


SketchUp

SketchUp is a computer application (software) developed originally by a group of professionals from the architecture and engineering disciplines. In the late 90's, they formed a company called @LastSoftware to develop and market SketchUp. In March 2006, Google purchased @LastSoftware and now controls the future development of SketchUp. Of great interest to potential users of the software is that Google have released a free (or home) version of SketchUp which is suitable for learning to use the tool and can be used for non-commercial use. It is downloadable from the Internet at <http://www.sketchup.google.com>

 There is also a so-called Professional version of SketchUp. As mentioned, we will use the home version of SketchUp for this course. There is a great deal of commonality between the two programs. Once you start using SketchUp professionally, you are well advised to purchase the professional version.

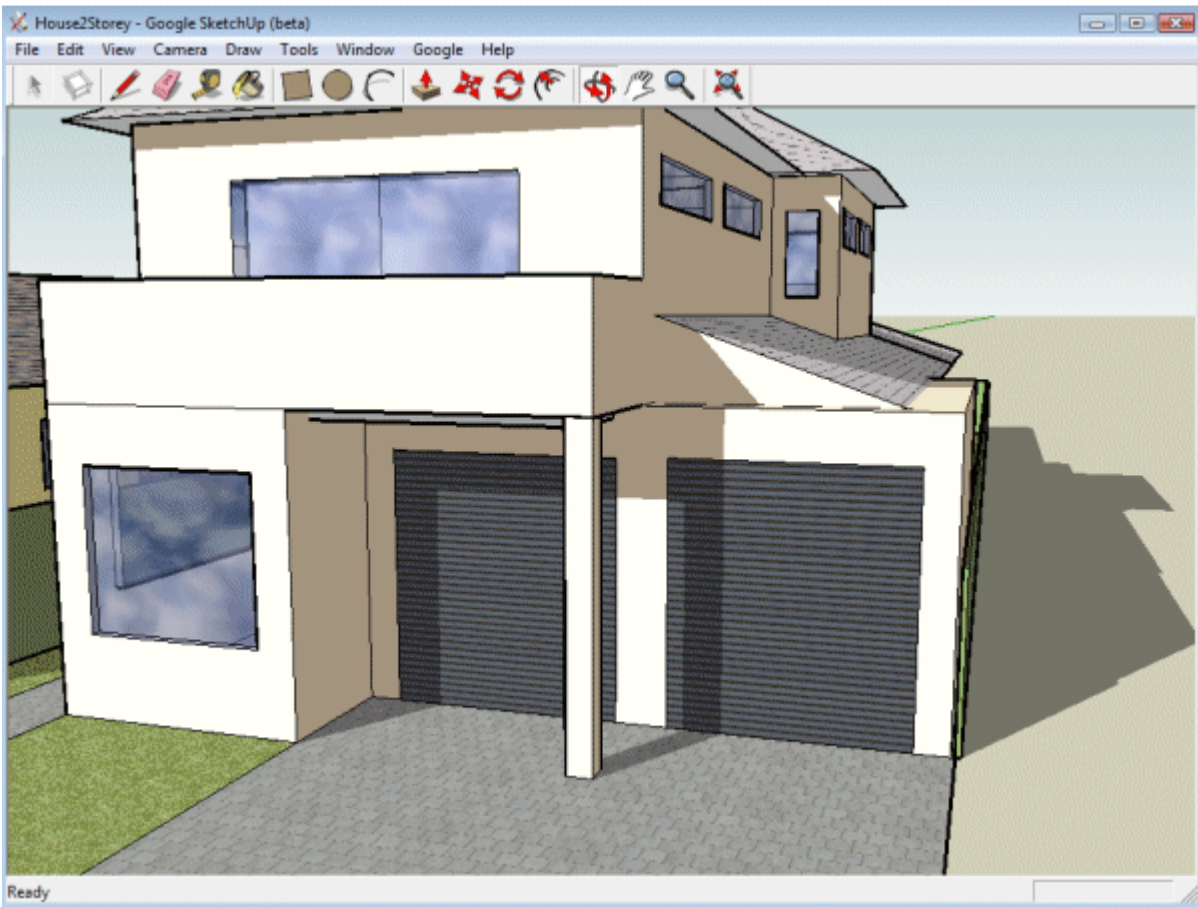
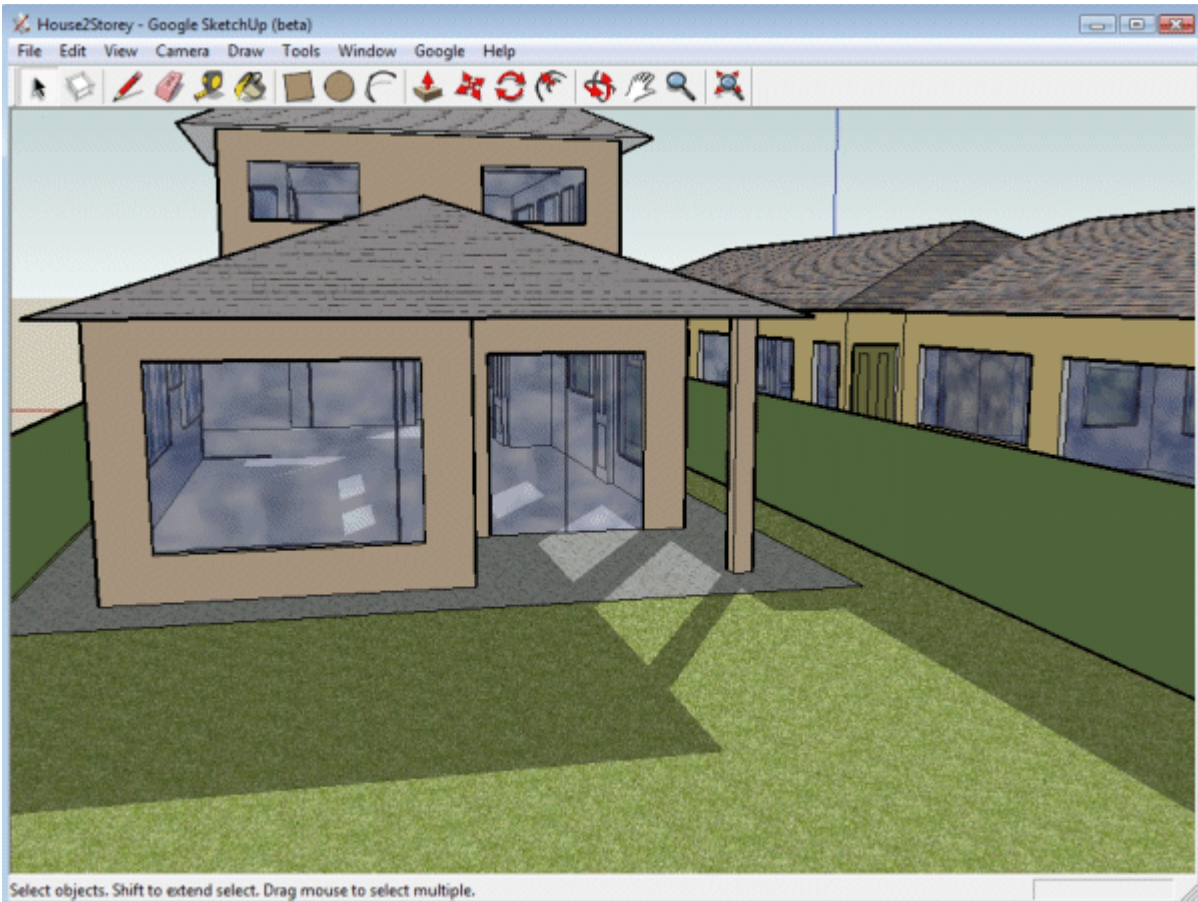
SketchUp and MicroStation

Even though your copy of MicroStation does allow for the creation and rendering of 3D geometry, there may be occasions where you have a need to move models which are partly built in MicroStation into SketchUp to take advantages of some of its features. This article explores that scenario.

