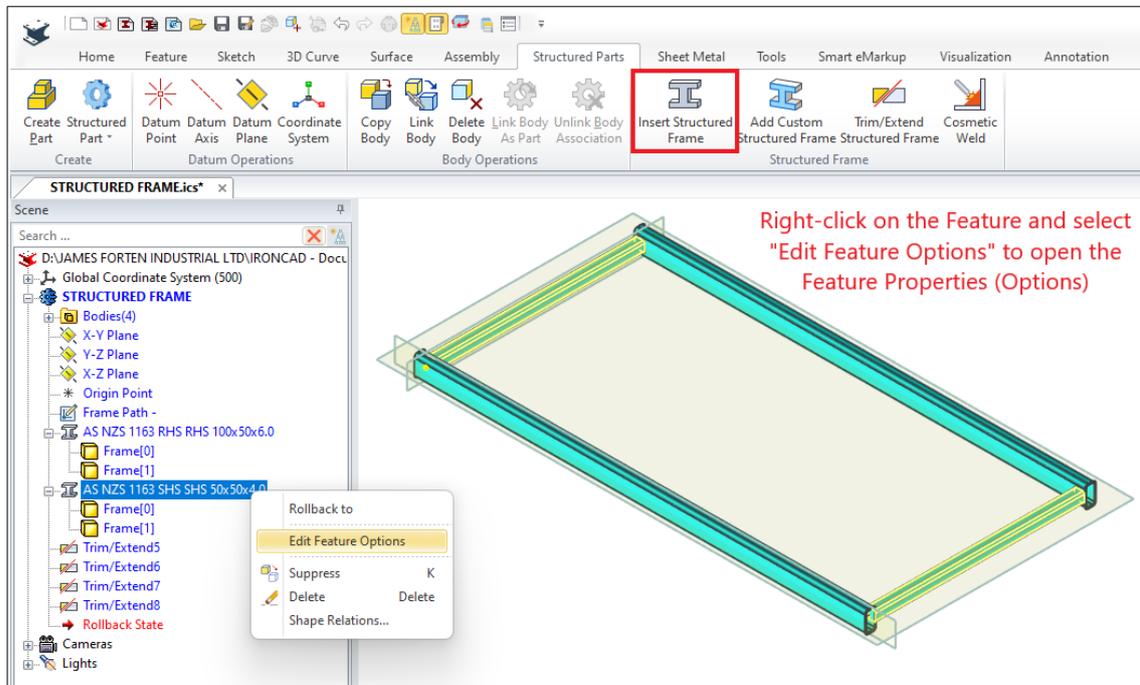
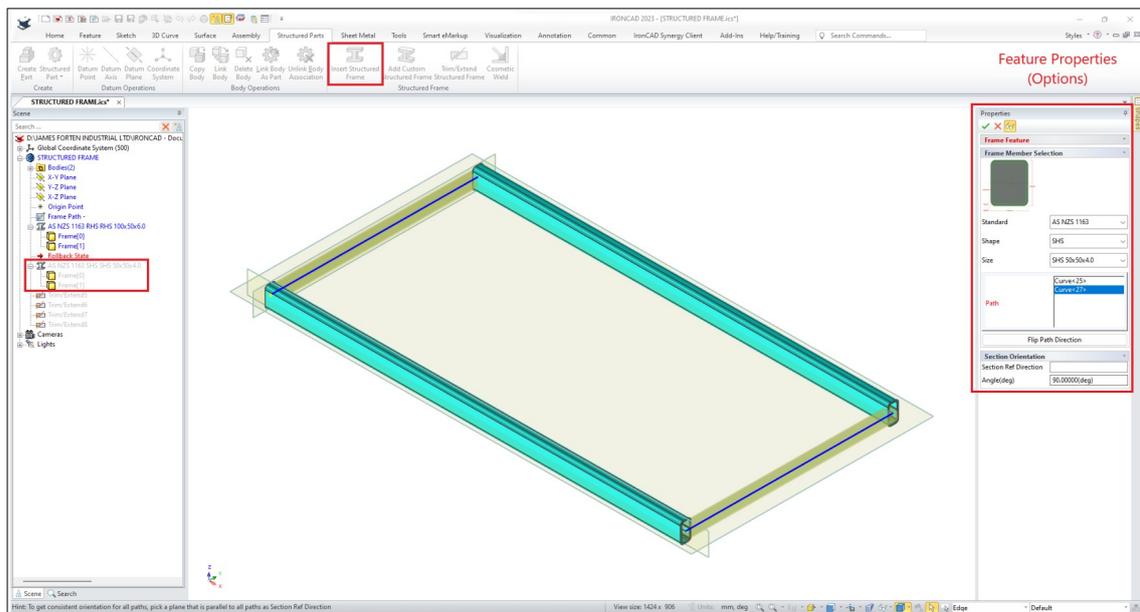


