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Vectorworks Essentials

Tutorial Manual



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1.0 Introduction to Vectorworks

In this chapter you will look at the basic interface of Vectorworks and learn about basic concepts for creating, selecting, and deleting objects and how to assign graphic attributes to objects.

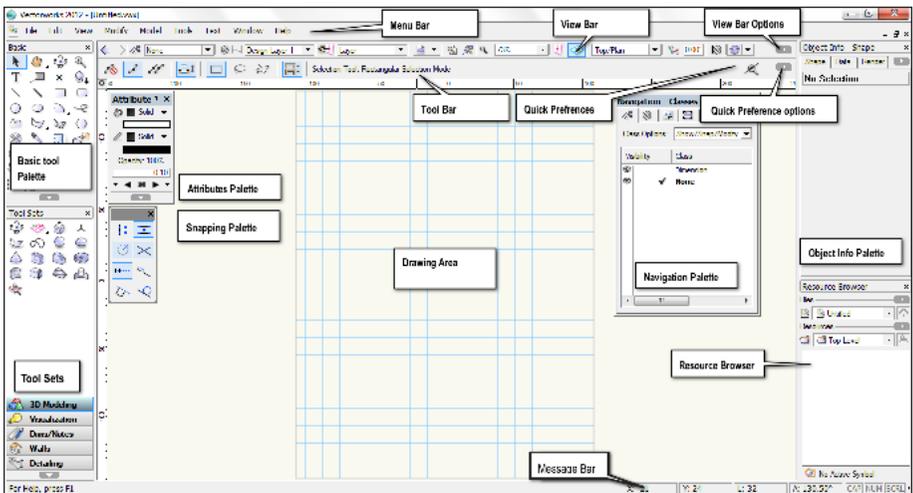
This chapter is important because it covers the most basic concepts in Vectorworks, the concepts that make it different from other programs.

Vectorworks is a powerful program that can be utilized by those in a range of professions—from engineering and landscape to set and lighting design and architecture. Vectorworks uses a combination of tools and concepts to create sophisticated drawings and models. It includes a database/reporting component and a built-in scripting language that allows you to make your own custom tools.

Vectorworks can be used to create simple drawings for joinery, a whole set of contract documents for a large commercial building, landscaping design, or a virtual model of a building that you can walk around or fly through.

1.1 Vectorworks Interface

When you start Vectorworks it looks like this on a Windows machine:



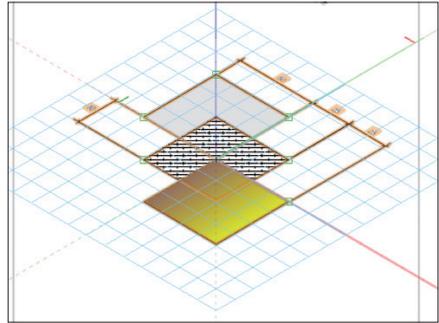
2.0 Modeling and Drawing

In this chapter you will learn to create an object and use it to create a drawing. This the most effective way to create drawings. When the object is updated, it is easy to update the drawings.

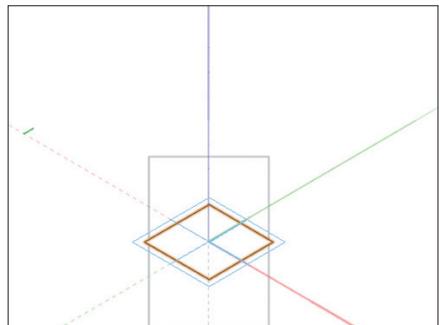
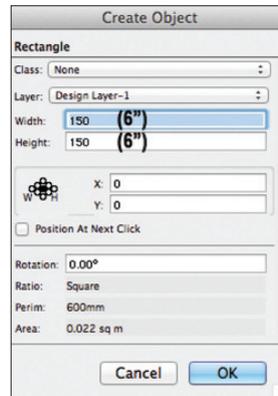


This chapter is important because it is an introduction to 3D modeling, and it shows the workflow from the start of a drawing to the finish.

- Use the **Selection** tool to select all the objects on the screen, by dragging a marquee around everything.
- Hit the **Delete** or backspace key to delete everything.



