



Second Edition

# Sample

## Vectorworks Architect Tutorial Manual

by Jonathan Pickup



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# Sample

## Introduction

In this manual we will be working through a domestic project for a client. Vectorworks is really designed to be used for commercial and industrial work as well.

Our clients live in a 1970 - three bedroom timber-frame house on a concrete block basement garage. The house is facing north on a gently sloping 1/4 acre section.

The clients have been living in the house for 5 years. They now have two children, one boy, 11 years old, and his sister 8 years old. The children are wanting more separation from their parents, and in the future they will want to be even more independent.

The kitchen, dining and living areas have not been updated since the house was built, and they are not big enough for this family. The clients have asked for a renovation and extension to allow for more open living areas. They want the house modernized and enlarged with a new entry, a new living area to the north (to catch the sun), a new bedroom, dressing room and ensuite.

Our first task is to draw the existing site and building. Then we need to draw the proposed extensions and renovations and present these to the client as a concept plan.

After the client has approved the concept we will prepare the working drawings.

This manual builds on the Essential Tutorial Manual, which is designed to show you basic concepts of Vectorworks such as 2D drafting, simple 3D modeling and basic file organization. If you are unfamiliar with these concepts, you should get this manual and complete it before you go any further.

One of the main concepts in using Vectorworks is called the Building Information Model. What this means is that as you draw a wall in Vectorworks, it is more than a 2D representation of a wall. The wall has texture, knows when a window is inserted and can have information attached to it. Many parts of the Vectorworks drawing are like this: they are much more than they seem. A door, for example, is more than the 2D representation of the door. It has a 3D part, and you can attach information about the door, door hardware or even the supplier and cost of the door. This information can be generated as a report whenever you want it.

Live sections and elevations are a development of the Building Information Model that allow you to keep the sections and elevations up to date as you change the form of the building.

# How to Use this Manual

Here are some recommendations that will help you to use this manual better:

- Spend the time to work through the manual. The information in this manual will not find its way into your head if you don't complete the exercises. Reading the manual is good, reading the manual and watching the movies is better, reading the manual, watching the movies and completing the exercises has the best results. Watch the movies, try the exercise and then play the movie again.
- Instructions for you to complete are shown like this.

*Tips: Useful tips are shown like this.*

Measurements are shown in both metric and imperial. Metric measurements are shown first, imperial measurements are shown in brackets. If you are using metric, don't type in the imperial measurements; if you are using imperial, don't type in the metric measurements. Just use the measurements inside the brackets.

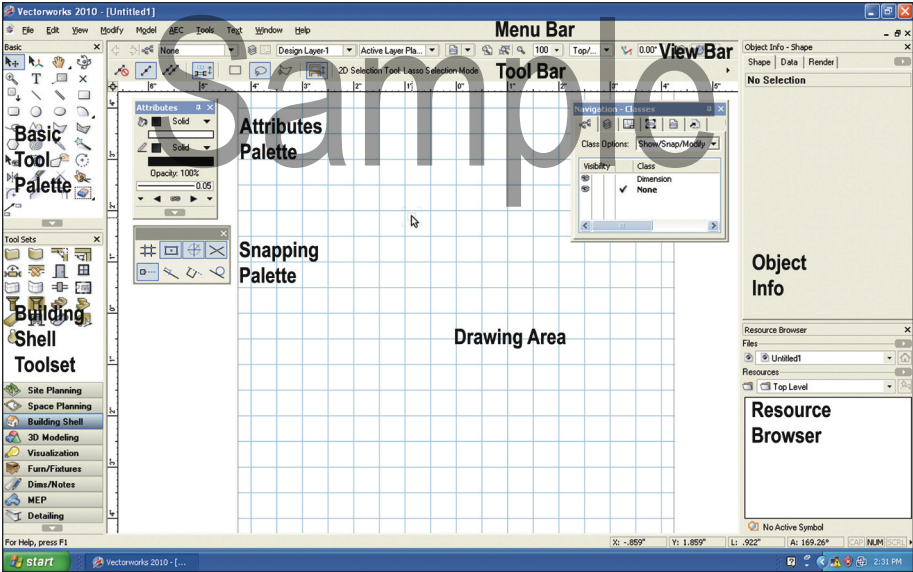
This manual comes as a hard copy with one CD. There are two exercise folders on the CD. One is called "Architect Exercises", and the other is called "Completed Exercises". Copy both folders to your computer. Copy the exercise folder to a location that will make it easy to find.

