

GWB - Get wooden beams 1.1

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GWB is an add-on for AutoCAD 2013-2018.

It serves to identify rectangular wooden beams in AUTOCAD 3D DWG or DXF drawings. Beams can be cut perpendicular or non perpendicularly to the ends. DWG or DXF files can be created directly in AutoCAD or may come from programs that can generate structures of wood or other materials (for example the software: ArchiCAD, Chief Architect, Autodesk Inventor, Solidworks, Tekla, [FURNIT-Design of furniture](#), etc.). In fact, all parts with a rectangular section of a 3D model of a building are identified. The result of the program is a drawing with the identified parts (numbered, dimensioned and positioned from an origin) and a file of quantities that can be loaded into EXCEL. The identified pieces become entities that can be manipulated (modified, archived or drawn) in the FURNIT program.

Installation

Always download the latest shareware version from <http://rcad.eu> (not from other sites)!

Follow the steps:

- 1) Unzip "gwb.zip" in the folder "c:\gwb"
- 2) Launch AutoCAD
 - starting with Autocad 2014, set the SECURELOAD variable to 0 or the TRUSTEDPATHS variable to "c:\gwb"
 - launch the menu functions:
 - Tools
 - Load Application
 - Startup Suite
 - Add
 - c:\gwb\gwb.vlx
 - close and then restart AutoCAD
- 3) open a DWG (for example "c:\gwb\gwb_example.dwg").

Launch in work

Launching is done in AutoCAD with the GWB command after a DWG file containing 3D beams has been opened. The program will identify the beams in the entire DWG. The unit of measurement shall be [cm]!

When you run the program for the first time for a DWG, do not forget to define the reference point (with the "Origin" option - see below) for the positioning of the beams! The point should only be defined once (or when you want to modify it) for a DWG!

The demo version will identify a maximum of 50 beams and will work 5 times!

3D beams must be:

- with 6 flat faces,

- with rectangular section,
- cut (possibly non perpendicularly to the ends) to the final size,
- placed in space at the final position,
- described by BLOCK, 3DSOLID, 3DFACE or POLYFACE entities, located in a GROUP or not.

The beams should not contain cutouts for joining!

Delete (or freeze the layer for) DWG objects that do not have 6 flat faces!
Otherwise it will greatly increase the execution time, all objects being exploded in 3DFACE!

Result of execution

At the 6-face beams, the following operations will be performed automatically:

- a 3DSOLID (green) entity will be generated in a layer with the same name as the identified beams but at the beginning of which is added "g_",
- will be numbered starting with 1, in the middle of the entity, in a layer with the same name as the identified beams, but at the beginning of which is added "n_"; the dimensions of the gauge are also written under the beam number; the plane where the number and dimensions are written is the plane of the screen, so set the VPOINT corresponding to the desired viewing direction, before running,
- the dimensions of the section, l (the smallest), L (the big one), and h (gauge length), in a layer with the same name as the identified beams, but at the beginning of which is added "d_",
- the angles relative to the perpendicular to the beam of the two faces at the ends of the beam (in DD degrees), if they do not have the value of 90
 - all - the angle of the side 'l' of the face number 1
 - aL1 - the angle of the side 'L' of the face number 1
 - al2 - the angle of the side 'l' of the face number 2
 - aL2 - the angle of the side 'L' of the face number 2
- it will calculate the volume in cubic meters, lxLxh (m3) being the volume given by the dimensions of the gauge and vol(m3) being the real volume (after cutting at an angle),
- the coordinates of two opposite vertices of the beams, against an origin point indicated in advance (see "Origin" option), will be drawn in a layer with the same name as the layer of the identified beams but at the beginning of which "o_" is added; the origin point is marked in drawing by a red sphere,
- the beams become entities recognized by the [FURNIT-Design of furniture](#) program; the beams can be individually modified or grouped into bodies (they can be mirrored, stretched by one direction, archived in libraries for reuse, can be drawn and quantity lists are generated).

