

# THE THIRD GUILD

## *CADbuddy for modo 401*

[www.thethirdguild.com](http://www.thethirdguild.com)

CADbuddy is a set of tools that help you to use 2D polylines inside of modo:  
From clean-up to checking to creation of geometry.

### **Key Features (v 1.4)**

CADbuddy comprises of nine (9) tools to aid working with imported 2D polyline data and other geometry.

#### **Merge CAD**

- Clean-up and flatten 'mesh items' containing 2d polylines.
- Merge many mesh items (regardless of content) into a single Mesh Item layer.

#### **Scale CAD**

- Scale imported 2d polylines or other 3d geometry based on the length of a single 'known' edge.
- Anchor the mesh to a specified point prior to scaling.

#### **Polyline (Edge) Checker \*new**

- Check for incorrectly drafted lines.
- Checks lines are facing along major axis and/or along the common angles used for buildings.
- Can be used to check edge alignment on any 3D model.

#### **Extract Elevations**

- Quickly extract elevations to their own layer (with auto-naming)
- Auto-rotate 2d polylines into correct orientation for front, left, right, etc. elevations

#### **Align Elevations**

- Align to origin centred around a vertex or align to a stored vertex position.

#### **Align Points \*new**

- Easy points-to-point alignment.
- Align along any combination of the major axes plus quick 1d alignment option.

#### **CAD Extrude**

- Extrude polygon/s using heights taken from 2d polyline data or any vertex selection.

#### **CAD Slice + Projection Slice**

- A powerful tool that enables you to use edges from 2d polylines to slice through building geometry.
- Projection slice option allows cutting in the direction of a selected poly normal (only for Vertical cutting).

#### **Smart Bridge**

- Bridge multiple window/door openings at once.
- Automatically create a polygon locator for use with Windo - the Third Guild's window generator. \*new

For *MORE DETAIL* about the functions and limitations of the individual tools please read the *PAGES BELOW* and watch the videos on the Third Guild's *WEBSITE*: <http://www.thethirdguild.com>

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**Merge CAD :**

Merges polylines layers in to a single mesh item and clean up the data.

Options:

- remove the original CAD mesh items (layers).
- centre the outlines around the world origin.
- merge vertices
- remove one point polygons.
- remove floating vertices (i.e. vertices that have no polygon association).
- flatten all vertices to ensure they are in the same plane i.e. set all vertex Y positions to zero etc.

**Scale CAD: (Vector Scale)**

Select any edge from a mesh, set the desired size and the mesh will be scaled accordingly. This has an advantage over using modo's built-in absolute scaling scripts as it does not rely on knowing the bounding box size, but rather on knowing the size of just one object in the model e.g. size of one edge of a door or window frame.

Options:

- scale along XZY, XY, YZ or ZX.
- grab the size of the currently selected edge
- anchor the mesh to a specific point (by selecting a vertex)

**Polyline (Edge) Checker**

Selected one or more mesh items (layers) and this tool will check that all the edges align along the major axis and other common angles used for arch-viz drawings: Edges that do not match will be automatically highlighted and the number of unmatched edges is displayed in the UI.

This tools works with edge selections or checks all edges, if none are selected. As this tool checks edges it can be used to check any 3D model and is especially useful for checking the shell of a building, for example, to highlight mistakes you may have made during modeling.

Options:

- Specify specific planes for checking (slightly faster) or check for alignment with all.
- Check for multiples of 5, 7.5 and 15 degrees in any direction.
- Check for multiples of any given (user defined) angle in any direction.
- Specify a minimum edge length – edges below this length will not be checked.
- Re-highlight the edges from the last check – in case you drop the selection

**Extract Elevations:**

Once you have cleaned-up and scaled your CAD this tool allows you to quickly extract the elevations to their own mesh items (layers). A new layer is automatically created (and named) whilst you are keep on the original CAD layer to enable fast extraction of subsequent elevations.

Options:

- Eight preset names so you can simply click 'Make Front' (elevation).
- Auto-rotate the front,back,left and right elevations to the correct facing during extraction.
- Offset the front/back and left/right elevations from the origin whilst extracting them.
- Option to centre extracted elevation around the world origin.
- 'Make custom' extracts polylines to new item and pop-up the layer name dialog.