## IRONCAD – STRUCTURED FRAMES

One of the Features available within “Structured Parts” is “Insert Structured Frame”. After first creating a “Path” in the form of a 2D Sketch or 3D Curve, this Feature will apply (sweep) a predefined “Shape” along the selected “Path Segments”. Different “Shapes” can also be selected for different “Path Segments”.



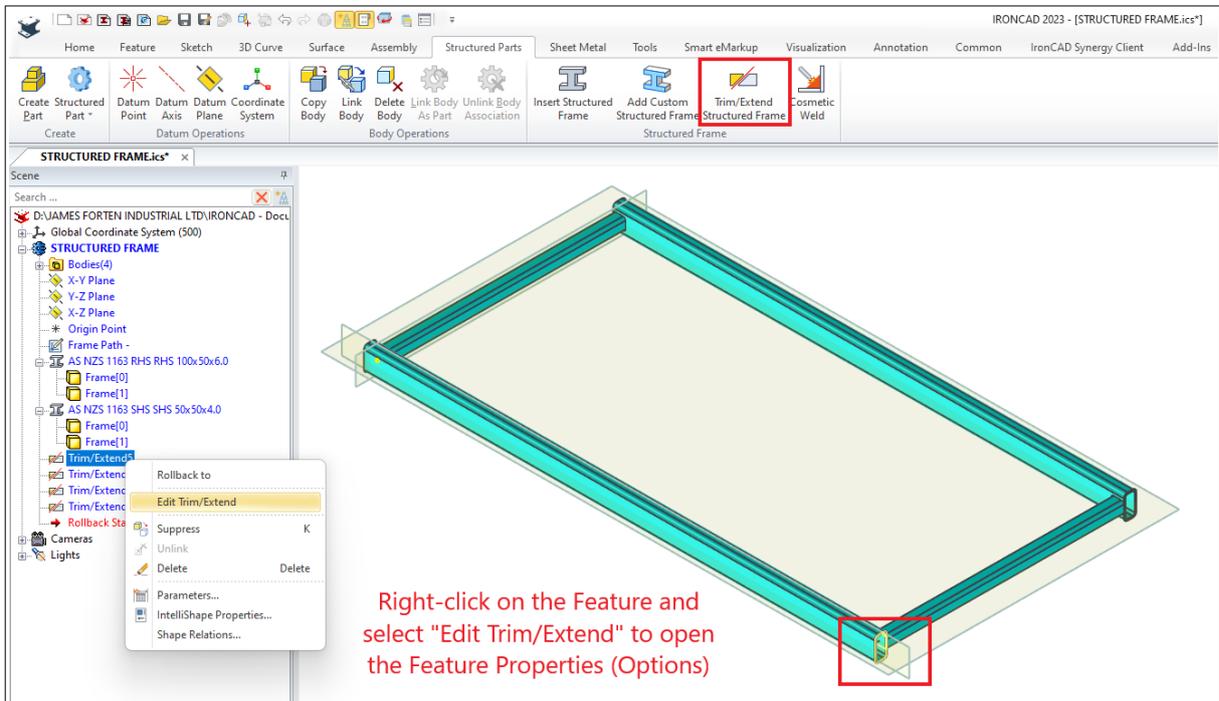
Inserting or Editing Structured Frame Features



