

How to create a layer-by-layer LEGO® build plan from a 3D model file

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What do you need?

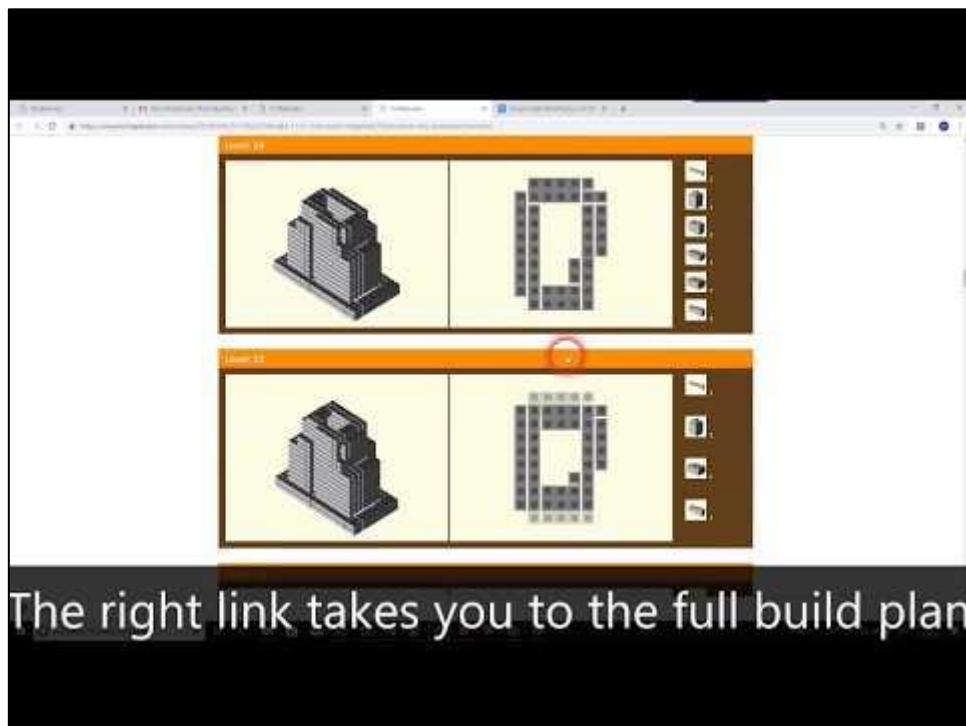
You need

- A suitable 3D model file
- A Windows/Mac/Unix Computer with a Chrome/Firefox/Safari browser
- An internet connection

For the impatient...

Go directly to www.brickplicator.com

For anyone that prefers watching videos over reading.....



For everybody else ...

1. What is a 3D model file, and where to get it?

If you ever saw a 3D printed object, played a modern video game, looked at Google Earth, used a GPS, or saw one of the great animated movies from Pixar, Dreamworks, Disney or other studios, you have been in close contact with 3D model files. Vastly simplified a 3D model is a scalable "picture" of an item you can "fly around" and look at from any perspective you wish.

Because of the broad application of 3D models, they come in different shapes and colors. Some are widely available and free, others are scarce and you might need to pay for. The most common 3D model file formats are:

STL

STL files are widely used for 3D printing and do not contain color information. Since the VAST majority of today's household 3D printers are single colored, this is not a significant 3D printing limitation.

While being single-colored it is a disadvantage for the creation of LEGO plans, STL files are in WIDE circulation and most of them are absolutely FREE for personal use.

You could "colorize" STLs for LEGO plans by importing your STL into a Minecraft world with www.craftplicator.com , "reshape" and "repaint" it in Minecraft before creating the plan for your LEGO bricks.

DXF

DXF files are usually exported from CAD programs such as AutoCAD. For that reason you will find technical designs or houses in this format. Like STL files, they contain no color information.