Save any training files that you work on to your exercise folder.

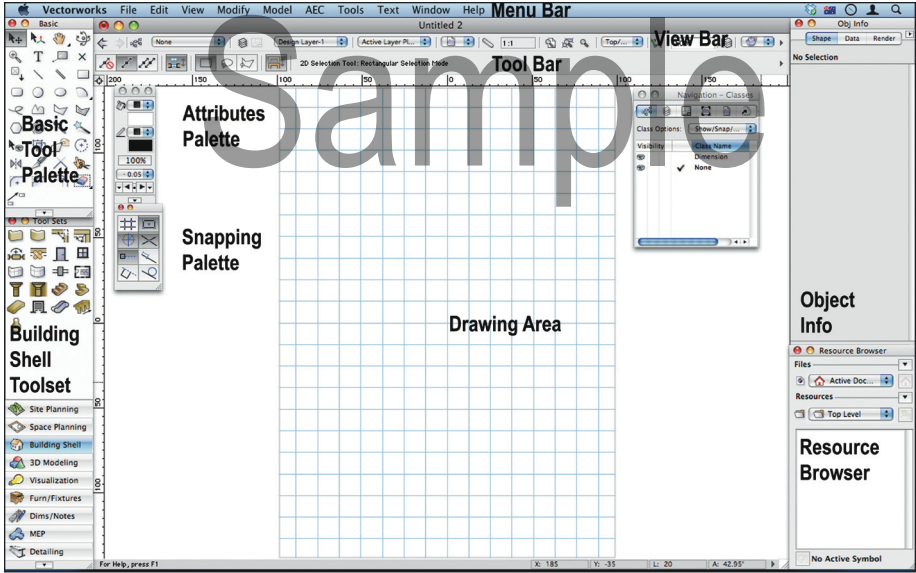
When you want to play a movie that is shown in the printed manual, insert the CD into your computer and double click on the file on the CD called "Architect Tutorial Manual.pdf." This is your electronic copy of the manual, and it contains links to all the movies. If you are using a Macintosh, make sure the Architect Tutorial Manual PDF opens with Adobe Acrobat Reader, not Preview. Preview will not display the movie icons.

To play a movie from the electronic copy of the manual, move your cursor over the movie icon (the cursor changes shape) and click once. When the movie is finished it will automatically close. Use Adobe Acrobat Reader to read the manual and play the movies; use Vectorworks to do the exercises.

When you start Vectorworks Architect, it looks like this on a Windows machine.



When you start Vectorworks Architect, it looks like this on a Macintosh.



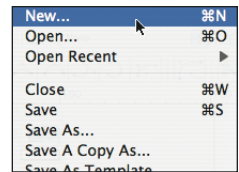
# Step 1 Layer and Model Setup

## Document Setup

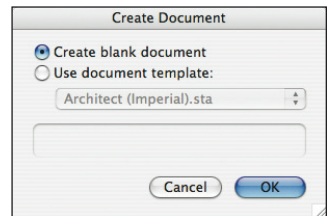
We will set up the file from the beginning, from a blank document. Vectorworks has set up commands to make it easier to set up the file. When you have set up the file, it can become a template file that you can use to start every new job, saving you a lot of setup time.



- Go to the Menu Bar.
- Choose **File > New...**



- This opens a dialog box for you to choose **Blank Document**.

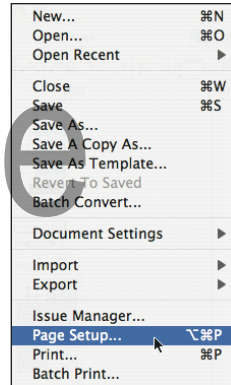


- A blank file opens with a layer scale of 1:1 and a letter-size page.
- We should set up our page first.

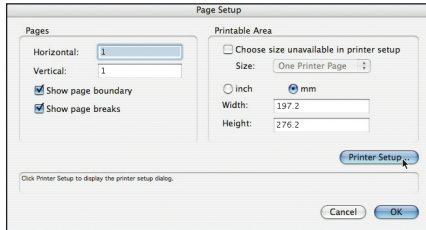


- Go to the **Menu Bar**.
- Choose **File > Page Setup...**
- This opens a dialog box for you to set up the page size.