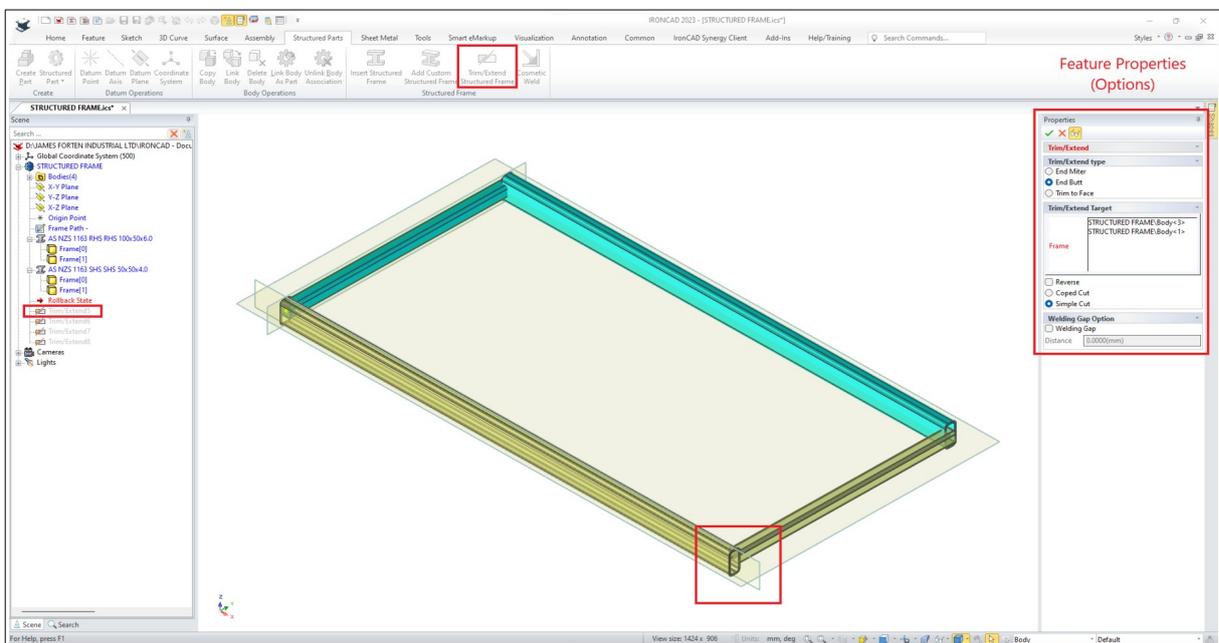
Structured Frame Feature Properties (Options)

Select the Standard, Shape, and Size. These will be applied to the selected Path Segments.

After inserting, the various “Frame Bodies” within a “Structured Frame Feature” can be trimmed and extended relative to each other using the “Trim/Extend Feature”. While there are different options available, users are not limited to this Feature for editing “Bodies”, as standard “Shape and Modifying Features” (including Direct Editing) can also be used.