Why learn SketchUp?

SketchUp is designed to let you create models of your intended design directly in a 3D environment an intuitive way. Once a 3D model has been built, SketchUp contains tools to apply rendering to surfaces in your model, create 'see through' and hidden line views, take sections through the model, orbit around the design and create a walk through the 'virtual' site. Because it can do all these things, the software is a tool much used by architects and other construction and engineering professionals. SketchUp can enable clients to understand a proposed design better than they can from a 2D plan.

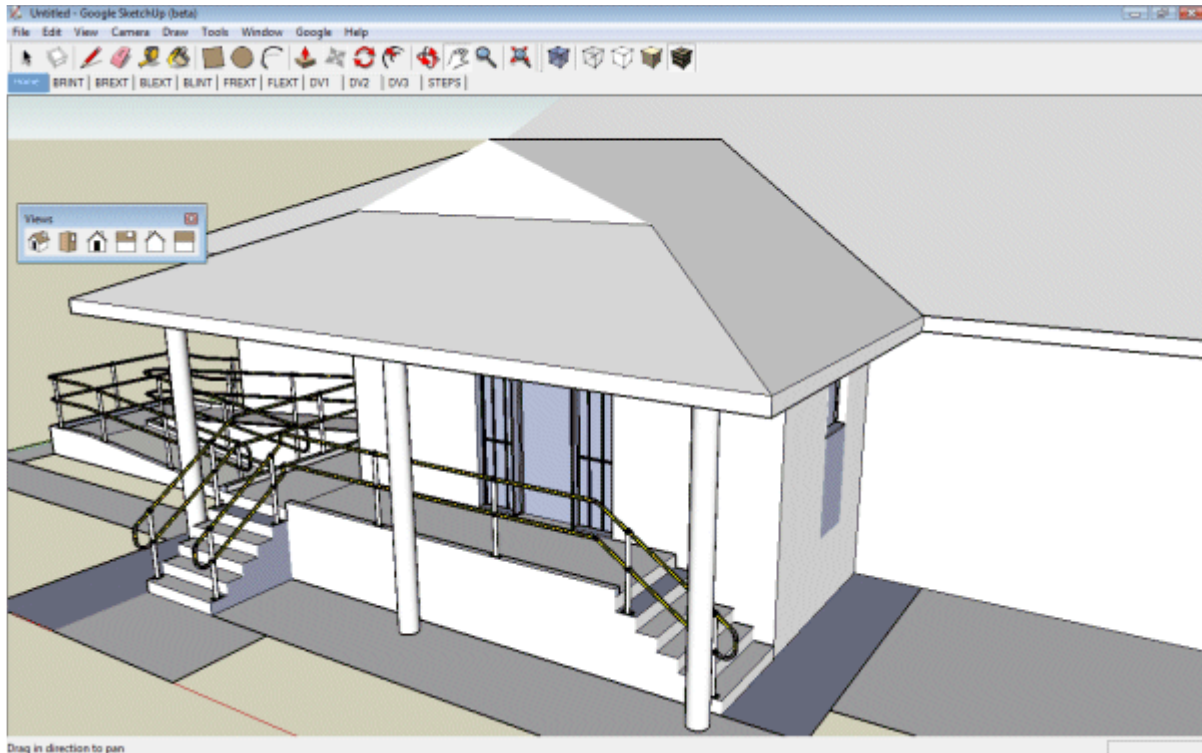
The figure below shows two views of a typical SketchUp model, one from the rear of a proposed house and one from the front.



A typical SketchUp model. Rear of two story house model (top) and front of house model below.

SketchUp talks to CAD software

Because SketchUp has tools which allow the importation of geometry from CAD software such as MicroStation, it has gained a considerable following among architects and engineers. The figure below shows a SketchUp model created in its entirety by importing a CAD model (as a DXF file from MicroStation).