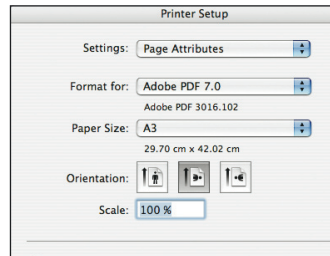
Sample



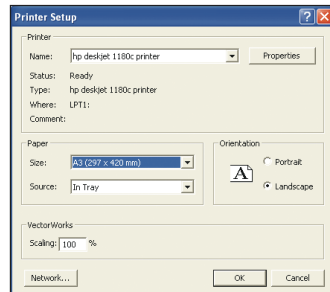
- This dialog box allows you to set up the printer that you are using.
- Click on the **Printer Setup...** button.



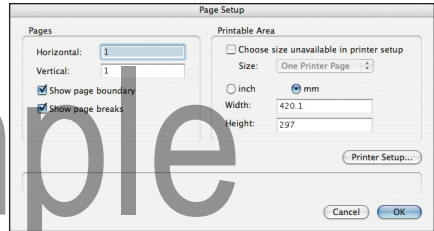
- This dialog box will vary depending on your printer.
- On a Macintosh the dialog box will look similar to this picture. Set the printer, page size and page orientation.
- Click on the **OK** button.



- On a Windows machine the dialog box will look similar to this picture. Set the printer, page size and page orientation.
- Click on the **OK** button.



- This takes you back to the Page Setup dialog box.
- Our drawings are going to be set up using Viewports, so the page boundary won't be meaningful on our design layers.
- Turn off **Show Page Boundary**.
- Turn off **Show Page Breaks**.
- Click on the **OK** button.



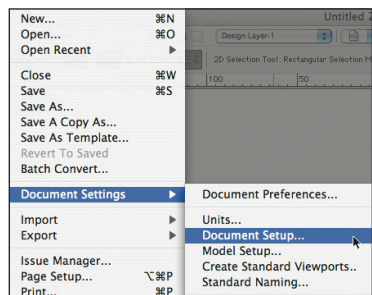
- Vectorworks shows the new drawing area.

The reference grid may not appear on the screen due to the density of the grid at a particular scale and page size.



- Go to the **Menu Bar**.
- Choose **File > Document Settings > Document Setup...**

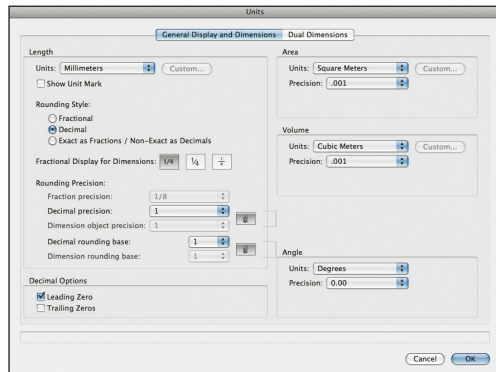
*Document Setup is a quick way to set up the drawing when you are starting a new project.*



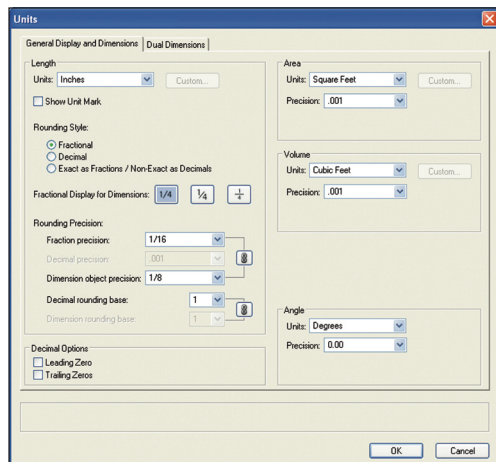
- On this dialog box we get the opportunity to check the setup of the project as a whole: the units, layer scale, drawing area, grid setting and the title block size.
- Click on the **Drawing Units: Change...** button. This will open the Units dialog box for us to set up the drawing units, primary dimensioning, secondary dimensioning and area and volume units.



- Set your **General Display and Dimension** units to the settings that you want.