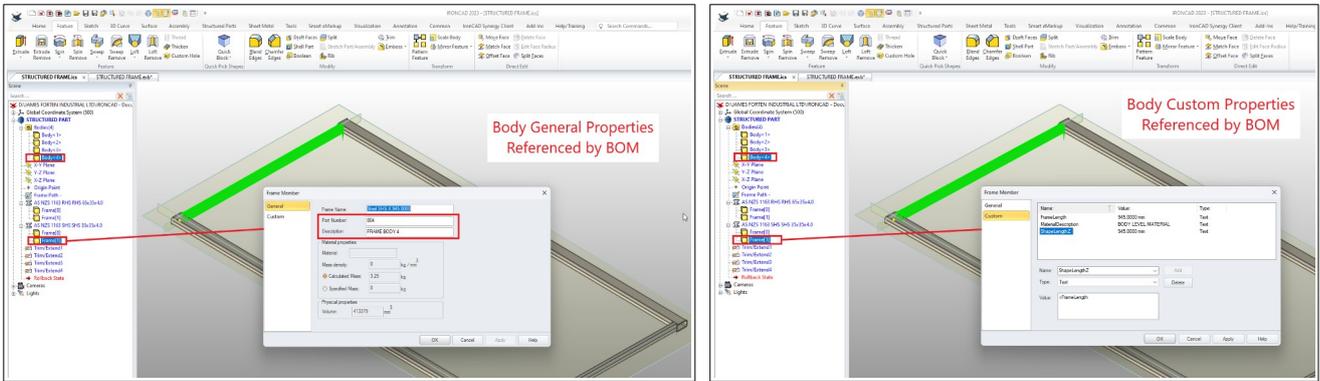
Trim/Extend Structured Frame Feature



Trim/Extend Structured Frame Feature Properties (Options)  
For editing the “Frame Bodies” relative to each other.

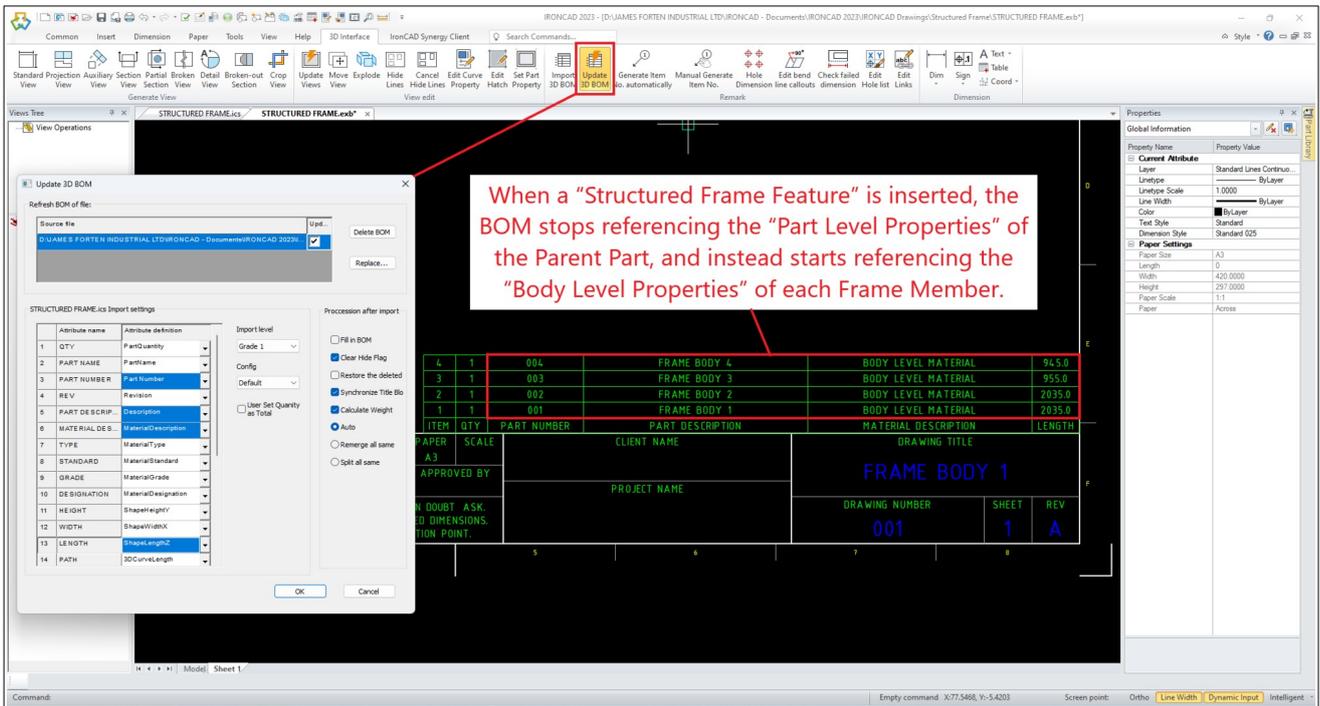
**IRONCAD – STRUCTURED FRAMES – BODIES DISPLAYED IN BOM**

One of the important differences with “Structured Frames” is regarding what is displayed in the Bill of Materials (BOM). When a “Structured Frame Feature” is inserted, the BOM stops referencing the “Part Level Properties” of the Parent Part, and instead starts referencing the “Body Level Properties” of each Frame Member.