Dynamic viewing

SketchUp provides some innovative tools for visualizing the design. It is possible to tell the software to cast shadow, take an X-Ray view, quickly orbit the model and view it from different directions.



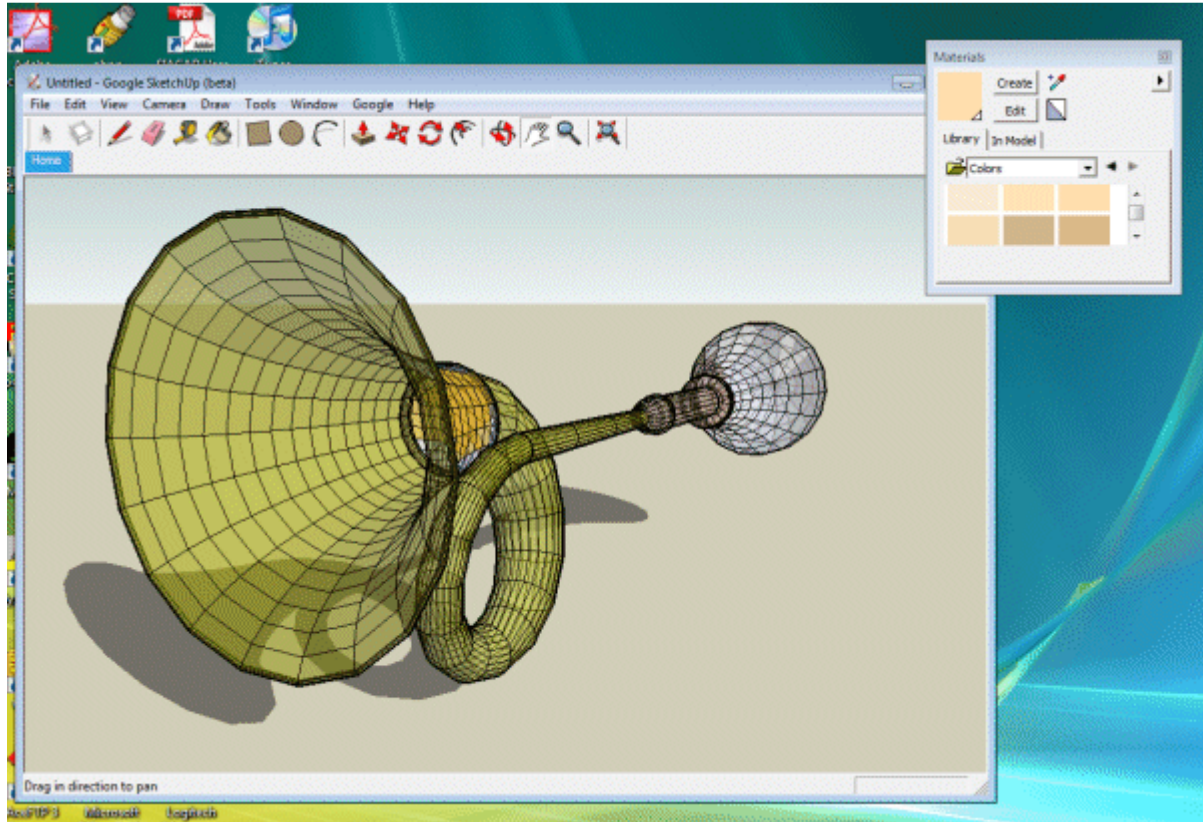
An X-ray view of the rear of the house and a front view (also in X-ray mode).



If you visit this web site, you can play a small movie which shows SketchUp in action.

SketchUp is not just for architects

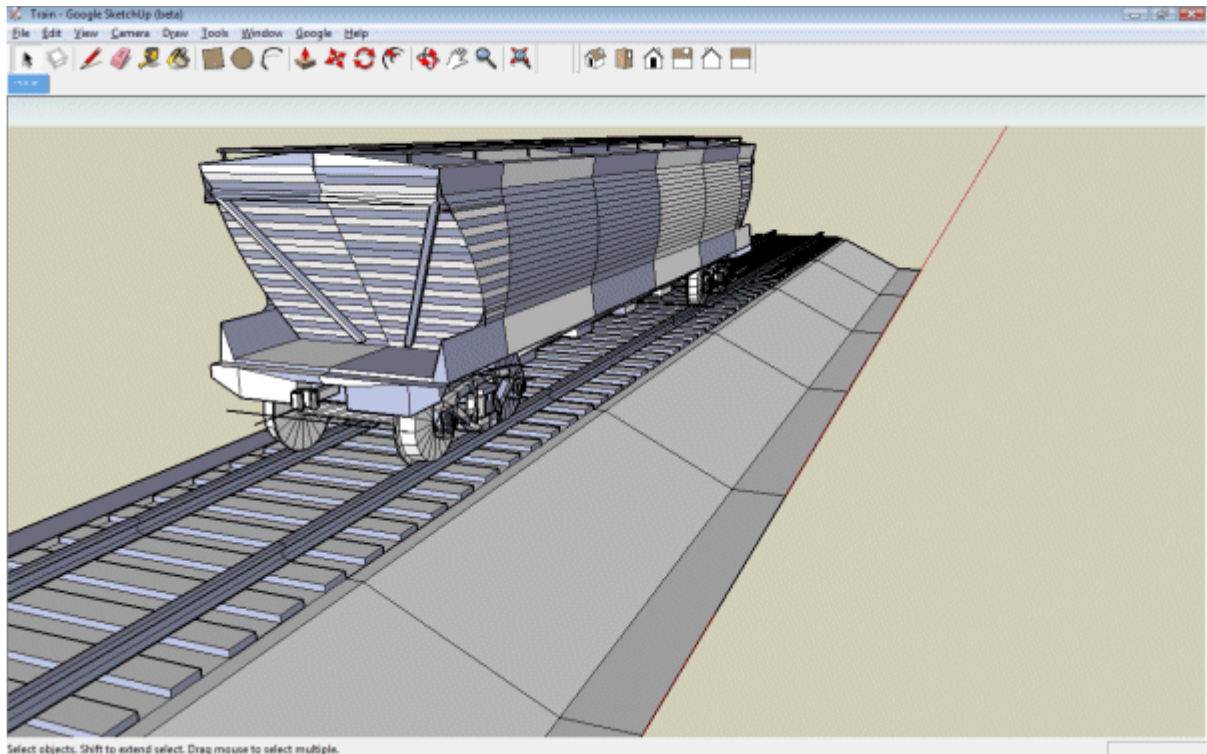
Although SketchUp was designed with building and construction industry users in mind, it can be used in many different fields. Here is one of our models; that of a 'musical' horn. Note that SketchUp models are wire mesh models.



SketchUp model of a horn by John McIver. Note that the window containing the Materials palette is outside the main SketchUp window. It is important to keep your eye on these external palettes.

An engineering model

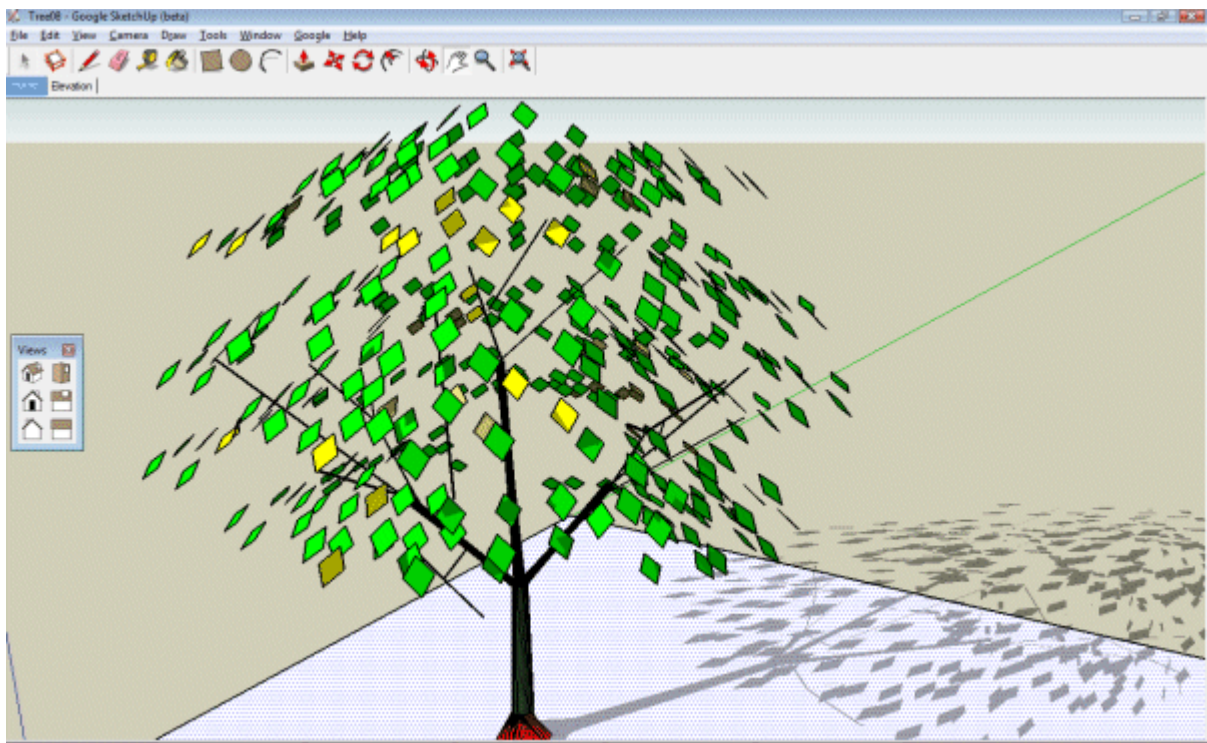
SketchUp can be used to good effect on mechanical engineering models.



Model of a railway carriage on a causeway. Model by John McIver.

Some limitations

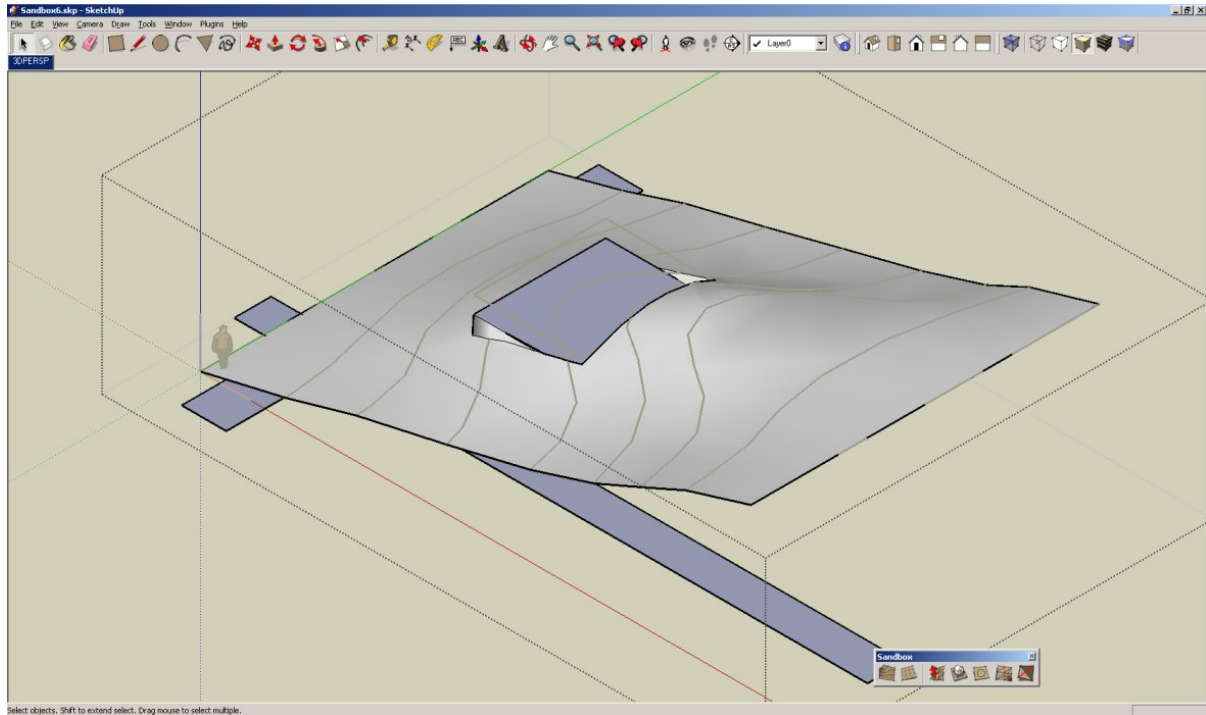
Not all objects are suitable candidates for SketchUp modelling. While meshed and planar surfaces are handled well by SketchUp, some objects are very difficult to properly model. Plant symbols are in that category. The file size of the model is necessarily very large and the result is not realistic.



SketchUp model of a generic tree. The option to cast shadows has been turned on.

Terrain models

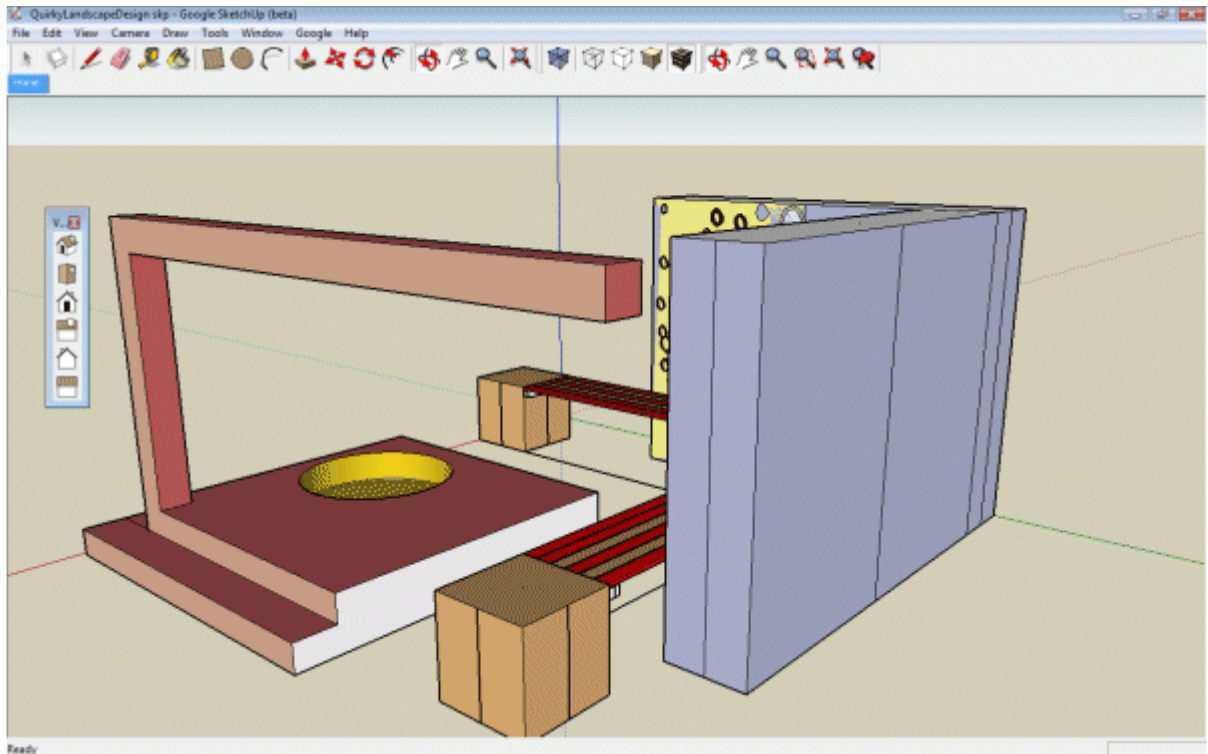
SketchUp handles terrain information much better than many other CAD software applications. The figure below shows a SketchUp model of a sloping site with a site for a house cut into it. The strips running horizontally and vertically represent roads which have been taken from the original cadastral (flat) information. We have made a cut/fill bench in the terrain model which is formed from a triangular mesh..



Terrain model by John McIver. We have taken some contour information into the SketchUp environment.

Take care building your models

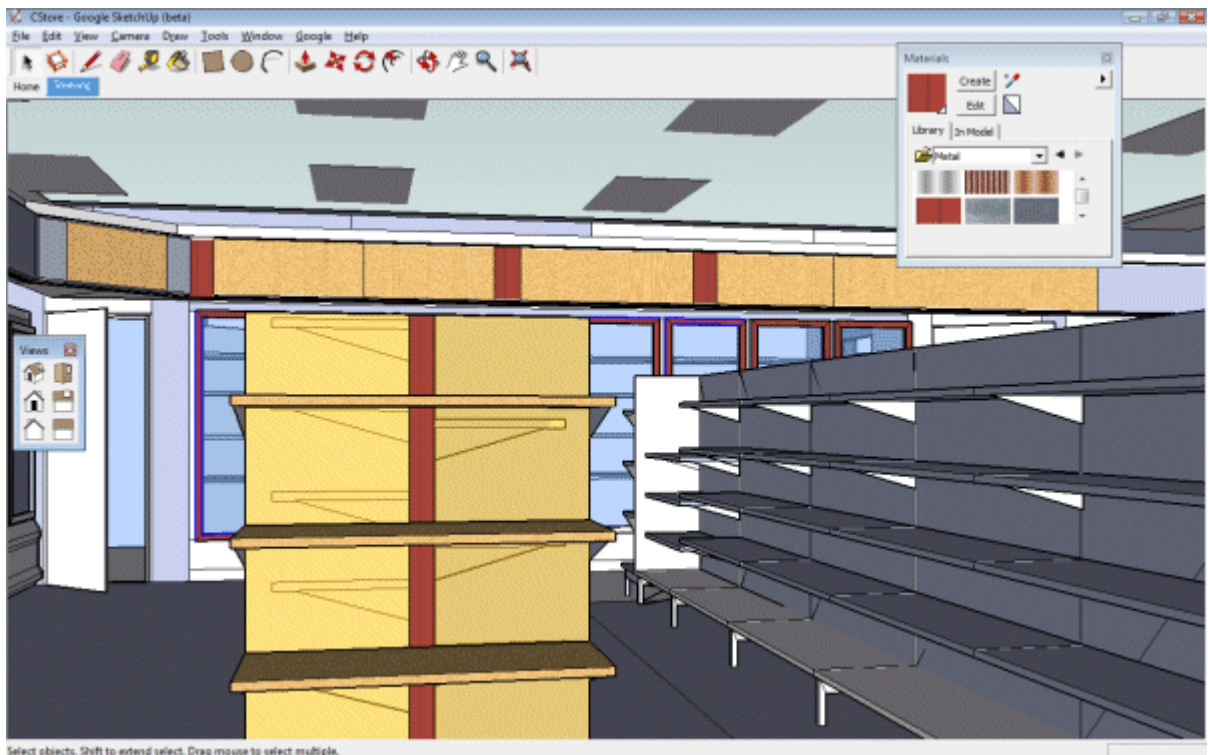
Although a powerful tool, be careful. SketchUp will allow you to create model which might be difficult to construct.



An unsupported beam in a SketchUp model.

SketchUp can save named views

It is possible to store views in your SketchUp models. We will investigate whether or not named views created in MicroStation can be understood by SketchUp.



Partly rendered image, taken from a SketchUp model of a corner store.