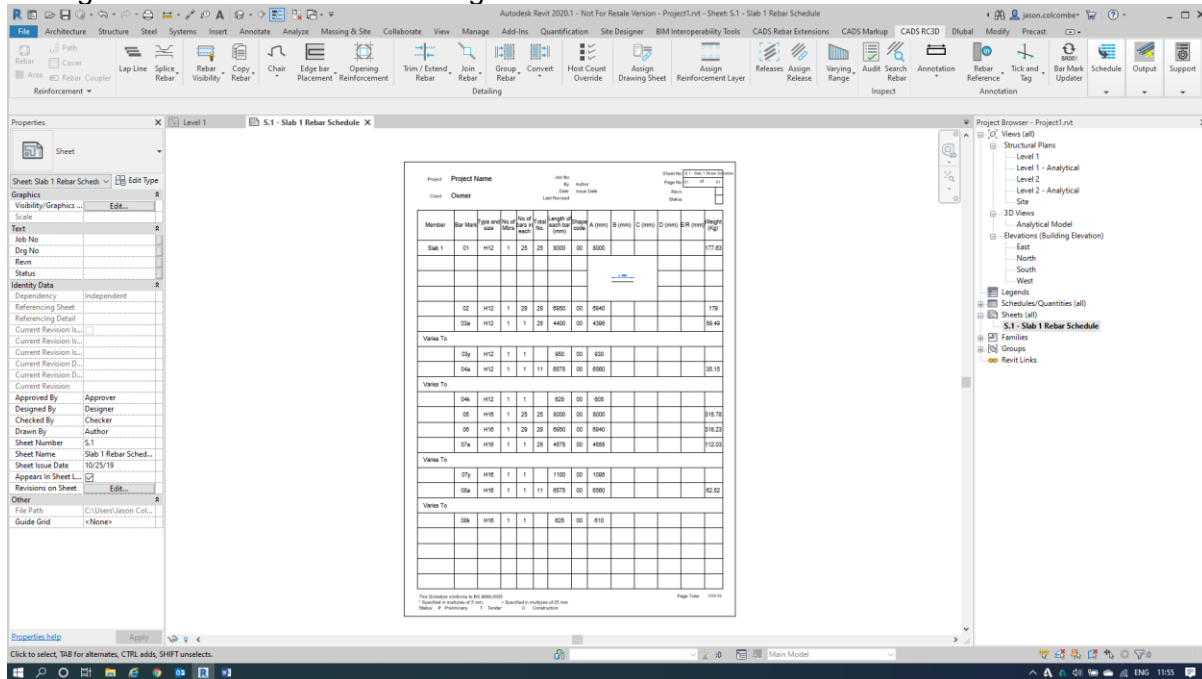
*Show Schedule* = New Scheduling System held within its own environment.

We are using **Place** in this example. Define the properties within the Bar List dialogue and then position the outline onto the Sheet.



If there is more than one Sheet in the Schedule you need to finish the placement of all Sheets before it will generate the information. This is common if you choose to show ALL Sketches and not First Instance Only.

The Schedule is now automatically created on the Sheet showing the information from the setting selected in the Bar List dialogue.