- Go to the **Basic** tool palette .
- Double-click on the **Rectangle** tool.
- Type in the dimension you want for the width field, **150mm (6")**.
- Type in the dimension that you want for height field, **150mm (6")**.
- Set the box position (the black dot in the grid of nine) to the center by clicking on the correct radio button.
- Enter the co-ordinates for the origin of the rectangle: **X = 0, Y = 0**
- Click on the **OK** button.
- Your rectangle will be in the middle of the grid.



3.0 Tools and Commands in Detail

Vectorworks has many tools and commands for creating, editing, modifying, and annotating your creations. At some point you need to learn these tools and commands, so this section of the manual is designed to teach you many of them in detail.

There are several exercises in this chapter. They are designed to teach you the basic tools and commands that you will need to use Vectorworks effectively. Many users want to hurry through these exercises, but these exercises are vital if you want to use Vectorworks well. Please make time to practice these exercises every day, as subsequent exercises will be easier if you learn these tools and techniques now.

- Open the file called **Creating and Editing.sta**.

The file is divided up into a series of layers. The exercises are designed to teach you how to draw and edit things in Vectorworks. Each tool you choose in Vectorworks has choices about how you use that tool. The choices are shown on the Tool bar. The purpose of these exercises is to get you to use each mode for each tool.

When you have completed the instructions on the first layer, go to the layer button and choose the next layer down in the list. Do the same for all the layers until you get to the bottom of the layer list. Then you can move on to the next exercise.



Use these exercises as a starting reminder when you have taken a break from Vectorworks for any length of time. They are designed to allow you to develop some skills with Vectorworks. Then you can use them to refresh your memory.



4.0 Annotation

This chapter will introduce you to the main annotation tools. These tools and techniques are important for all Vectorworks users because they enable you to communicate your designs effectively.

4.1 Text

Getting Started

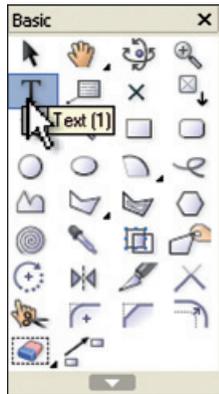
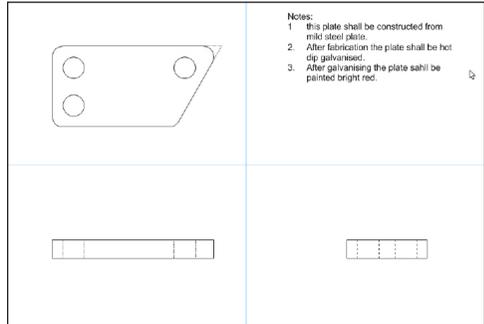
Most drawings require text so it's important that you are able to create and edit text easily.

- Open the file called **Annotation.sta** from the exercises folder.

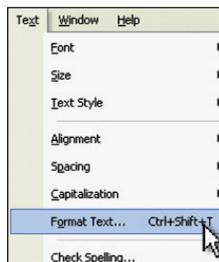
The file is a metal bracket that is missing dimensions and labels.

Creating Text

- Go to the **Basic** tool palette.
- Select the **Text** tool.



- Go to the **Menu** bar.
- Choose **Text > Format Text...**



5.0 Organizing Information

With Vectorworks, you have the ability to create several drawings from one file. This means that you have to learn to organize your information. This chapter is all about organizing your information to create several drawings from one file. After all, organization of your information is important regardless of whether you're an architect, landscaper, or designer.

Vectorworks uses several concepts to organize information. We will be looking at only some of the concepts:

Design Layers

Classes

Sheet Layers

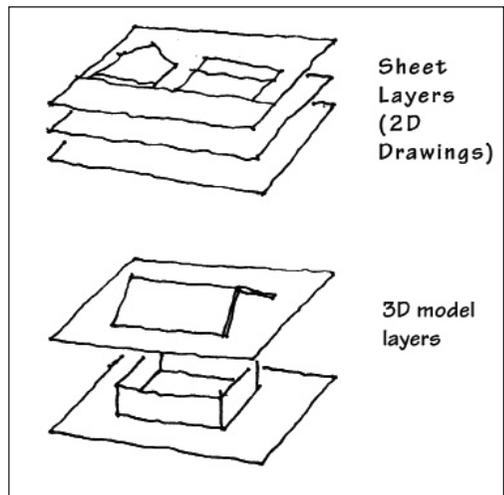
Viewports

5.1 Design Layers and Sheet Layers

We use Design Layers as an organizational tool to break up the design into usable chunks. Layers are used to control the visibility of parts of the drawing so that we can hide or show information for different purposes.