“Body” (Frame Member) Properties Referenced by BOM

IRONCAD 2023 introduced the ability for Custom Properties to reference other Custom Properties. In the image above, the Custom Property “ShapeLengthZ” is referencing the default Custom Property “FrameLength” by using the expression “=FrameLength”.

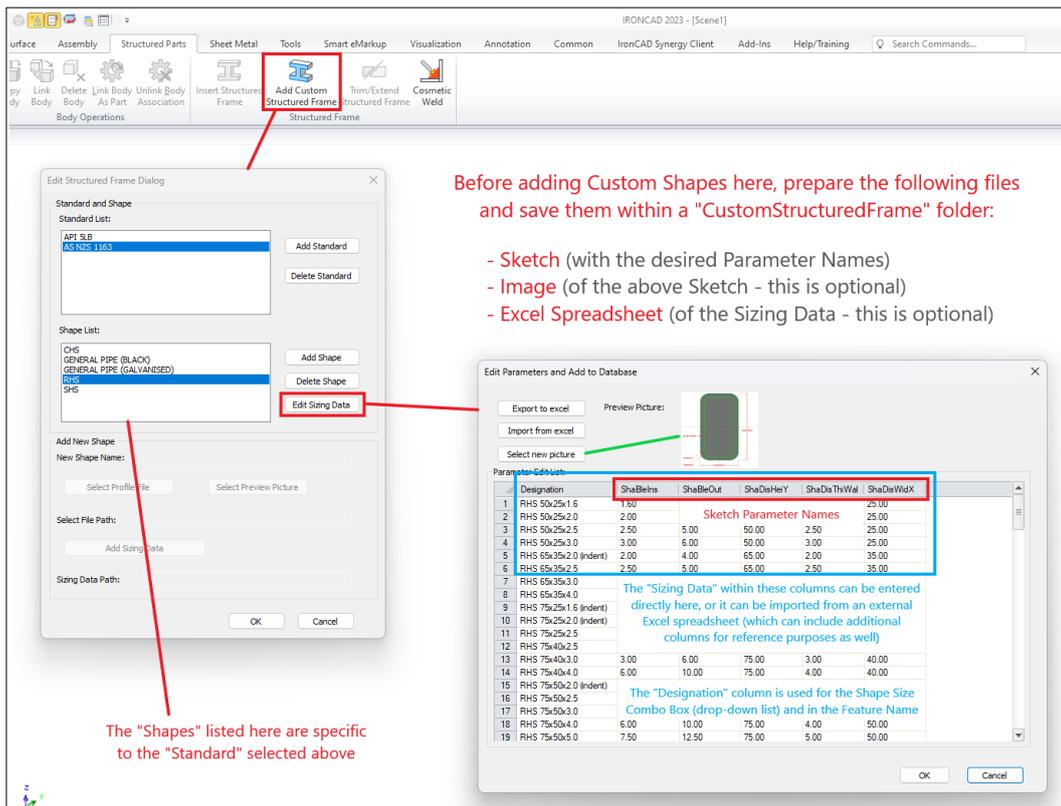


Bill of Materials (BOM) Referencing the “Body Level Properties” of the Frame Members

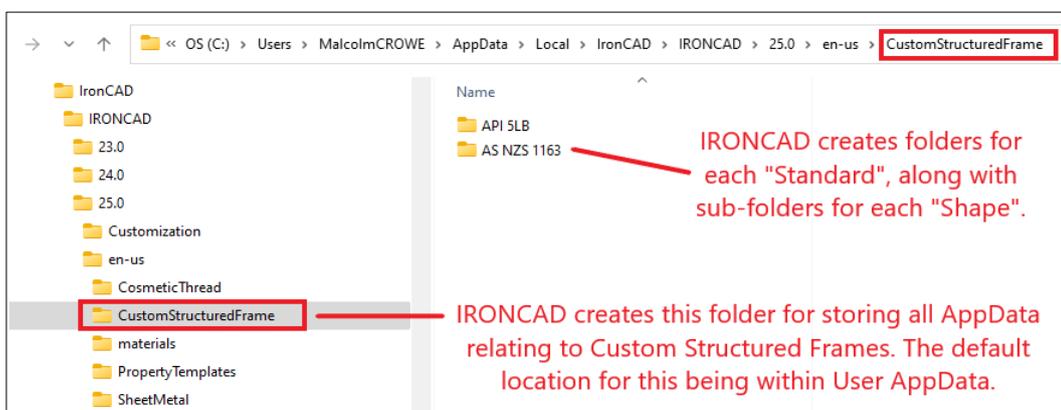
**IRONCAD – STRUCTURED FRAMES – CUSTOM SHAPES**