**Align Elevations:**

A couple of simple options to help alignment of the 2d polyline elevations.

Options:

- Move the a mesh (eg, 2d polyline elevation) to the origin, cantered around a specific vertex.
- Store a vertex position and then move a mesh to that position (cantered around a vertex selection).  
Option to automatically activate the move tool after alignment.

**Align Points:**

Align a set of points to another point along one or more axis at the same time.

Options:

- Align to the FIRST or LAST selected point (vertex)
- Fast 1d axis selection and 1d alignment option
- Select one or more axis using check boxes, allowing for easy 1,2 and 3d alignment.

**CADextrude:**

Extrudes one or more polygons, e.g. floor plan, based on the Y values taken from a vertex selection from CAD data. Vertices representing the heights of the various parts of the structure, e.g. masonry openings, can be selected in any order.

Options:

- Maintain the polygon selection (if one exists) for the geometry being extruded – allows for additional edits without having to re-select polygons.

**CADslice:**

Slice geometry, in separate layer, using a polyline selection (one or more edges) from a CAD elevation. This allows the users to rapidly cut the masonry openings in to a building mesh whilst retaining quad polygons (as opposed to using boolean).

Additional features:

- Duplicate slice positions are automatically removed allowing for 'lazy' selection of the edges used for slicing. This helps to prevent making very close cuts (eg, two slices within 0.2mm, for example) by mistake due to errors in the original CAD data/polylines.
- 'Tolerance' system in combination with 'lazy' selection means the users can select both vertical and horizontal edges at the same time. Then, with a couple of clicks its possible to quickly cut the geometry in both directions.
- Once you have selected a building mesh and CAD layer you can work away without having to change the item list selection.

Options:

- Horizontal: Guarantees slices created in the geometry will be horizontal (based on Y-up) and thus prevents errors in the CAD polylines from being transferred to your mesh.
- Vertical: Guarantees slices created in the geometry will be vertical (Y-up) and thus prevent errors in the CAD polylines from being transferred to your mesh.
- Unique 'tolerance' value automatically averages out small errors in CAD polylines and highlights any edges (polylines) you have selected which are outside the given limit.
- Isolate a given polygon selection (hide the other polygons) without having to use the Item List to change your current item selection.

**CADslice: Projection Slice**

Enables you to drive the slicing direction of CADslice based on a polygon selection. The tool only cuts vertically (Y-up) and is subject to the same safety checks as per CADslice:Vertical. The tool can only be used in Perspective view.

Options:

- Max. cut depth: This determines the maximum depth from the face of the selected polygon that geometry will be cut. This enables you to only cut through the exterior wall, for example.

## **Smart Bridge**

The 'smart Bridge' tool takes control of modo's built-in bridge tool and enables you to bridge multiple window/door openings at once, which is a big time saver. The tool uses 5 criteria to find the best possible matches and leaves unmatched polygons/polygon-groups highlighted.

Options:

- Segments: Same as for modo's built-in tool. This is the number of segments the 'bridge', between selected polygons, will be divided into.
  - Max. Distance: Specify the maximum distance where two opposing polygon groups will be considered for bridging. This helps to prevent bridging polygon that are far apart.
  - Create a locator polygon for use with Windo – the Third Guild's window generator. Assign a material to the 'locators' and update its colour and transparency without having to leave the CADbuddy UI.
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## **CADbuddy Limitations**

- CADextrude and CADslice currently only work in modo's default scene orientation of Y-up.
- Extract Elevations with Auto-Rotate currently only supports modo's default Y-up scene orientation.
- Smart Bridge currently uses modo's built-in bridge tool so some bridged polygons may be flipped.
- Scale currently centres the Mesh Item around the world origin (0,0,0).
- The 'Polyline Checker' is currently limited to check a maximum of 60,000 edges (25K in any one layer)

## **Install and User Guides**

- This script plug-in comes complete with a PDF install guide together with a video that shows how to install the script and quickly set-up its user interface within modo 302/401.
- The User Guide is completely video based and consists a series of short videos (h.264 encoded) which will get you up to speed with these user friendly tools.

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