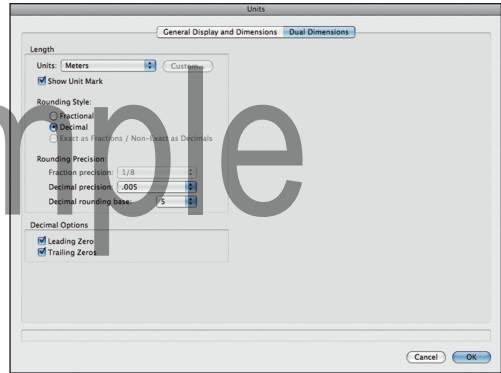


- The settings might be in feet and inches.

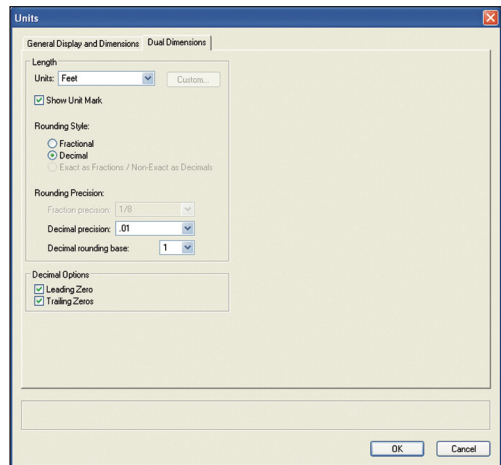


- Set the **Dual Dimensions (secondary units)** to the settings that you want.

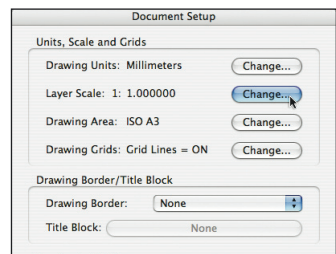
Sample



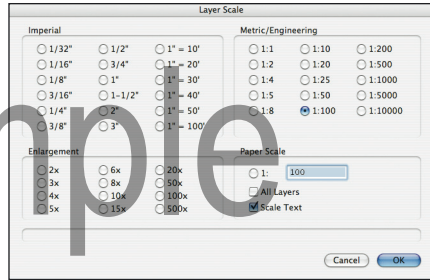
- You can mix the dimensions types with the Dual Dimensions.
- Click on the **OK** button.



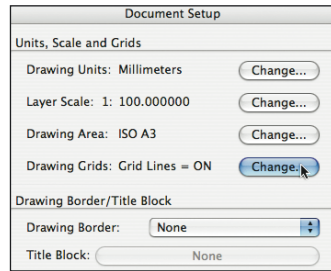
- Click on the **Layer Scale: Change...** button. This will open the Layer Scale dialog box for us to set the scale of the current layer.



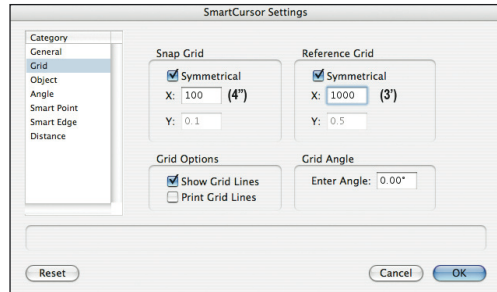
- Set your Layer Scale to **1:100** for metric drawings or **1/8 (1:96)** for imperial drawings.
- Click on the **OK** button.



- Click on the **Drawing Grids: Change...** button. This will open the Set Grid dialog box for us to set the snap and reference grids for our file.



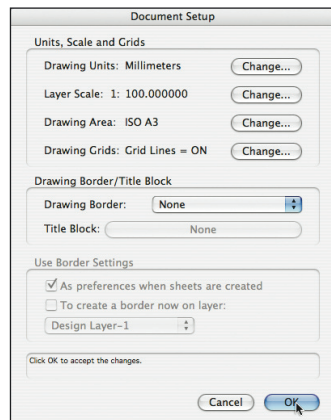
- Choose **Grid** on the left hand side.
- For metric drawings set the snap grid to **100mm** and the reference grid to **1000mm**.
- For imperial drawings set the snap grid to **4"** and the reference grid to **3'**.
- Click on the **OK** button.



The reference grid may not appear on the screen due to the density of the grid at a particular scale and page size.

The Document Setup dialog box now shows you your setup...

- Click on the **OK** button.