IRONCAD 2023 introduced the “Add Custom Structured Frame” tool for creating custom predefined “Frame Shapes” based on parametric “Sketches” saved as individual scene files.

The minimum requirement is to first create and save Sketches of the desired Shapes. While it’s possible to add “Sizing Data” directly within this tool, there is the option to import this data from an external Excel Spreadsheet. The benefit of the Excel spreadsheet approach is that additional information (columns) can be included for reference purposes.



Adding/Editing Custom Structured Frames (Dialog Boxes)

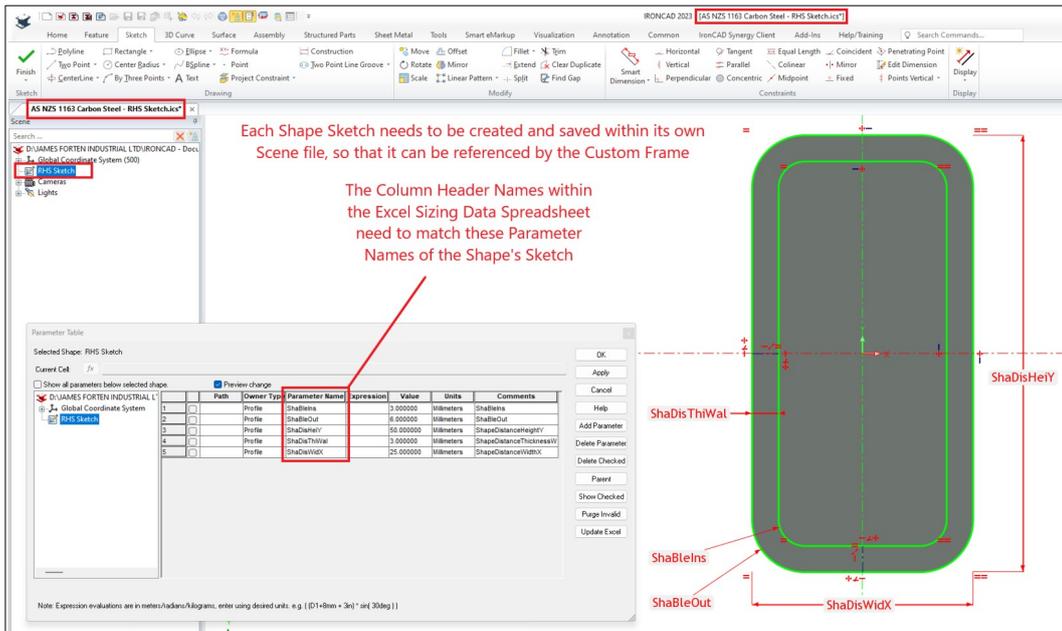


By default, the AppData relating to Custom Structured Frames is saved in this location. The folders and files created here are different to the referenced files (Sketches etc...).