FBX

The filmbox format was originally used for capturing motions for animated movies. It is widely used for color 3D models today, as it allows to carry the color information WITHIN the model file and does not have to rely on external material or pattern files (such as OBJ) that makes it harder to handle.

OBJ

Is a simple geometry format that allows storing color/material information in separated files that can then be referenced. It is mostly used for color models, but there are only a very limited amount of quality OBJ files available for download. Because every model consists of multiple files (the OBJ file, the MTL file (containing the references to the material files) and any number of material files,) it is harder to manage/bundle.

PLY

PLY is a very versatile file format that stores point clouds as well as triangular models. It can handle color as well as monochrome. Very much like OBJ, quality color objects are rare and if anything goes wrong, it is pretty hard to debug due to the versatility of PLYs formats.

2. Where can I get great 3D models to create build plans for my LEGO bricks?

It is always a good start to google for **<desired object> stl free download fbx** and follow the results.

Apart from that, some great sites to get 3D models for your LEGO bricks are:

- thingiverse.com
- cgtrader.com
- clara.io
- myminifactory.com
- cults3d.com/en
- pinshape.com
- www.youmagine.com
- en.3dexport.com

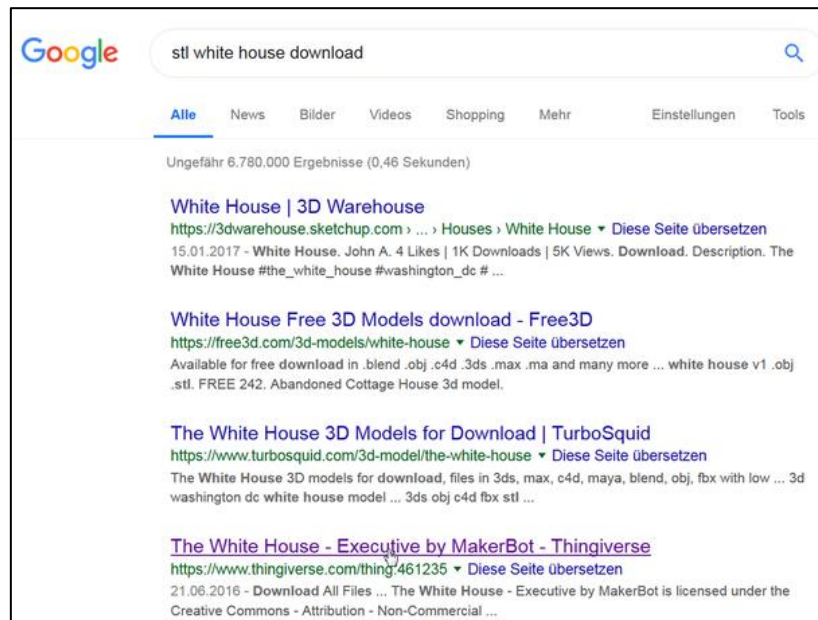
3. I have the right file but the wrong format. Can I convert one format into the other?

Yes, you can. There are some great free converters such as:

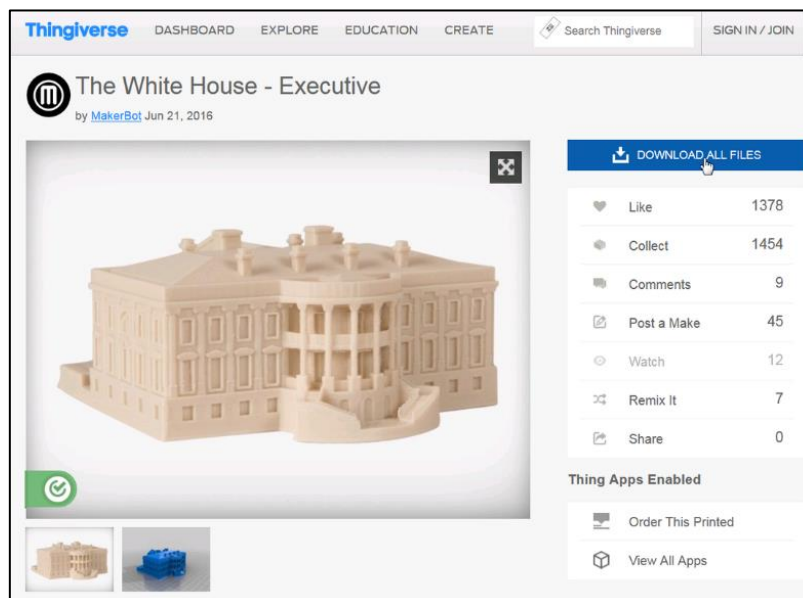
- http://www.swiftconverter.com/convert_3d
- <http://www.greentoken.de/onlineconv/>
- <https://www.nchsoftware.com/3dconverter/index.html>