Design Layers are a horizontal organizing method where you can divide a file up into horizontal chunks. These horizontal chunks also have a height, and if you set the heights up correctly, you can easily generate 3D views of the model.

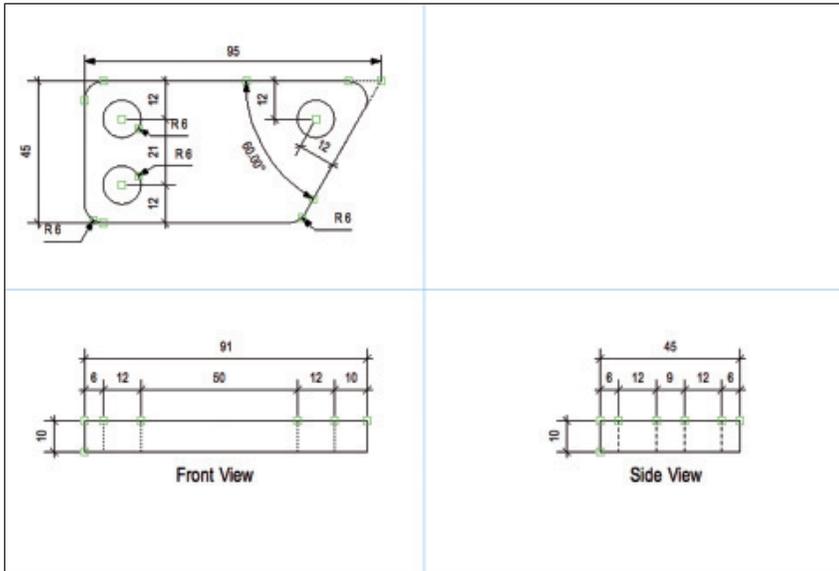
If you were an architect, you would tend to break up the design into building elements or stories (floors) of the building. You would also have several layers that contain drawings and details that make up the document set.



6.0 Drawing Exercise

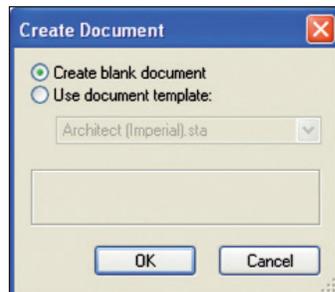
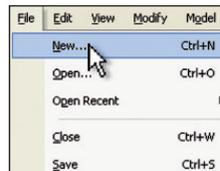


The aim of this exercise is to bring together many of the drawing tools and techniques into one drawing. This exercise reinforces the flow of the tools from start to finish. We want to complete a drawing of a steel bracket.



Start with a new file.

- Go to the **Menu** bar.
- Choose **File > New...**
- On the Create Document dialog box, choose the option to **Create blank document**. We will start with a blank document and set it up to suit the drawing that we want to draw.

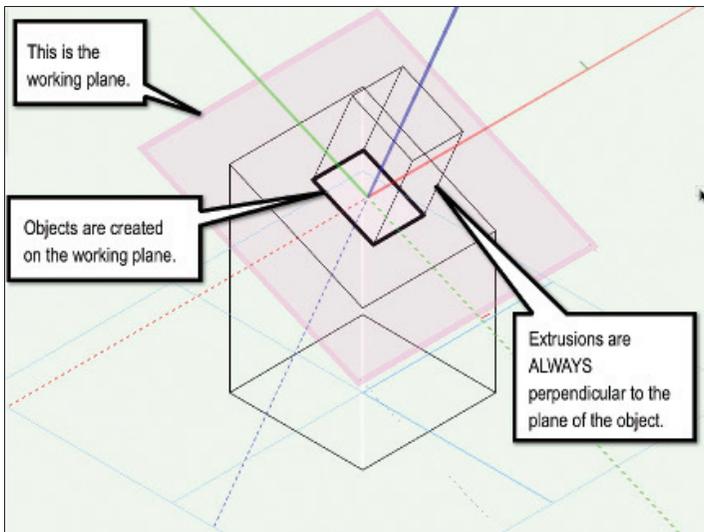


7.0 Introduction to 3D Modeling

Modeling in Vectorworks is not just a fun way to create objects that have never existed before, it is also the quickest way to create your drawings. Earlier in the manual we looked at a simple 3D model, and we used this to create drawings for the object. In this chapter you will learn about the basic concepts for working in 3D.