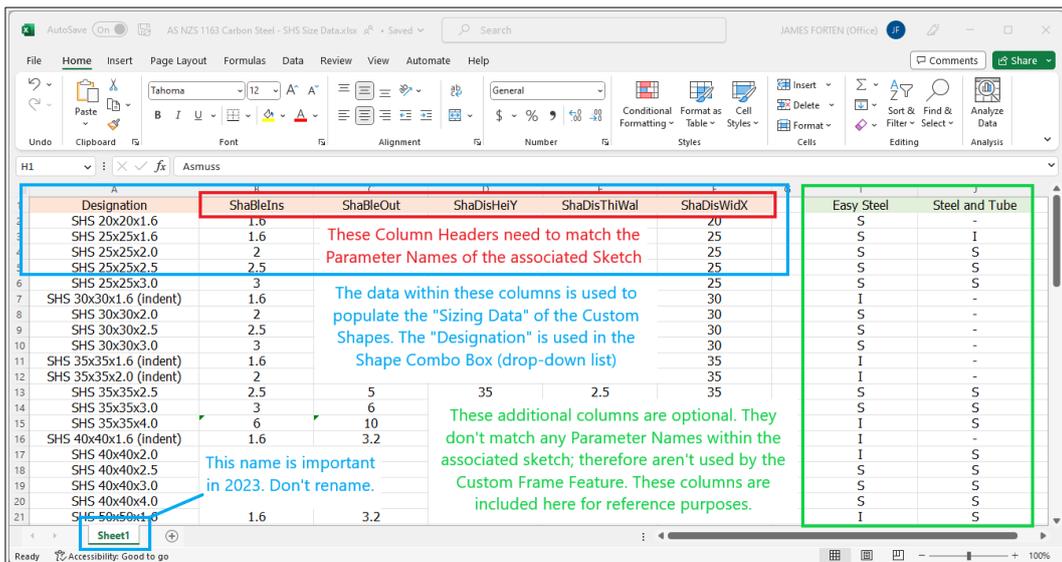
**IRONCAD – STRUCTURED FRAMES – REFERENCED CUSTOM FILES**

For each desired “Frame Shape” prepare the following reference files and save them within a “CustomStructuredFrame” folder. These are used by the “Add Custom Structured Frame” tool to create its “AppData” files and folders. These files aren’t the AppData themselves.

- Sketch (with the desired Parameter Names)
- Image (of the above Sketch – this is optional)
- Excel Spreadsheet (of the Sizing Data – this is optional)

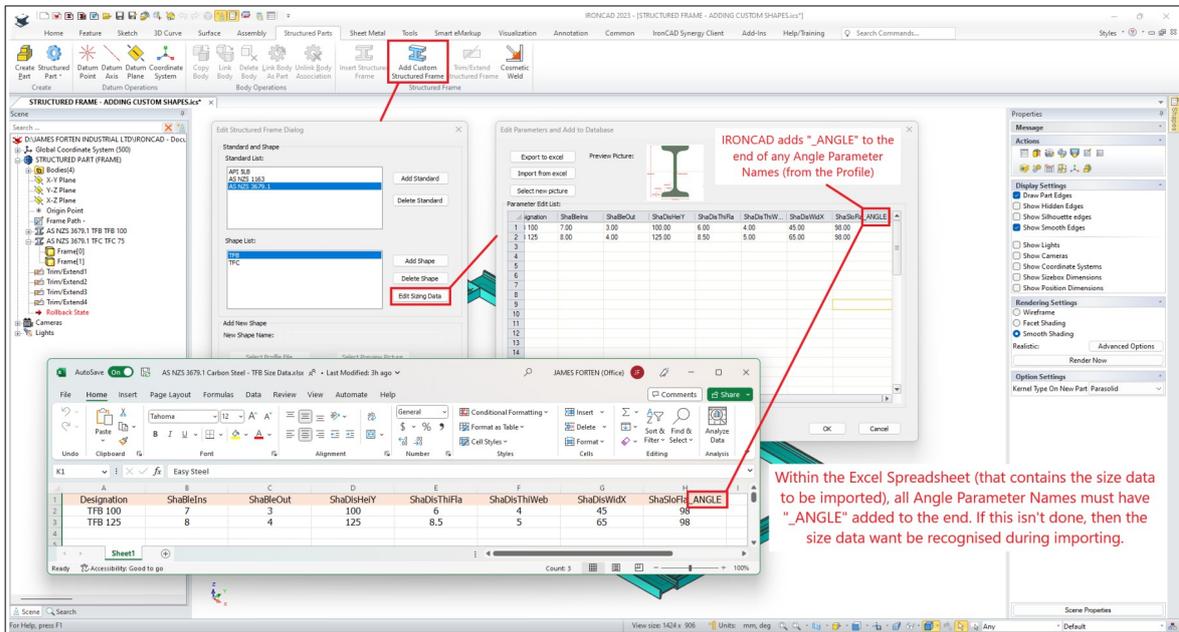


Sketch Editing with the Parameter Table open, displays the Parameter Names in the dimensions.