OK - Let's get started

Let us say that we would like to build the White House with our LEGO bricks. Our search on Google gets us the following links:



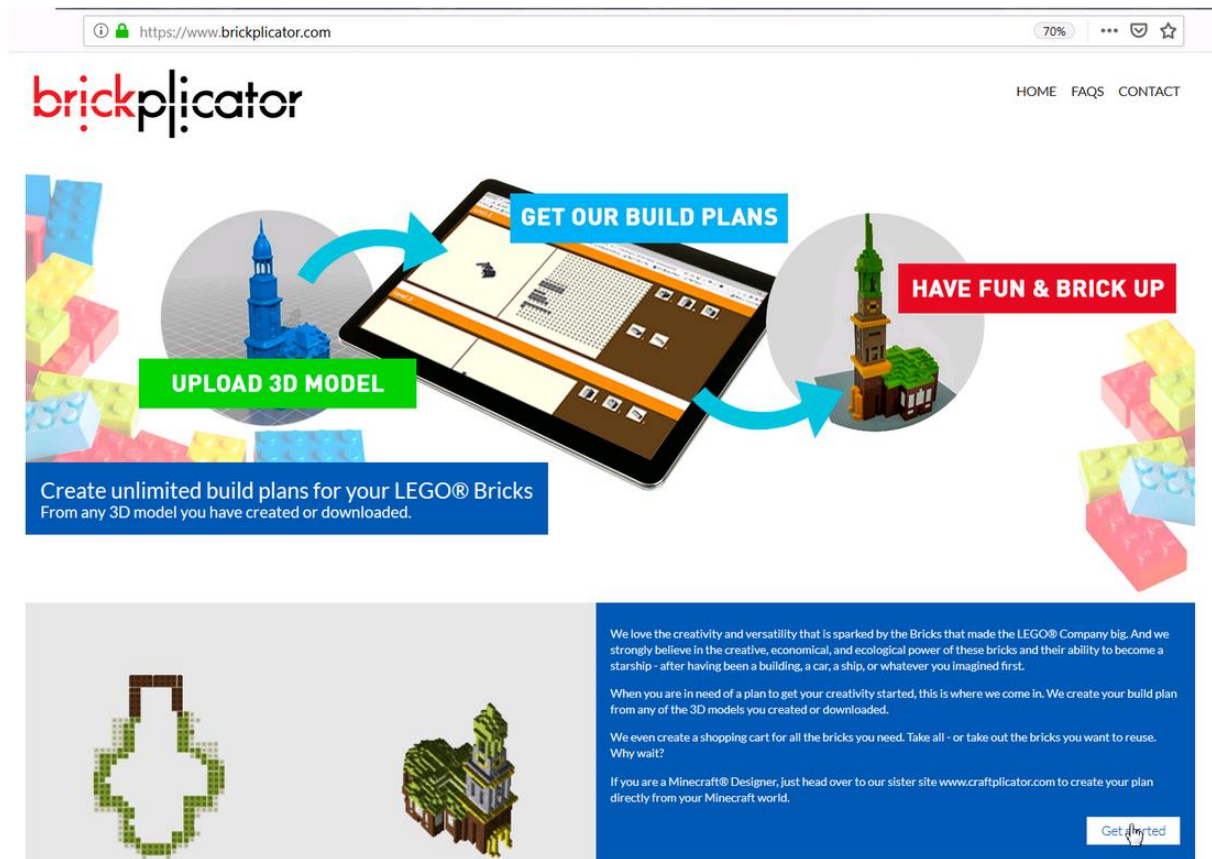
... and a click on the fourth option gets us to www.thingiverse.com :