The units used are determined by the Revit Project Units in the Manage Tab

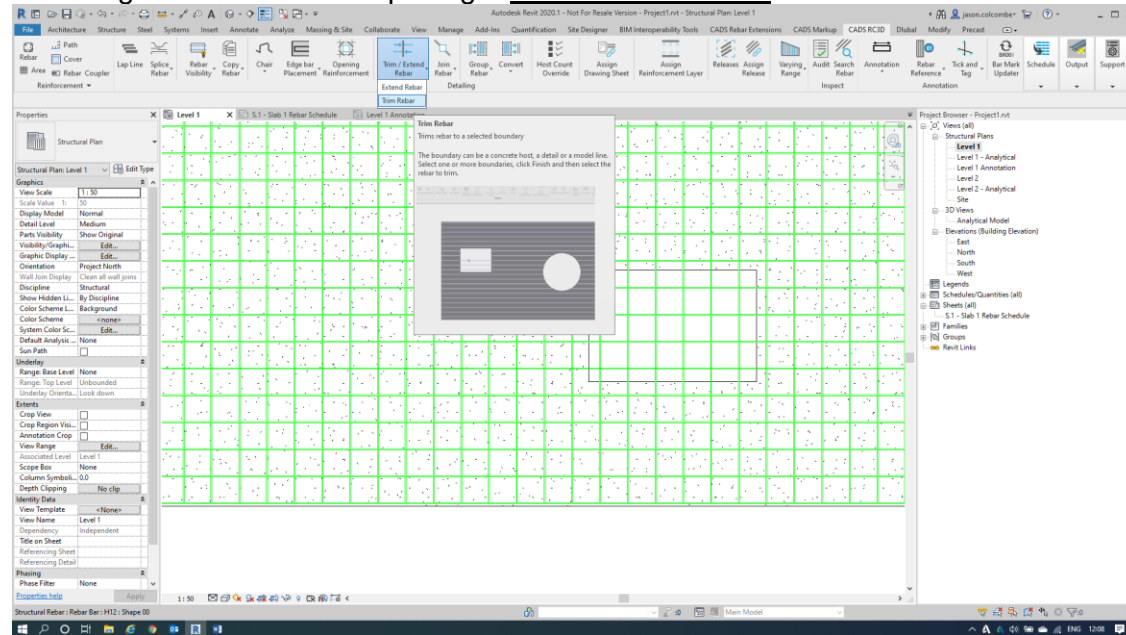
That's your 5 minutes up!

The next few pages will cover some simple editing functions in our 2 Minute Tip Section



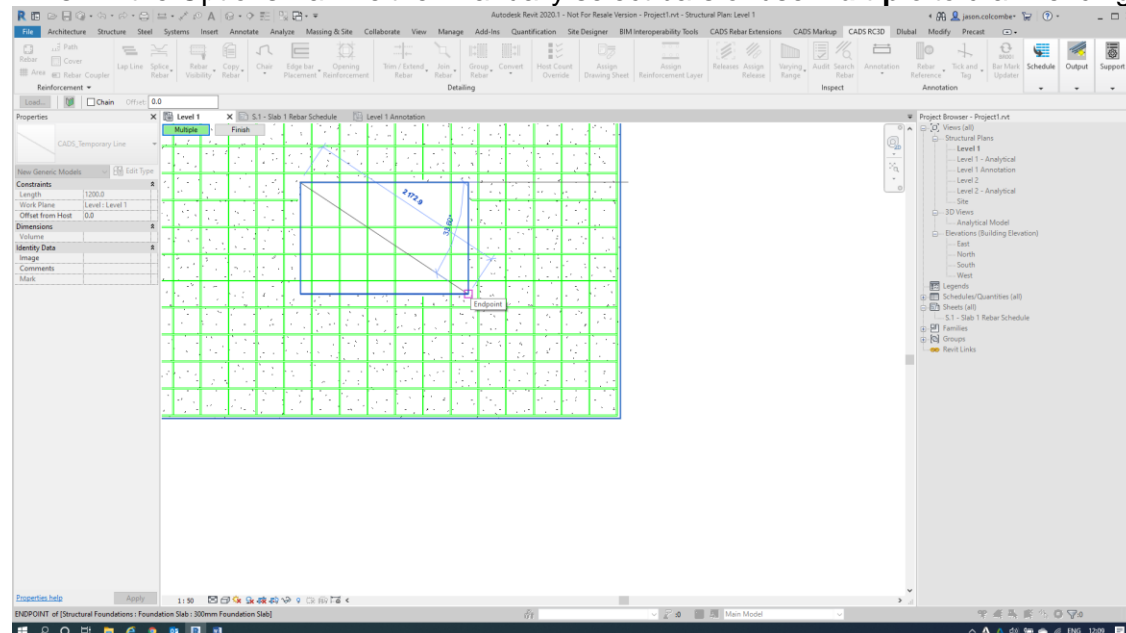
Once Revit Reinforcement Area Systems are removed editing ranges/sets becomes increasingly time consuming in Revit so RebarCAD 3C/CADS RC3D has added tools to assist with the process.