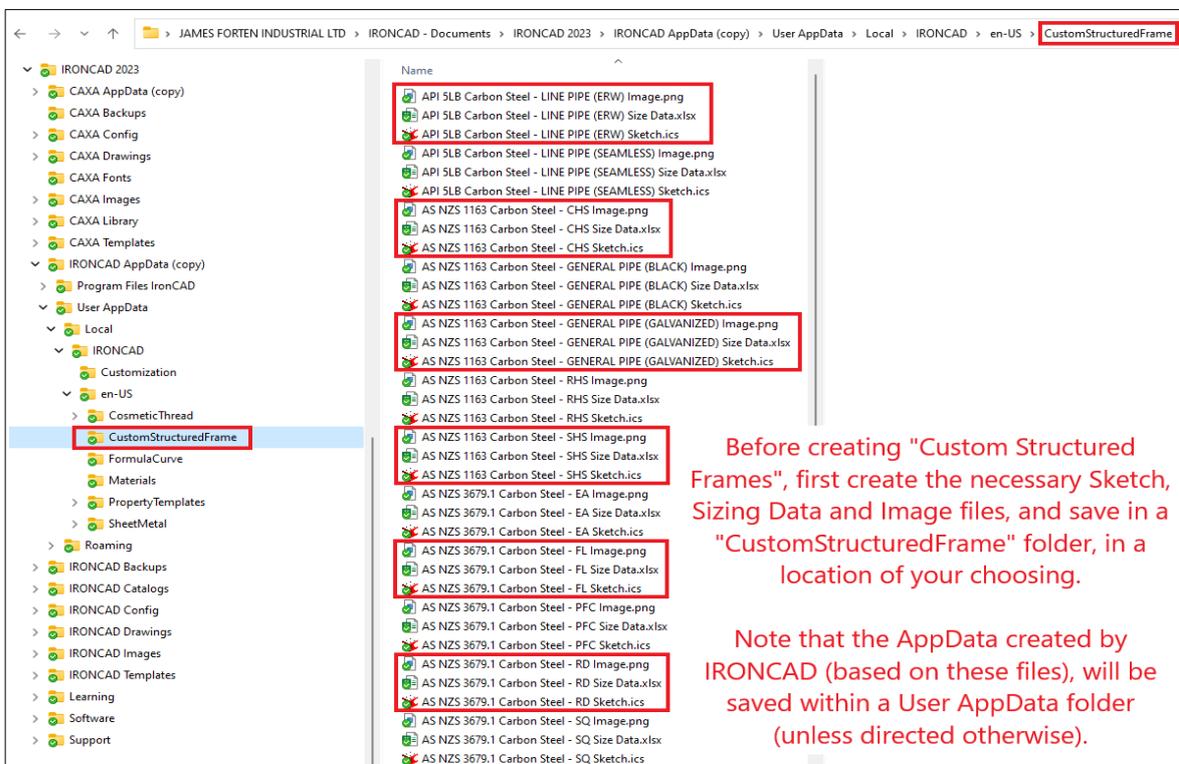


Excel Spreadsheet with Sizing Data columns that match the Sketch Parameter Names. Any additional columns (for reference purposes) are ignored during importing.

Regarding adding Size Data, its important to be aware that IRONCAD adds “\_ANGLE” to the end of any Angle Parameters coming from the referenced Profile. Because of this, “\_ANGLE” needs to be added to the end of any Angle Parameter Names within any Excel Spreadsheets (that contain size data to be imported).



Excel Spreadsheet with Sizing Data – Angle Parameter Naming (\_ANGLE)



Reference files (and folder) used for creating Custom Structured Frame Shapes. A Sketch, Image and Excel Spreadsheet (Size Data) was prepared for each Frame Shape.