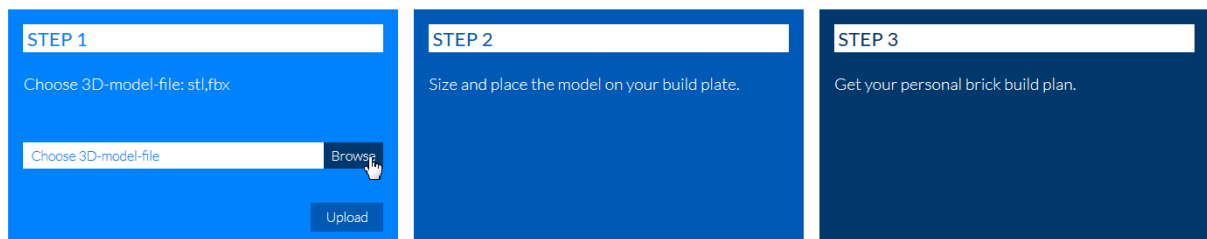
Unzip the STL file.

Upload your file to brickplicator.com

Go to www.brickplicator.com to convert your 3D model into custom LEGO instructions for your standard LEGO bricks.



Select the **Get Started** button on the right side of the screen and click **Browse** to select the 3D model file you want to turn into a build plan for your LEGO bricks.



Select the file you just downloaded and hit **Upload**.

STEP 1
Choose 3D-model-file: stl,fbx
File:DC_WhiteHouse.stl
Browse
Upload

STEP 2
Size and place the model on your build plate.

STEP 3
Get your personal brick build plan.

Top-Down View A or Top-Down View B?

Since our view on the build plate is "top-down", the left "Top Down View A" option would put the White House Building bottom-to-top on the build plate, which is what we want. If we would choose the right option "Top Down View B" the object would be placed on the build plate on its side.

Since 3D models follow no standard when it comes to using an XYZ or an XZY axis, this option allows you to swap the Y and Z axis to make sure you can use 3D models regardless of their axis rotation.

Set the size

STEP 1
Thank you for uploading your 3D-model file.

STEP 2
Size and place the model on your build plate.

STEP 3
Get your personal brick build plan.

Please select the size of your "brickplated" 3D model by dragging the borders of the highlighted area. The border of this area will turn RED if it is too large.

Please choose from the options your model will be on the surface.

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By dragging the blue borders of the highlighted area you set the size of your "brickplated" 3D model. If a border of the area turns RED it is too LARGE.

Solid or Hollow?

Some STL 3D models have all the details of the inner of the object and some 3D models are solid. If you run into a solid object, you might want to create a hollow model to save LEGO bricks. In this case select **Only create "hollow" shell from 3D model file** option.