7.1 Working Planes

Working planes are really important for 3D modeling. When you draw objects, they are drawn on the working plane. Extrusions also use the working plane, as the extrusion is always perpendicular to the plane of the object.



Set Working Plane

Vectorworks has the ability to set automatic working planes, but it is still important to know how to set a working plane in order to understand the concept of the automatic working plane.



8.0 Drawing Buildings

When you read the title to this chapter, your initial thought might be that drawing buildings does not pertain to your profession. However, even if you do not need to draw buildings, you still need to learn the basic concepts of doing so. Many clients now expect to see your project in relation to their builder. Therefore it's important that you be able to create a simple building as a backdrop to your design proposal. As well as creating a building model, this chapter shows you how to create drawings from your model, a technique you can use on many other types of projects.

Before starting this section, make sure that you are using the Standard Workspace. From the Menu bar choose, **Tools > Workspaces > Standard**.

8.1 Setting up the Layer Heights

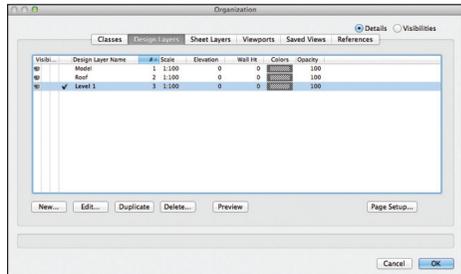


- Open the file **Building 1.sta** from the exercise folder.

Normally, to start a project you would work out the number of layers that you need and the classes that you would need to make the drawing. To work out the layers and classes required, you need to have some idea of the project and the number and extent of the drawings that you want to make. For this case, we will use a template file that has already been set up with the layers and classes that we need, but the layers are not set at the correct heights.

We need to have some idea of the house that we will be drawing. We have looked at the plan and worked out that the storey (floor) will have a wall height of **2440mm (8' 0")**. To set up the layers to their correct heights we need to edit the layer using the **Organization** dialog box.

- Go to the **Menu** bar.
- Choose **Tools > Organization...**
- Click on the **Design Layers** tab.
- Double-click on the **Level 1** layer.



9.0 Worksheets

Worksheets are a very important part of Vectorworks. When you use any of the Vectorworks premade counting or reporting tools, Vectorworks will create a worksheet to count or report your information. In order to deal with these reports and schedules, it's important that you understand the basic concept of worksheets.

Vectorworks can create spreadsheets within the drawing. That means you can count things, create databases, extract information from objects, and do mathematical operations and functions without having to leave Vectorworks.

These spreadsheets, or worksheets as they are called in Vectorworks, are linked to the source of information so that the worksheet can be updated when the source changes. To put it another way, if you edit the things in the drawing, the spreadsheet can be updated easily.

The most powerful worksheets in Vectorworks are databases linked to Symbols or Plug-in Objects listing the data entered in the different fields. As you add these objects into the file, you can update the worksheet and check the information. An example of this would be a bracing spreadsheet that tracks the bracing objects in the drawing. As you add bracing objects, the worksheet tracks the number, type, and length of the brace. It puts this information into the worksheet, letting you know if you have achieved enough bracing in each direction.

We can classify the worksheets into a few different groups depending on the nature of the worksheets:

- Count or select objects (generally symbols) through the file. They do not need to have a record attached, and they need not be in the same class or layer. We can choose to count symbols on a specific layer or assigned to a specific class.
- Do mathematical operations on drawn objects: areas, perimeters, volume, etc.
- Name the objects (Object Info palette) and find properties of them and their combinations.
- Create reports using symbols with records and list the field values from the symbols in the report.

This chapter will explain some simple worksheets so you can see how easy it is to use them. Worksheets can be very powerful, so if you want to learn more after this, please refer to page 263.