### Trimming Bars around new opening – Trim/Extend Rebar



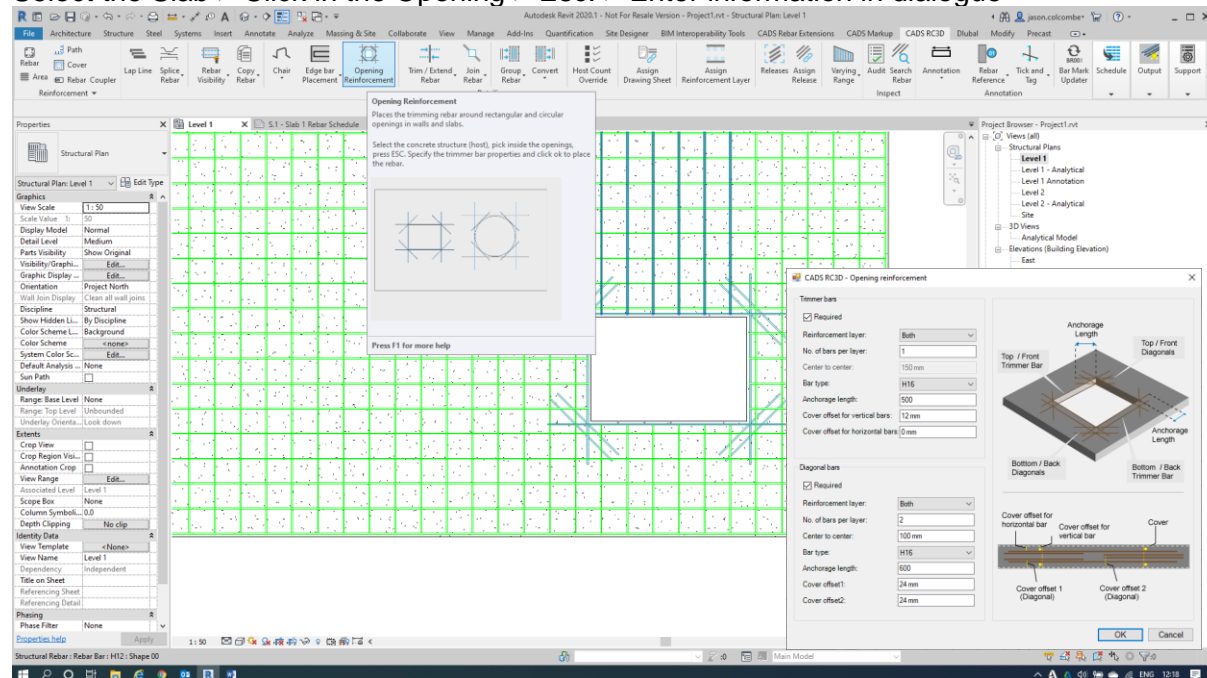
*This opening has been added after the aforementioned process in the 5 minute challenge*

Select the Slab > Click Finish in the Option Bar > Click on the Edges to use for Trimming > Finish in the Options Bar > either manually select bars or use **Multiple** to draw fencing lines



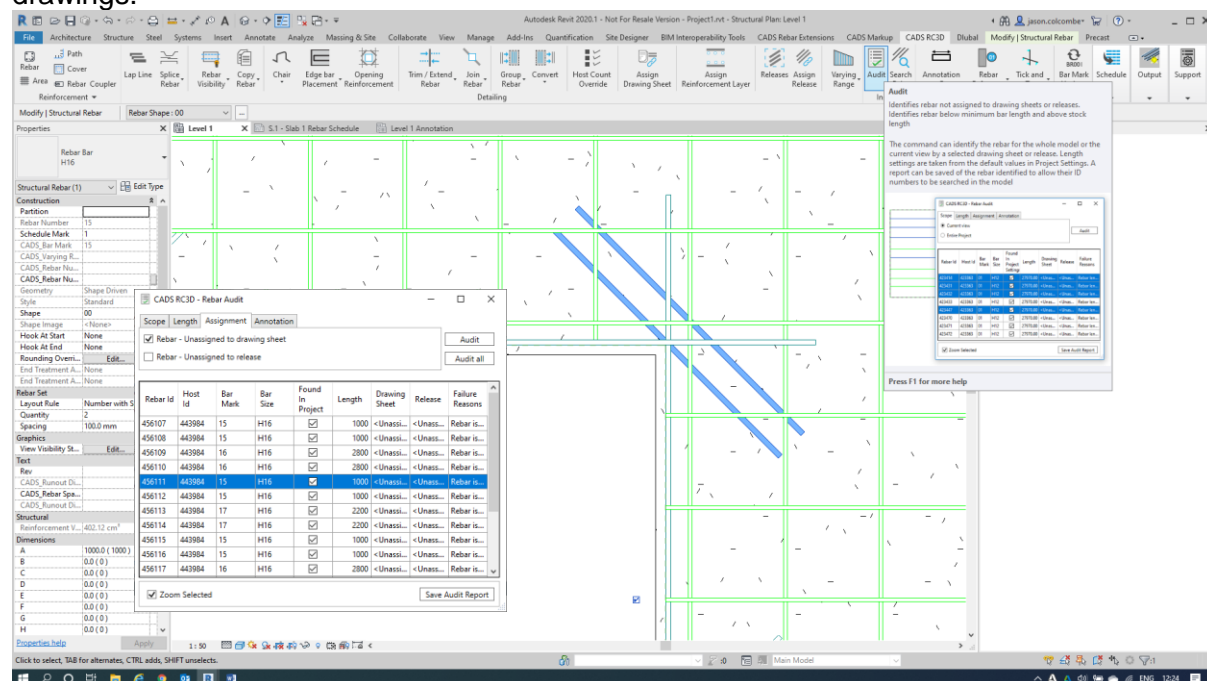
*Any Revit lines can be used for cutting/extensions planes.*

We can add automatic **Opening Reinforcement** to any openings within Slabs and Walls. Select the Slab > Click in the Opening > Esc. > Enter information in dialogue



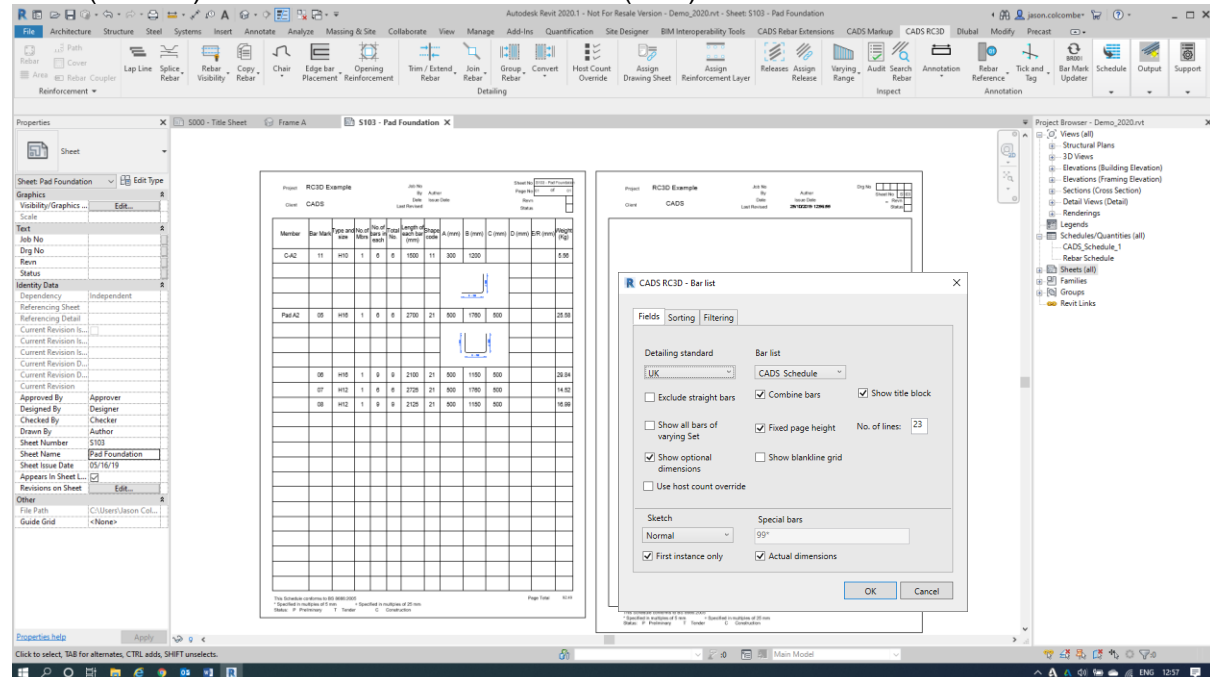
*This can be used on one or more openings.*

When changes have been made you can **Audit** the view to ensure there are no bars visible that have not been accounted for in the Schedule to prevent incorrect quantities against issued drawings.



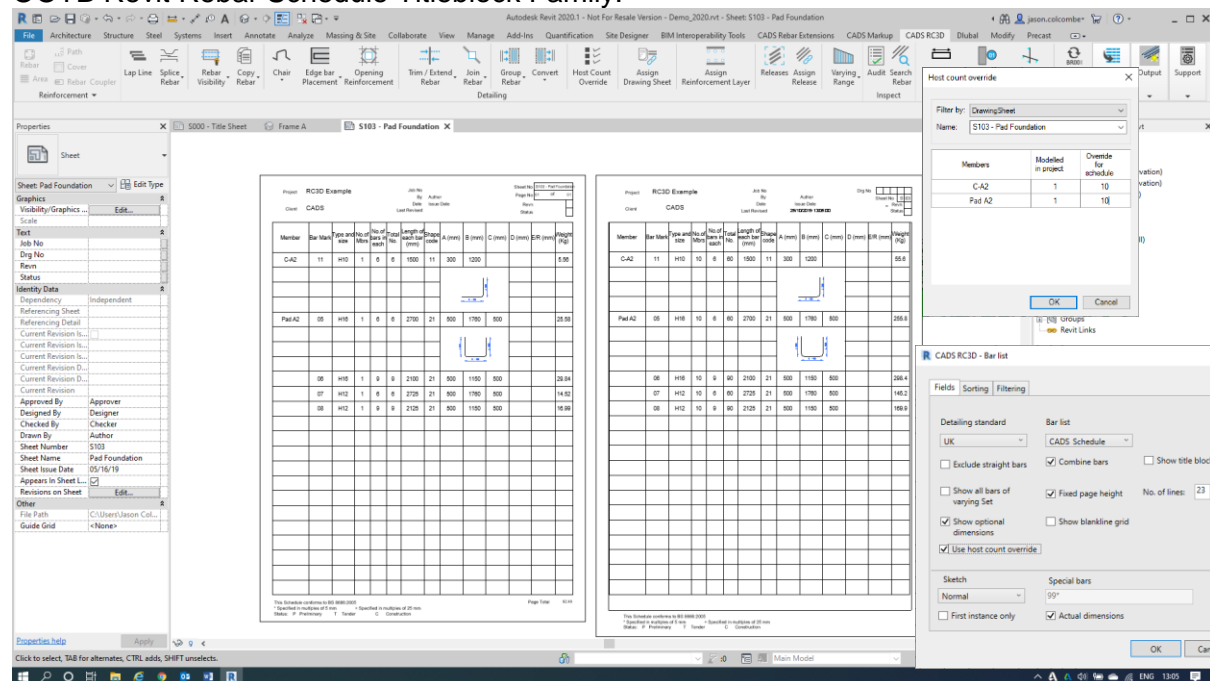
*Audit can also be used for Stock Length checks and Untagged and Duplicate Annotations/Labels/Tags.*

In this example we may have multiple elements on project but do not wish to model the rebar for them all so we can use **Host Count Override** – below is a Schedule using Place for a Pad Base (Pad A2) and Starter Bars into a Column (CA2)



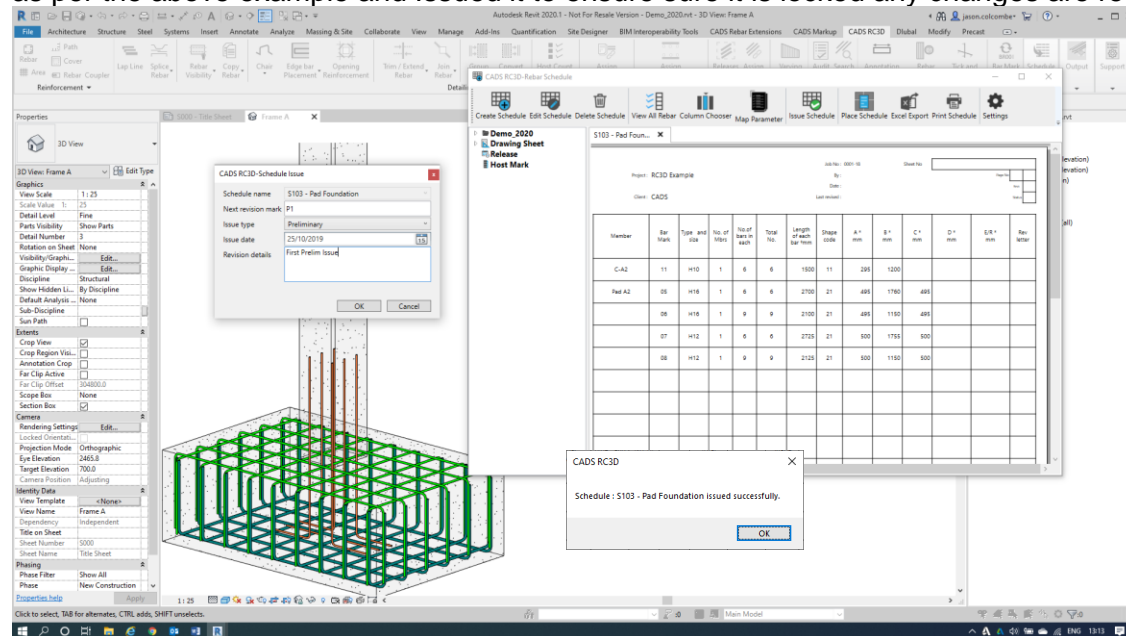
Note the Settings/Options in the Dialogue \*Show title block, \*Use host count override.

We now apply the Host Count Override and when placing the Schedule this time we use the OOTB Revit Rebar Schedule Titleblock Family.



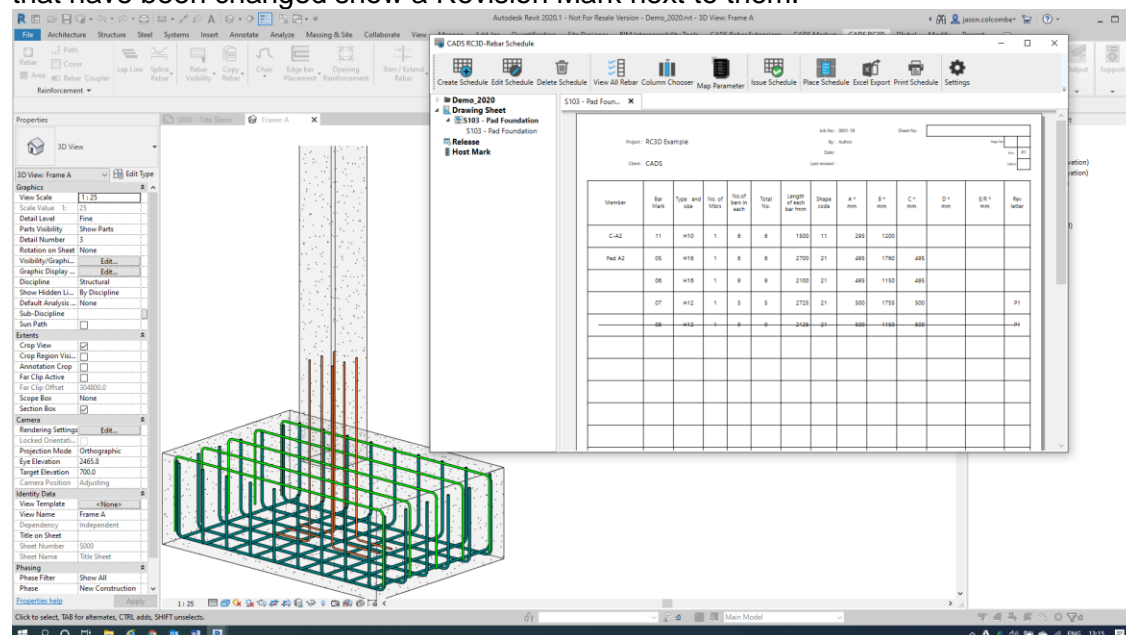
Note the Settings/Options selected in the Dialogue \*Show title block, \*Use host count override.

In the NEW Show Schedule System I have created a revised Schedule to indicate the Pad Base as per the above example and Issued it to ensure sure it is locked any changes are recorded.



You can use existing company RebarCAD/CADS RC Schedule Templates and Excel Templates within the New Scheduling System

I will remove one set of bars and edit the spacing of another ranges, and on reopening the New Scheduling System you will see the Bars that have been deleted are struck-through and those that have been changed show a Revision Mark next to them.



You can set which revisions you wish to show and the format in the Edit Schedule locally or Settings for global changes and for futures Schedule creation.