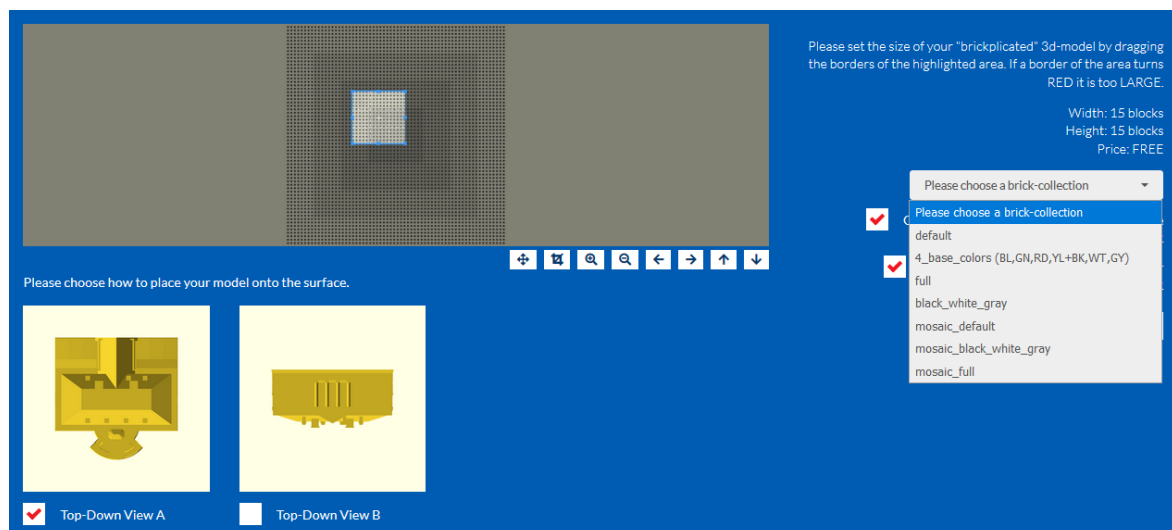
What is LXF and LEGO® Digital Designer?

A LXF file is a three-dimensional model or scene created by LEGO® Digital Designer (LDD). It can be loaded and refined by LDD. The LDD allows you to refine your model and use non-standard LEGO bricks to enhance the model generated by brickplicator.

Choose a brick-collection

When you click on the drop-down menu **Please choose a brick-collection** you can select from a variety of different color brick-sets your brick model should be built with.

Since we operate in the current case with a STL 3D model file which is monochrome, i.e. contains no color information (as explained above), it makes no difference what color brick-collection you pick. The result will be in any case monochrome too. Should you process a color 3D model file format (like fbx or obj as explained above) to choose a color brick-collection has an effect on the look of the final brick model. Choose between many different color sets, like full color, default or 4_base_colors. Or, choose black_white_gray to create your own piece of brick model art.



Receive the build plan for your LEGO bricks via eMail

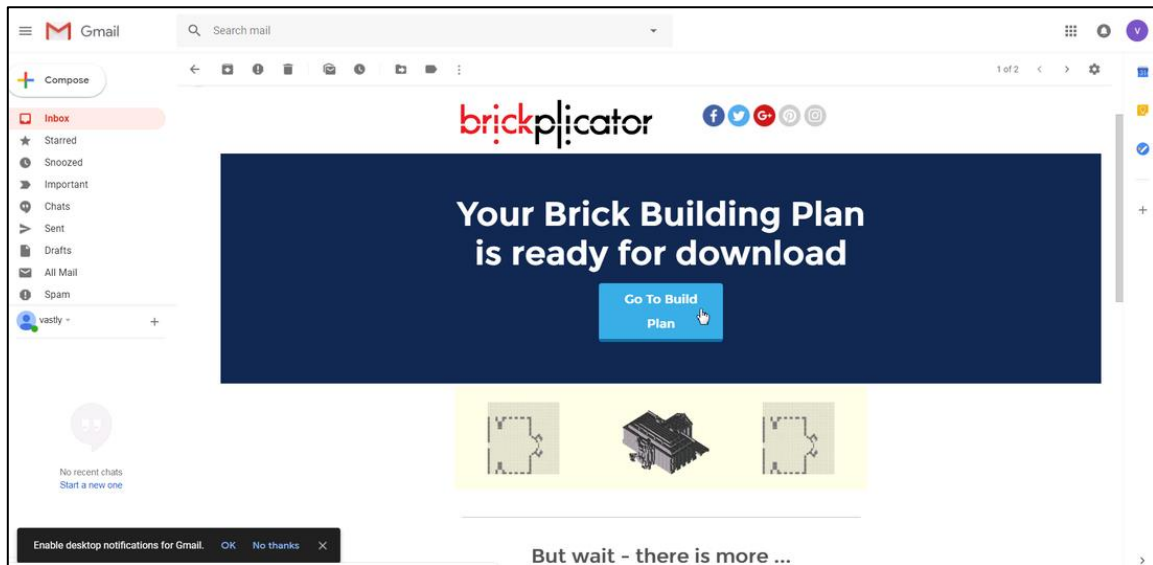
STEP 1
Thank you for uploading your 3D-model-file.