The above information will also be written in a file in the same folder and with the same name as the DWG name, but the TXT extension. This file can be loaded into EXCEL, where different totals (by section type, angles, layers, etc.) can be made.

For each layer, the following information will appear on the screen:

- "3DSOLID_6x3DFACE" - the number of recognized beams (with 6 quadrilateral flat faces),
- "unresolved_6x3DFACE" - the number of objects with 6 flat quadrilateral faces, in contact 2 by 2, but not identified as beams with constant rectangular section after one direction; they will be drawn as POLYFACE (of red color) if the "Drawunresolved" option (see below) is set to "Yes", in a layer with the same name as the identified beams, but at the beginning of which is added "r_",

- "unresolved_3DFACE" - the number of quadrilateral 3DFACE entities that do not enter in a group of 6 flat faces that define a beam,
- "3DFACE with 4 sides" followed by the number of 3DFACE entities with 4 sides and then by the total number of 3DFACE (which may be larger than the first number because it also contains triangular 3DFACE).

The entities in the initial DWG remain unchanged.

The identified beams together with the number and their dimensions will become an Autocad GROUP, so they will be able to be handled as a unit. A GROUP can be exploded with the AutoCAD UNGROUP command.

You can search in a DWG for a particular beam, using the AutoCAD FIND command, where you first indicate the beam number, then select FIND, double-click the result and finally DONE.

There will be generate one VIEWPORT in PAPER SPACE for each layer from the initial DWG, where beams were found. The layer's name is written left-down on the VIEWPORT. The dimensions of the VIEW are set with the X-paper and Y-paper options (see below). A table, similar to the generated TXT file, is inserted over each VIEWPORT. The beams are sorted by l,L,h. After the beams with the same lxL section, a total of green color is written. Finally, a total/layer is written with the red color. In "h(cm)" column the number of identical lxLxh beams is marked. The view direction from each VIEWPORT will be the initial view direction. If you want to get VIEWPORTS in one of the XOY, XOZ or YOZ planes, set VPOINT to "0,0,1", "0,1,0" or "1,0,0" before running.

After execution, the DWG is automatically saved under a name formed from the initial name to which "_processed" was added.

GWB options

Launching work in AutoCAD is done with the GWB command.

There will be more options displayed, with "run" launching the execution, the other options being various settings. The settings will also be valid in the next AutoCAD session, they beeing saved in the DWG folder (in a file with the same name as the DWG but having ".var" extension), as well as in the "c:\gwb" folder.

RUN - launches the program for the current DWG. To speed up the execution, delete in advance unneeded entities or freeze their layers.

EPS - sets a value (initially 0.05) representing the maximum distance between two vertices of 3DFACE entities, up to which the two vertices are considered to be the same.

HTEXT - sets the height of the text (initially 5 cm) of the number of a beam, which will be generated in the middle of the beam. The height of the dimension texts will be 0.6*HTEXT.

JOIN3DF - can have 2 values "Yes" or "No" (initially). If "Yes" will be searched pairs of 2 triangular 3DFACE entities that have an identical side. Each such pair will be transformed into a single quadrilateral 3DFACE entity. "Yes" setting increases the execution time.

Drawunresolved - can have 2 values "Yes" or "No" (initially). If "Yes" will be drawn with red color, in the form of POLYFACE, groups of 6 3DFACE in contact on the sides, but without defining a beam.

X-paper - defines the X-axis dimension of the VIEW entities generated in PAPER SPACE, in [mm].

Y-paper - defines the Y-axis dimension of the VIEW entities generated in PAPER SPACE, in [mm].

Origin - defines the reference point against which the relative coordinates of 2 vertices of a beam are drawn; the two vertices are at the opposite ends of the beam. Do not forget to define this point before the first run with a DWG! The point should not be defined at each running, its coordinates being saved.