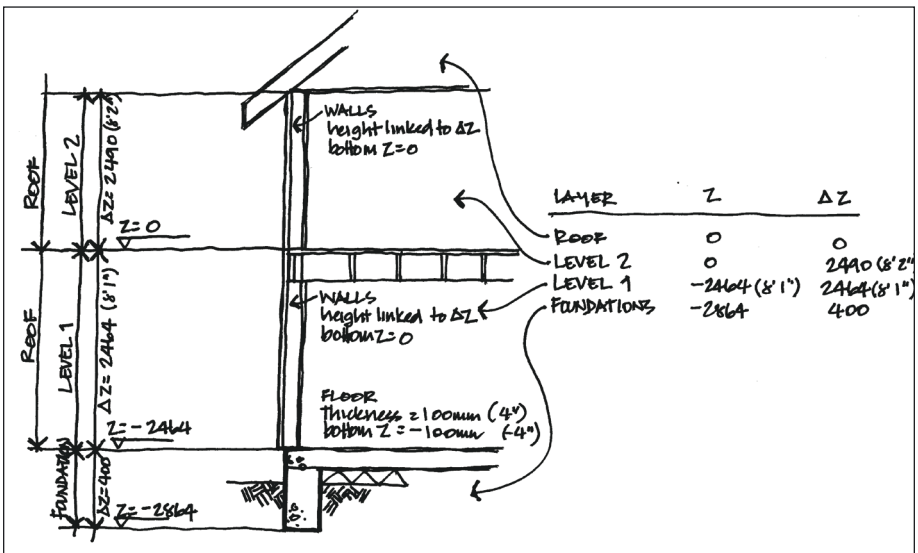
## Layer Setup (Model Setup)

We need to break up the project into a series of manageable chunks to make it easier to draw the building. These chunks are called layers, and at the beginning we will have a layer for each storey of the building, a layer for the site plan, a layer for the site survey data and a layer for the contour plan.

If you are not familiar with layers please refer to the Vectorworks Essential Manual, which has a series of exercises to explain layers.

We can create a few layers now to draw the existing building, then add more layers later as we need them. There is a way to have a file set up with most of the design layers and sheet layers, called Layer and Class standards. This allows you to grab a few layers when you want them. For more information on creating a Layer and Class Standard, refer to the Vectorworks Productivity Manual available from [www.archoncad.com](http://www.archoncad.com) or [www.Vectorworks.net](http://www.Vectorworks.net).

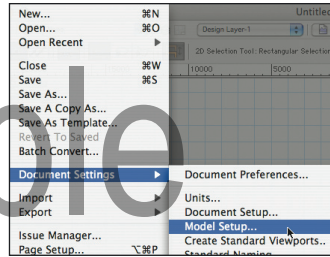
One way of creating the layers is to use the Model Setup Command. This will create some of our layers for us and input the correct heights. It's also a graphical way of creating the layers at the right height, so it will make it easier to understand layers and their heights. Our building is similar to this sketch, and we will use these dimensions for our model setup.



- Go to the Menu Bar.
- Choose **File > Document Settings > Model Setup...**

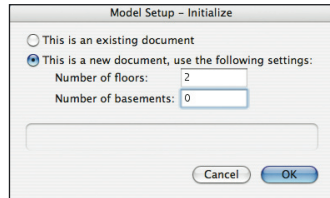
This command is for setting up the project as a model, setting the number of floors, the heights of the floors, etc.

We had a house with foundations (400mm high), ground floor slab (100mm thick), a lower floor with a stud height of 2464mm, an upper floor with a stud height of 2490mm and a roof.



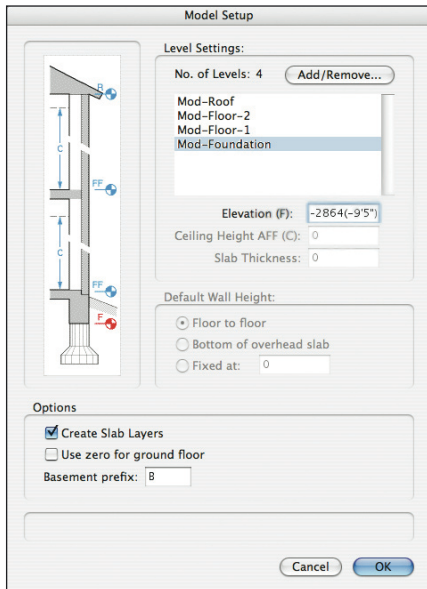
The Model Setup dialog box can be used to set up all the model layers for this project, but we will still need to add other layers to help us make this project. When you use this command on a new file, you get the first dialog box to set up the number of floors.

- 2 floors (the basement will be the lower floor).
- No basements.
- Click on the **OK** button.

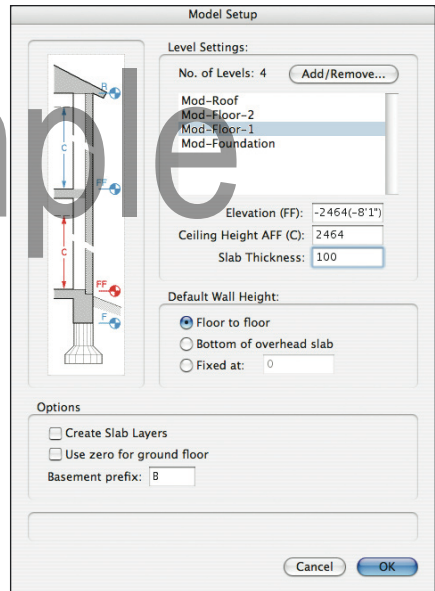


On the next dialog box, set the layer heights for each layer of the project.

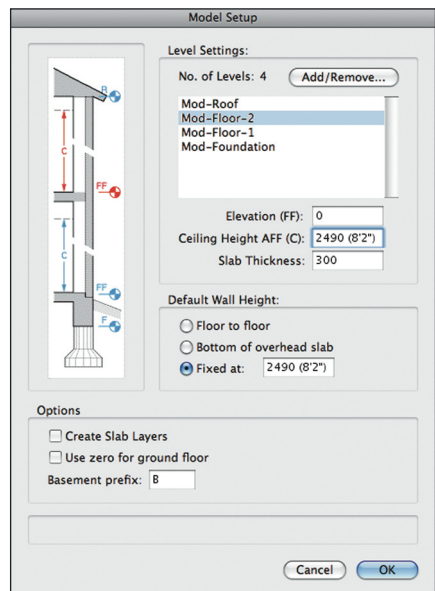
- For this project we will not be using the correct project levels for the layer heights. We will use the upper floor as the main floor. This will be set at **Z=0**, and all the other floors will be related to this.
- The foundation should be below the ground floor slab. The foundations will vary due to the site conditions, but enter an elevation value of **-2864mm (-9'5")** (so that the foundations are **400mm (1'4")** below the lower floor).



- The lower floor, Mod-Floor-1, has its Elevation set to **-2464mm (-8'1")** (so that it is below the main floor).
- The walls will go from the top of the slab to the top of the floor above, so the Ceiling Height need to be **2464mm (8'1")**.
- The slab thickness for this project is 100mm (the floor is a concrete slab).
- Turn off the option to create Slab Layers, which would give us extra layers that we don't need.



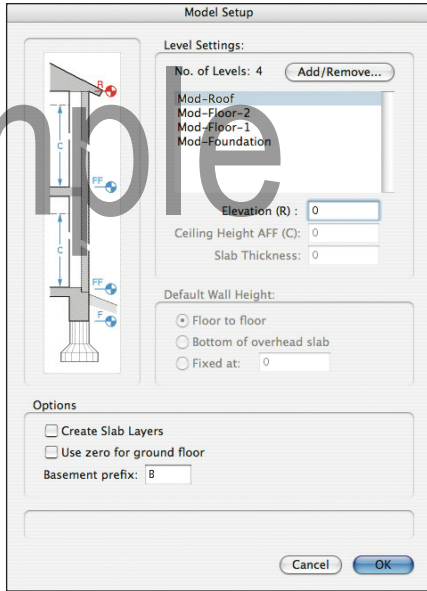
- The upper floor, Mod-Floor-2, is the main floor, and we want to set its Elevation to 0.
- The walls will go from the top of the floor to the underside of the roof above, so the walls need to be **2490mm (8'2")**.



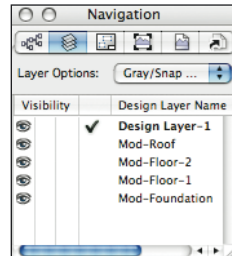
- Finally the roof has its elevation set at **Z=0**. This allows us to use the bearing height of the roof to control the 3D height of the roof.

This is the easiest way to control the roof. You can use the bearing height of the individual roof planes to control the height rather than the layer height.

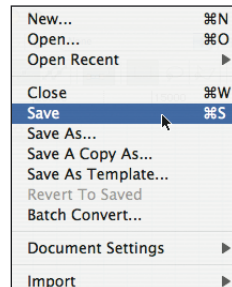
- Click on the **OK** Button.



- You can see all the new layers in the **Navigation** palette.
- We can edit the layers in the Navigation palette, but the Organization dialog box gives us additional information.

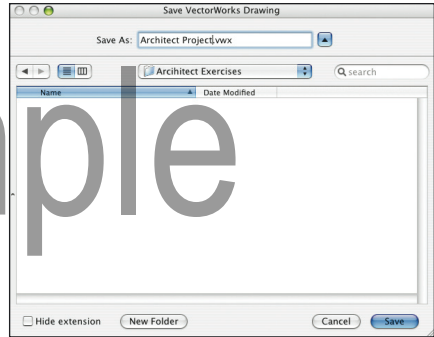


- Before you do anything else, make sure that you save your file. Get into the habit of saving your file on a regular basis.
- From the Menu Bar choose **File > Save...**

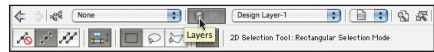


- Save the file into a job folder where you store all your other projects.

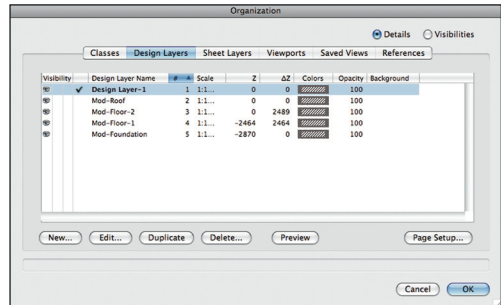
# Sample



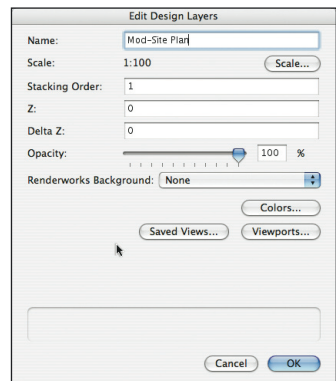
- Open the Organization dialog box by clicking on the Layer button. The Model Setup command is not perfect and needs some help to set up the project we want to draw.



- Notice that for the floor and roof layers there is no ability with the Model Setup to make 2 roofs. If you had a project that needed an upper roof layer and a lower roof layer, you would have to add a new roof layer.

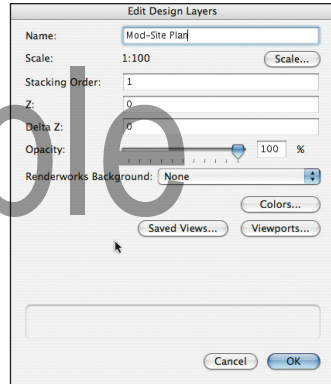


- Select the layer **Design Layer-1**.
- Click on the **Edit** button.
- Type in the name of the new layer: **Mod-Site Plan**.

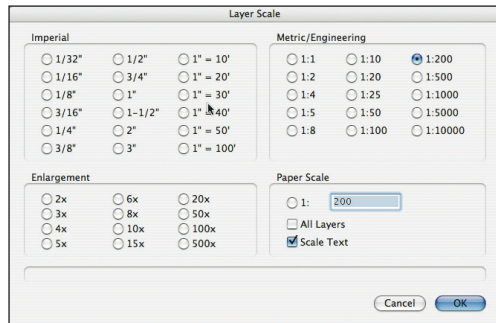


- Click on the **Scale** button.

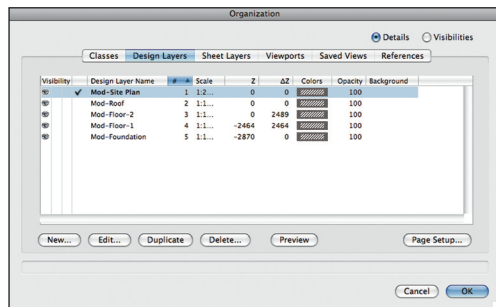
# Sample



- Change the scale to **1:200**.
- Click on the **OK** button.



- Now the layers have the settings that we want.
- Click on the **OK** button.



The layer scales can be changed at any time.

- Right mouse click on any layer in the Navigation palette to edit, duplicate or remove layers.