STEP 2
Size and place the model on your build plate.

STEP 3
Get your personal brick build plan.

Please enter your email address to receive your download link.
Email:
vastlyunderrated@gmail.com
Coupon(optional)
☐ I agree to the [Terms of Use](#) and [AGB](#)
Submit

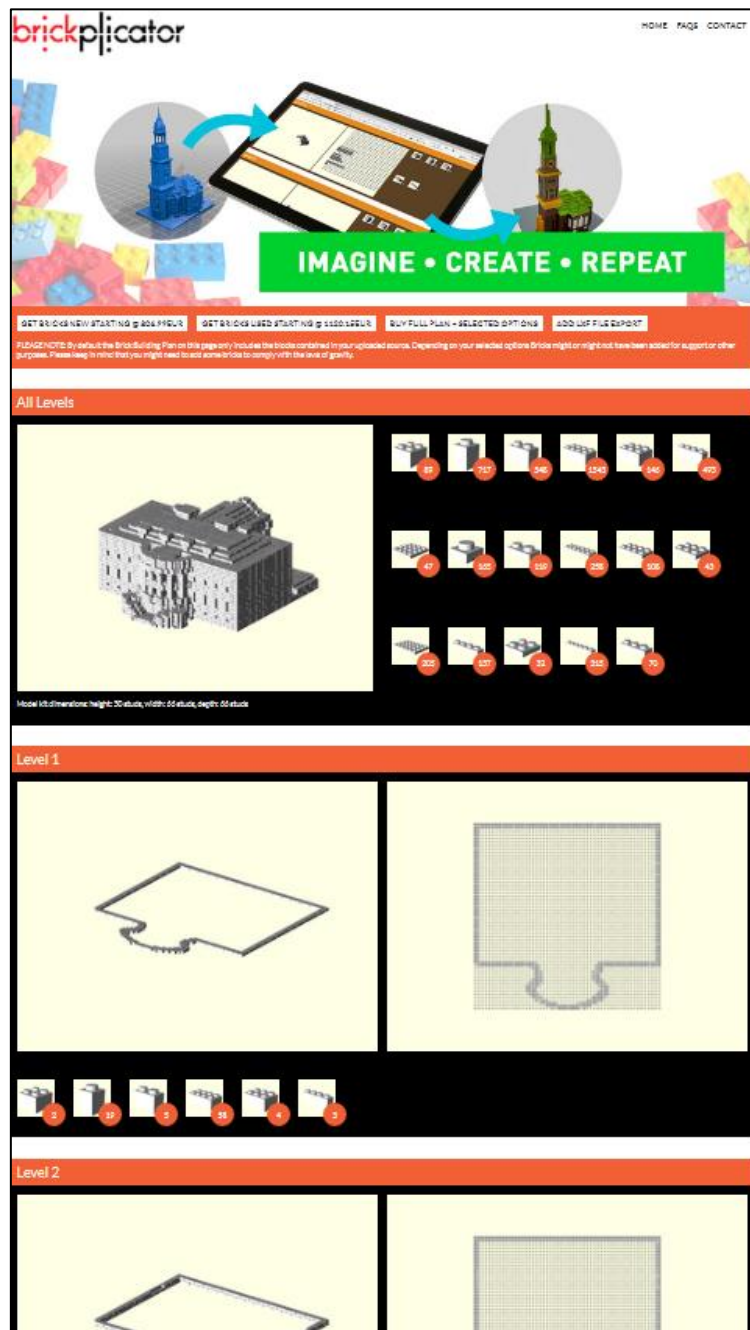
Since it takes some pretty hefty computing to generate your custom LEGO brick set, it might take up to 30 minutes for the model to arrive in your inbox. If your brick model has more than 130 layers and is higher than 1 meter - yes we have tried that - it might take even longer. Once the eMail shows up, it looks like this:



Here, you can go to your personal MOC of the White House for your LEGO bricks. Once clicked, it takes you to a page containing a 4-layer-preview of your LEGO layer-by-layer brick building plan. In the **All Levels** section you see a full picture of your brick kit with its dimensions (height, width, depth) as well as a complete list of all bricks needed to build it up.

The Brick Building Plan

The 4-layer-preview



If you selected a model small enough to qualify for FREE delivery, you can select the **GET YOUR FULL PLAN FOR FREE** button at the top of the page to get to the full build plan for all layers.

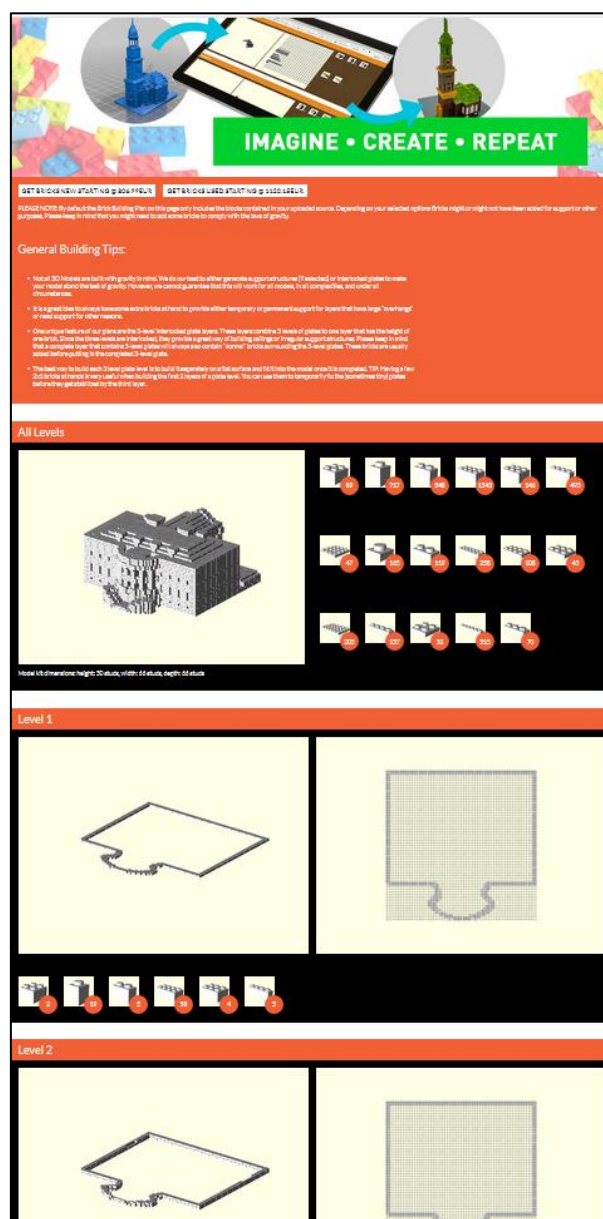
If you happen to own all LEGO bricks you need, you are all set for your custom LEGO White House adventure.

For all of you that are missing a few or all of the required LEGOs, the system has generated a (completely optional) Brick Owl shopping basket for convenience.

Brick Owl provides a worldwide marketplace service to allow customers to connect with stores selling LEGO and LEGO related items. These stores independently market, sell and support these items.

The full Brick Building Plan

On the top of the complete building plan you find general building tips worth to read through, followed by detailed layer-by-layer instructions.



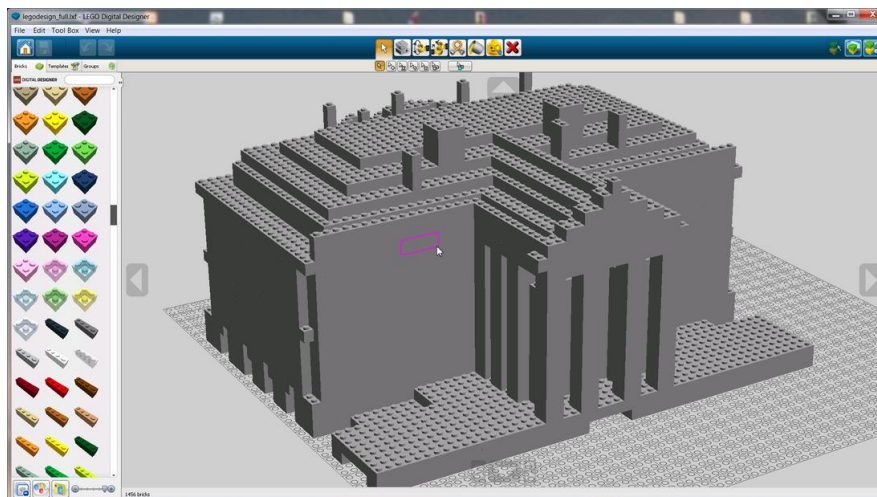
Every layer (level 1, level 2, level 3 ...) shows two sides. The left view shows your progress and the right top-down shows you where to put the bricks. Stud-by-stud. The previous layer is shown as reference with dimmed grey bricks.

Can I refine the model with the LEGO Digital Designer or other LXF compatible applications?

Yes, you can. If you selected in step 2 Brickplicants option to generate an **LXF export file for Lego Digital Designer**, it is available as a download link in the eMail containing your full brick building plan.

A LXF file is a three-dimensional model or scene created by LEGO® Digital Designer (LDD). It can be loaded and refined by LDD. Rebrickable has a great explanation of everything needed at <https://rebrickable.com/help/guide-to-lego-digital-designer/>.

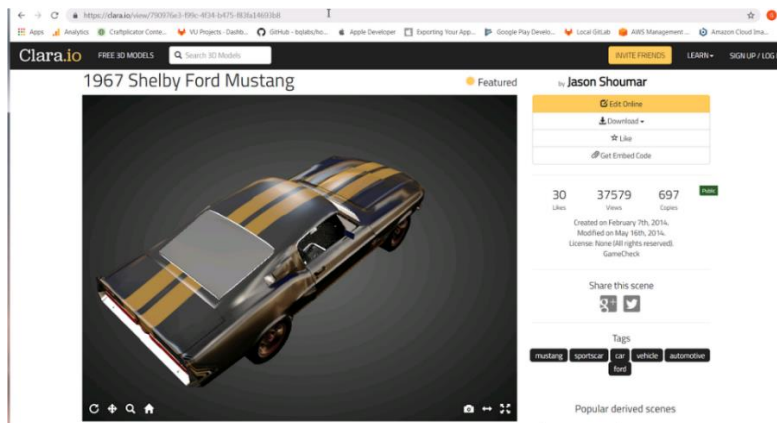
Once imported it looks like this:



Why don't I see any colors?

Since we used a 3D print STL file (which does not contain any colors) we only have one color as an output. If we would have used a color model (such as a FBX or OBJ file) the generated plan would have been in color too.

So, if you would have downloaded this 1967 Shelby Ford Mustang from <https://clara.io/view/79097e3-f99c-4f34-b475-f83fal4693b8>



The building plan for your personal LEGO MOC would have looked something like this:

