

Vectorworks® Landmark

2013 Getting Started Guide



Vectorworks Landmark Getting Started Guide

Created using: Vectorworks Landmark 2013 with Renderworks

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Introduction

Welcome to Vectorworks Landmark 2013! The purpose of this guide is, quite simply, to get you started using the software. Just as landscape design is a huge and varied discipline, Vectorworks Landmark is a huge and wonderful tool. Its wide range of features enable you to produce graphically beautiful, informative, and intelligent documents to support your design process. One of the enormous benefits of Vectorworks is that it is not prescriptive and does not force you to design in a particular way. This guide will use several short example tutorials to quickly introduce you to the key features of Vectorworks Landmark and get you up and running.

When you first open the program, it can seem a little daunting, particularly if you're making the move from paper. This guide will enable you to overcome some of that fear and start making the most of the software. Vectorworks Landmark so much more than a tool for producing beautiful plans and models. Used wisely, it can become the backbone of your design business and help out so many more business-critical tasks such as producing specifications and quantities.

Overview of This Guide

Each section of this guide will introduce you to different features that are key to landscape design. The exercises in this guide will familiarize you with these tools so that you use them in your own design projects.

It is not necessary for you to complete each section before moving to the section that specifically interests you. Having said that, it will do no harm to work through the exercises from start to finish, to get a full overview of the design process. The exercises include images and short movies for you to watch to see the exercises in action. The exercises will cover the following topics:

- setting up the software and accessing resources
- creating the existing site, including importing surveys, drawing buildings, and locating items on site such as existing vegetation
- hard landscaping/hardscape plans, including quantity reports
- creating planting plans including the plant schedule
- creating presentation plans including 3D views, title blocks, and borders.

How to Use This Tutorial

This tutorial is also provided as a series of videos, supported by this guide in a PDF format. You can view the PDF tutorial on-screen for enhanced electronic benefits, including navigation links and search features.

1. Each section will start with an objective and a list of the stages of the design process the section will cover. This overview is hyperlinked, as is the table of contents, so that you can quickly navigate to sections of interest.
2. If you view the tutorial on-screen, look for the Previous View and Next View tools at the bottom of the screen (or available in the Page Navigation Tool bar in newer versions). These useful tools—available in Adobe Reader and Acrobat—enable you revert or repeat navigational changes by page controls, bookmarks, and hyperlinks. Similar controls are available in Preview on the Macintosh.
3. The Adobe Reader Search tool provides more extensive options for searching text than the Find command does.

General Tutorial Tips

As I mentioned earlier, I recommend that you first work through the Getting Started Guide to Vectorworks Fundamentals. This guide provides a good grounding in the basic drawing functions. You can then use this guide to put your drawing skills into context for landscape design.

Use the following tips to facilitate working with your exercise drawing files:

- Read each step carefully and make sure your results match the figures. If your results vary from the figures, review the previous steps and try to work out which value has led you astray. If you can't find the problem quickly, start the exercise over with the appropriate supplied file.
- Vectorworks offers many different ways to draw. Some users like to complete dialog boxes while some prefer the freedom of drawing with the mouse and typing dimensions as they go. Others prefer to draw and then refine measurements using the Object Info palette. There is no right or wrong method. The correct method is the one that works best for you.
- When you hover your cursor over objects you have drawn, pause briefly over snap points, (corners and midpoints), to display a red snap box. A red confirmation dot is displayed temporarily to show that your cursor has "snapped" to that point. Moving the cursor away will produce guidelines to assist you in aligning objects to others in your design. This system is known as SmartCursor cues.
- When too many red snap boxes are displayed in congested areas, you can press the Esc key once to clear the display, or you can temporarily disable all snaps by holding down the backquote key (`).
- While drawing, you may need to adjust your view. Press the Z key for the Snap Loupe shortcut (a temporary zoom), or use the Zoom, Pan (press and hold the Space bar), and Fit to Objects tools as required. If you have a mouse wheel, use it to zoom in and out.
- To pan across the drawing at any time (even if you are midway through drawing something), hold down the Space bar and then click and drag with your left mouse button.
- If you inadvertently cleared a selection required for an active tool or command, press Space bar+X temporarily while you select the object(s).
- Many tools have different ways of doing things. These are called modes, which you can select in the Tool bar (located above the drawing window).
- Keep the Object Info palette open. To open it, select **Window > Palettes > Object Info**. It displays valuable information and provides access to key properties of selected objects.
- Press the Esc key to cancel any operation. If you are using a tool, it will still be active. You can then start drawing again or choose another tool. Sometimes, you must press the Esc key before you use a keyboard shortcut to activate another tool.
- Use the Undo command in the Edit menu to revert steps as necessary (both drawing and view changes are reverted). The shortcut for Undo is Ctrl+Z (Windows) or Command+Z (Macintosh).
- For tools that create multiple segments (such as the Wall tool) press the Delete key once while the tool is active to revert to a single segment, or press it repeatedly to revert to additional segments.
- When multiple files are open, you may need to click the Resource Browser's Home button if your landscape file isn't active.
- Object artifacts may remain in the drawing area after some drawing and editing operations. To refresh the screen and clear the artifacts, double-click the Pan tool (in the Basic tools palette).
- Save your files often to prevent data loss, and employ a backup strategy for your computer.
- Important: Exercise steps in this tutorial are based on default preference settings from a new installation of the Landmark program with Renderworks. Results for some steps may vary from the figures if your preference settings differ from the defaults.

Metric or Imperial?

- All exercise data set files for this tutorial were designed using metric values. However, I have included imperial measurements too, so use whichever you prefer. As each exercise section is standalone, it is not critical that you change your ways and convert to metric or imperial. Remember, Vectorworks Landmark is a flexible tool and you can use whichever is best for you.
- Imperial measurements are shown thus [1' 6"], (square brackets, with the unit mark), and Vectorworks will convert the values accordingly.

Keyboard Shortcuts

Although I use an Apple Macintosh, all keyboard shortcuts included in this guide will show both Windows and Macintosh. This will be written with the Microsoft Windows key first, followed by the Macintosh key. For example:

1. Press Ctrl+5 (Windows) or Command+5 (Macintosh) to restore Top/Plan view.

Refer to the Vectorworks 2013 Shortcuts PDF file (available from the Help system) to print a complete list of your own keyboard shortcuts.

Section 1: Landmark Setup

Objectives for Section One

After following the exercise steps in this section, and watching the accompanying movies, you will be able to:

- Name the different elements of the Landmark workspace and set basic Preferences
- Access the libraries of content provided with Vectorworks Landmark from your workspace, while working in any file
- Set the page size, set your drawing scale, and use the grid settings to control the size and visibility of the grid.

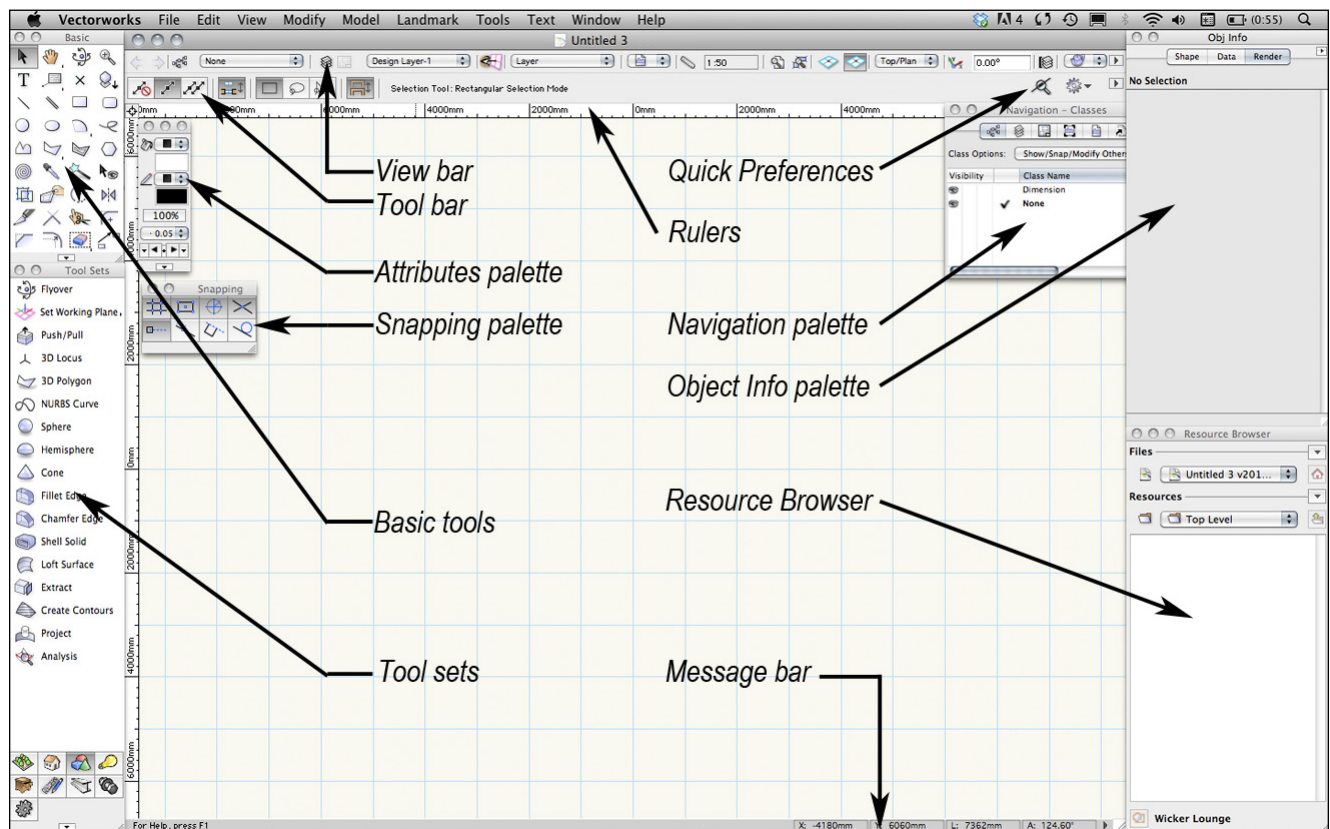
Example files required for this section:

- There are no specific examples required for this exercise, other than the Vectorworks resource files installed with your software.

Navigate the Landmark Workspace

Once your Vectorworks licence is activated, you will be presented with either the Vectorworks Landmark workspace, or the Vectorworks Designer workspace (if you have an Evaluation or Educational License). When first confronted with any new software application, it can seem a little terrifying. This is perfectly normal, so do not let it overwhelm you.

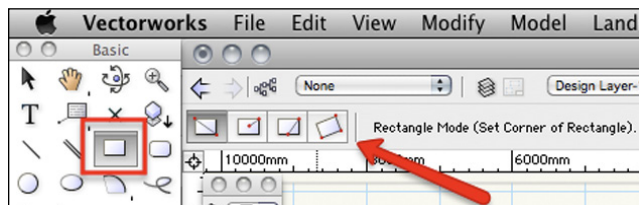
In this section we'll take a look at the Landmark workspace, name the different areas, and learn the headline functions of those palettes. Then we will customize some preferences, a process that is a little like organizing your desk. You choose how you want things arranged and what things you want to have easy access to while working.



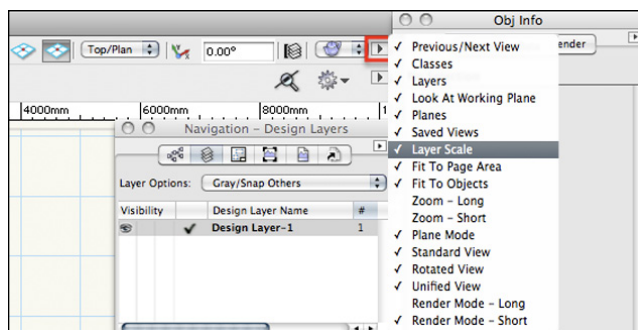
The drawing area has a semi-transparent background color that helps you determine if objects are filled. This background color will not appear on your final drawings, and you can change it if you don't like it. There may be a grid visible on the drawing area. This can be hidden and displayed as required. The labelled areas on the workspace are described as follows:

Get to Know the Workspace

1. On the left of the workspace you will find two tool palettes. The **Basic palette** contains 2D tools for drawing simple, regular shapes and more complex irregular shapes. Many of these objects can quickly be converted to 3D using the Push/Pull functionality built into their tools. Click on some of the tools. Notice that the Tool bar changes as you choose different tools.
2. The **Tool bar** provides different options, known as modes, for each tool. For example, click the **Rectangle** tool, you'll see the Tool bar change to offer you four different ways to draw a rectangle. Click the **Selection** tool again, or press **X** as a shortcut to return to the Selection tool.



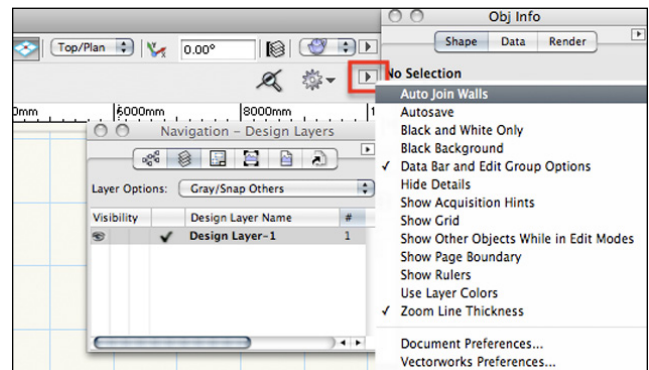
3. The **Tool sets** palette, below the Basic palette, contains buttons to activate more industry-specific tools for performing more specific tasks. Click the **Building Shell** tool set icon and notice the tools for creating walls, doors, and windows. Many of these tools are "hybrid" in nature, which means they contain both a 2D and 3D representation of the object. These tools also store information about the object—so you can produce schedules directly from your design. Click the **Wall** tool. On the Tool bar, click the button with a wrench and pencil icon. This will open the Wall Preferences dialog, where you can specify the kind of wall you want to draw. Click Cancel. You'll learn more about Walls later. Many of the tools in the Tool sets will have a Preferences button just like this.
4. The **View bar** can be customized to include different elements but is used to control the current class, layer, and scale. It has menus for saving views and for zooming the view. It has menus for changing to preset 3D views and rendering your 3D model. Click on the **Utility** menu and add **Layer Scale** to your View bar. If you don't have a large screen, you can also remove Zoom long from the View bar.



5. The **Attributes palette** has a menu for assigning different fill colors and styles to 2D objects. It has a menu for changing the pen weight,

color, and style to objects. You can also use it to vary the Opacity/Transparency of objects on your plan.

6. The **Snapping palette** has controls to help you draw with accuracy and precision. For example, the Snap to Object facility will highlight the names of points on objects when the mouse is held over them. Smart Points draws temporary helpful guidelines on the screen to assist you in aligning new objects with existing elements in the design.
7. The **Quick Preferences** area on the right of the Tool bar is for preferences you may wish to change frequently. Click on the arrow to the right to access a list of features that can be added to the Quick Preferences area. Select **Auto Join Walls**, **Autosave**, **Display Light Objects**, **Show Clip Cube**, **Show Grid**, **Show Other Objects in Edit Modes**, **Show Page Boundary**, and **Show Rulers**. Note that you can also access further Document Preferences and Vectorworks Preferences. Document Preferences are specific to the current file, whereas Vectorworks Preferences remain active for every Vectorworks session.



8. The **Navigation palette** is used to manage and navigate the organizational structure of the drawing. More about this later.
9. The **Object Info palette** is similar to a properties palette or an inspector palette that you may have used in other applications. Click the **Rectangle** tool on the Basic palette and draw a rectangle any size, anywhere on the drawing area. The rectangle will remain "selected." Look at the Object Info palette and notice that it displays information about the rectangle. Change the values in the Height and Width fields. Notice the rectangle changes size. Press Del/Backspace on your keyboard to delete the rectangle. Click the **Selection** tool again.
10. The **Resource Browser** is used to access and manage libraries of objects you can use in your design. There is further information on the Resource Browser in the following section.
11. The **Message bar** at the bottom of the screen is often overlooked. If Vectorworks is unable to complete the task you have requested, it will display helpful information about the failure here to help you determine the problem.

Accessing Landmark Resources

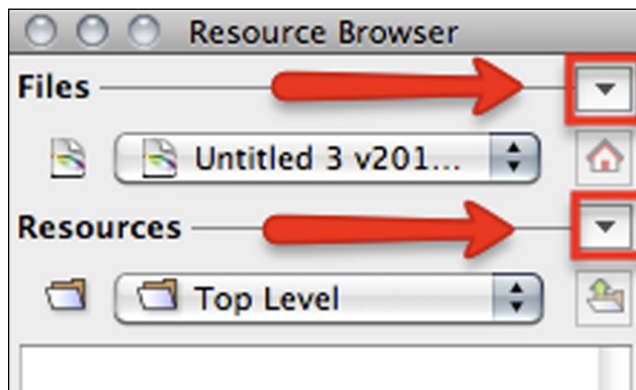
In addition to a wide range of drawing features, Vectorworks comes with libraries of ready-made items that you can use in your design. The term “resource” in Vectorworks is a collective name for a variety of different elements, including:

- Line Types
- Symbols
- Tiles
- Renderworks Textures
- and much more...

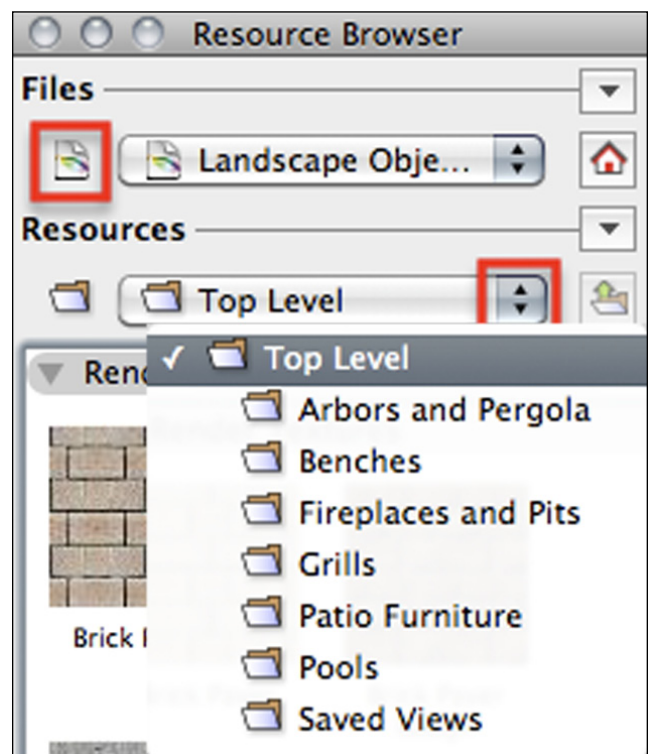
In this exercise, you'll add the Landmark specific resources as “favorites” so you can quickly gain access to them from any file.

Add Favorite Resource Files

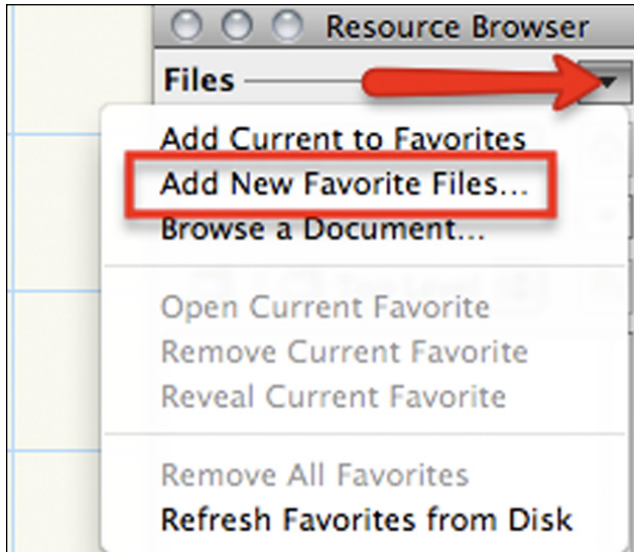
1. The Resource Browser has its own utility menu system. The top menu is for managing resource files (the **Files** menu), and the lower menu is for making changes to specific resources (the **Resources** menu).



2. The Resource Browser also has two drop-down menus. The top menu is for navigating to different resource files, and the lower menu is for navigating the folder structure within a specific resource file.

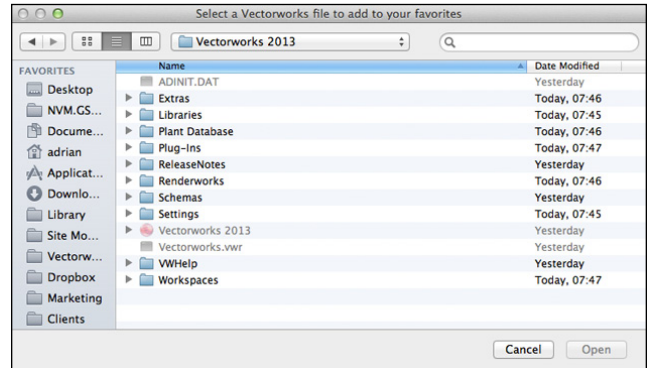


3. On the **Files** menu, choose **Add New Favorite Files**.



4. When the Explorer (Windows) or Finder (Macintosh) window opens, notice that it has taken you to the location where Vectorworks is installed:

- C:/Program Files/Vectorworks 2013 (Windows)
- User/Applications/Vectorworks 2013



5. Double-click the **Libraries** folder.
6. Double-click the **Objects-Landscape and Site** folder. Highlight all the file names in this folder, and click **Open**.
7. Repeat the process until you have added the contents of the following folders:
 - Objects-Landscape and Site/Plant Images/Xfrog Photorealistic.
 - Textures (Renderworks is required.)
8. On the Resource Browser, click the **Files** list. You will see a list of Favorites. Click on any of the file names to review its contents in the window below. Click the **Home** button on the right of the palette to return the Resource Browser to a view of the current file.

Setting Up the Drawing Area

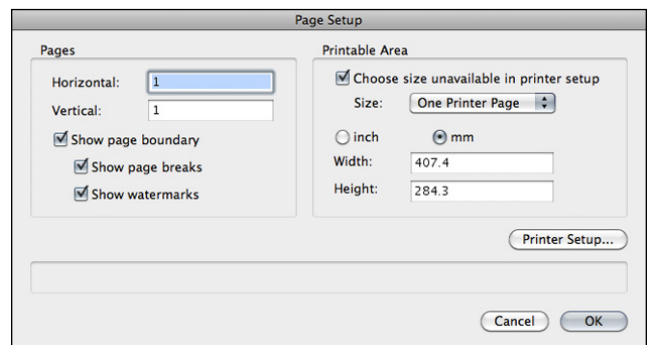
Vectorworks Landmark has some very sophisticated tools for laying out presentation drawings. These tools typically come into play at the end of the design project, so setting up a specific page size at the start is not essential. But I generally find that new users, who might be moving from paper-based design, have a strong desire to set up a page at the beginning of the project. The process is covered here to reassure you! To complete this part of the design process on paper, you would need to choose a physical piece of paper for your drawing board, decide on the unit of measure you're going to use, choose the appropriate architectural scale, and place a sheet of graph paper under your design to help you with proportions.

This exercise is not a precursor to any of the design exercises. Rather, it is a stand-alone set of instructions to help you set up your new projects.

Setting the Page Size

1. Create a new file, using **File > New**, and then choose From Template. Choose one of the Landmark templates and click OK.

To change the size of the Drawing Area, choose **File > Page Setup**.

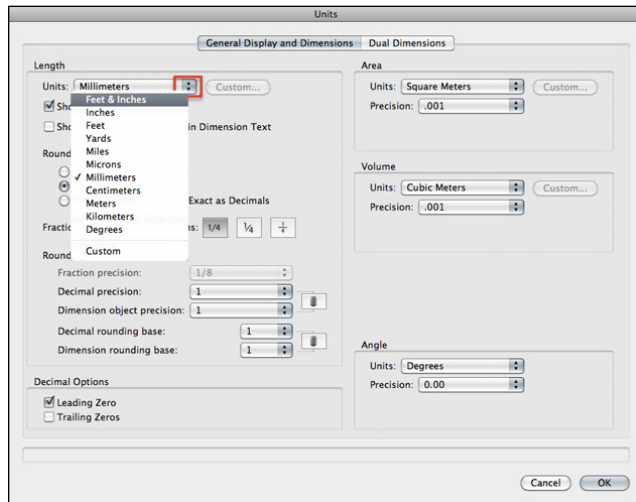


- If you will be printing on a printer already installed in your office, choose **Printer Setup** and then choose the printer and relevant paper size.
- If you will be sending the file electronically for printing on an unknown printer, check **Choose size unavailable in printer setup**, and then choose a standard paper size to suit your needs. The list includes US sizes and international metric standard sizes.

2. Click OK. The page will resize. Click **Fit to Page** on the **View bar** to see the page boundary. Click **Show/Hide Page Boundary** on the Quick Preferences bar to control the visibility of the page boundary.
3. Choose **File > Page Setup** and uncheck **Show Page Breaks**. Click OK.

Setting the Unit of Measure

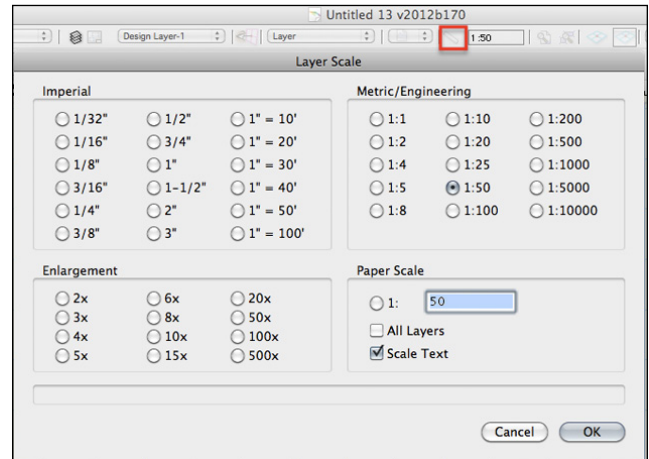
1. Choose **File > Document Settings > Units**.



2. Choose appropriate Length, Area, Volume and Angle units of measure for your geography and the project. Click OK. The ruler displays your chosen units.

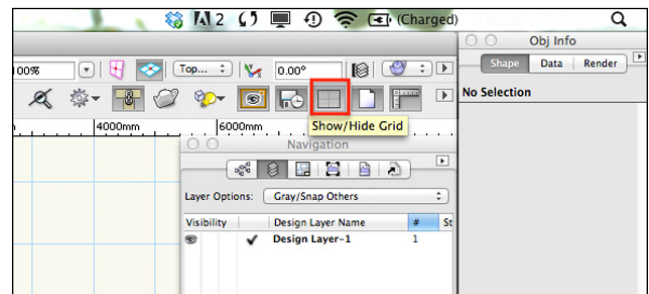
Setting the Drawing Scale

1. Click the **Layer Scale** button you added to the View bar earlier. Choose an appropriate scale for your page setup and project. Click OK.
2. You will see the scale is displayed on the View bar. The ruler is resized to accommodate your scale change.

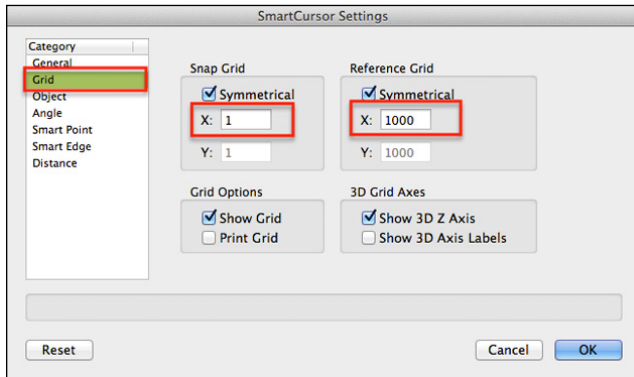


Showing/Sizing the Grid

1. To turn the Grid on or off, use the **Show/Hide Grid** Quick Preference button that you added to the View bar above. You may need to zoom closer to the drawing area to see the grid. Use the mouse wheel if you have one, or two fingers on your trackpad if you are using a Macintosh.



2. To change the grid size, double-click the **Snap to Grid** button on the Snapping palette. When Vectorworks offers the handy hint that you can disable all snaps using the backquote key, click OK. The Snap Grid is always invisible, but when Snap to Grid is on, it forces your drawing to fit to the snap grid.
3. Set the Snap Grid to something small (for example, **1 mm [1/16"]**). This ensures that if Snap to Grid is turned on, you will still be able to draw small lengths.
4. The Reference Grid is the blue grid visible on the screen and does not control drawing functions. It is there simply for your reference. Change the size to **1000 mm [3']**.
5. Click OK to close the dialog.
6. It's my recommendation that you work with Snap to Grid turned off unless you have a specific need to use it. Click **Snap to Grid** on the Snapping palette, to turn it off.



Turn on Auto-classing

Vectorworks uses Auto-classing to automatically classify certain objects you draw to help you distinguish them from other types of objects on the screen. You'll see classes in action later.

1. To turn on Auto-classing, choose **File > Document Settings > Standard Naming**.

2. On the dialog, check the **Enable Auto-classing** box. Click OK to close the dialog box.
3. On the resulting dialog box, click **Yes**.

Save these Settings for Future Projects

1. To save these settings for use on future projects, choose **File > Save As Template**.
2. Name the file "**My Template.sta**." Allow Vectorworks to save the file where it wants to. Click OK.

Section 2: Plotting the Existing Site

Objectives for Section Two

After completing the exercises in this section, you will be able to do the following:

- Import both a DWG and a PDF file to use as a base plan
- Use triangulation to locate positions on a site
- Create a floor and a property line for your model
- Use the Wall, Door, and Window tools and the Create Roof command to create a simple building
- Document existing trees on the site
- Set the position of the sun and create a shadow analysis

Example files required for this section:

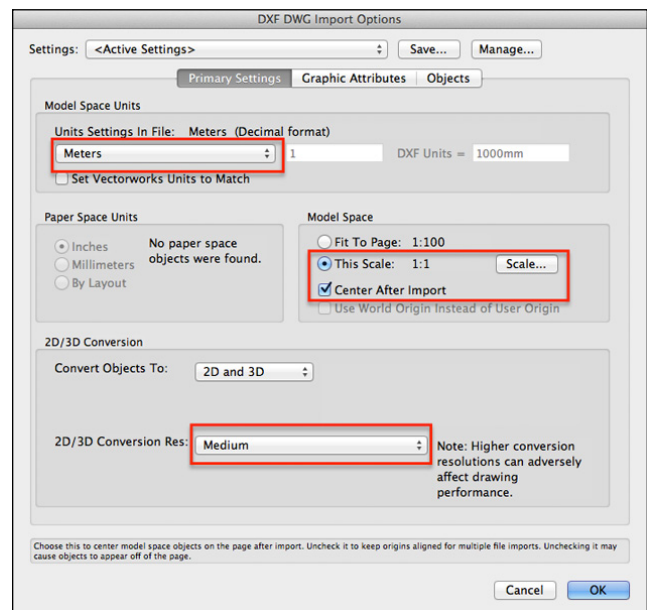
- 1-Sample DWG Import.dwg
- 2-Locating the Boundary.vwx
- 3-Create Building.vwx
- 4-Create Roof.vwx
- 5-Add Existing Trees.vwx

Exercise 1: Importing Files from External Sources

Even if you measure your own surveys on site, there will also be times when you need to start the design process by importing files from external sources. These could be AutoCAD files from a professional surveyor, an architect, or a map provider. Alternatively, you might have a PDF of a site. This exercise will take you through the import process and show you how to incorporate a survey file in AutoCAD format.

Importing a DWG file

1. Create a new blank file, choosing **File > New** and check **Use Document Template**. Choose any of the standard Landmark templates that came with your software. Click OK.
2. Use the previous exercise as a reference to change the settings to suit your preferred way of working.
3. Choose **File > Import > Import Single DXF/DWG File**.
4. Within the sample files, locate the file **1-Sample DWG Import.dwg** and click **Open**.
5. On the Import dialog, change the following settings:
 - Unit Settings in File: **Meters**
 - This Scale: **1:1**
 - Center After Import: **Don't Check**
 - Convert Objects to: **2D and 3D**
 - 2D/3D Conversion Resolution: **Medium**



It is critical that the Unit Settings in File field be set to the Unit measurement of the incoming file.

6. Click the Graphic Attributes tab and change the settings as follows:

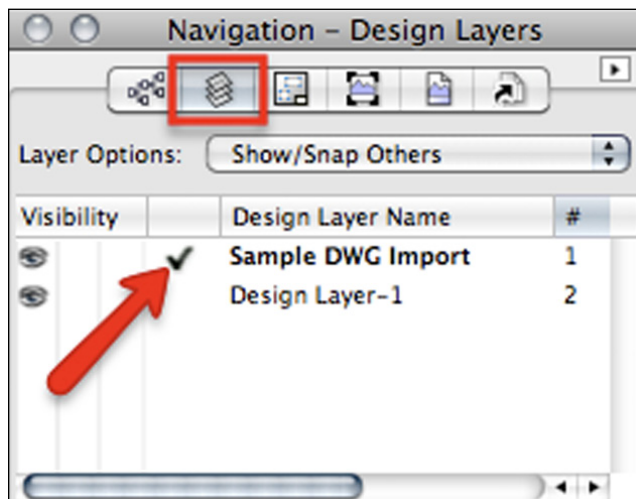
- Map colors to Line weights: **Uncheck**
- Add Prefix to Imported DXF Layers: **Check**
- Prefix: Enter the word **“Survey.”**

7. Click OK. If the Font mapping dialog appears, click OK to accept the default mapping of fonts not present on your machine.



Examine the File Structure

1. Turn your attention to the Navigation palette. Click on the **Design Layers** button.
2. Design Layers represent the piece of paper on which you are drawing. They are usually used to separate items in 3D space (think of the floors of a building) or to separate stages of the design process. This file contains the original Design Layer-1 and a new layer with the same name as the imported DWG file, which is the Active Layer.



3. Click on the **Classes** button on the Navigation palette. If you're familiar with AutoCAD, these classes are the translation of the DWG layers. Classes are a classification system used to distinguish different types of objects from each other. There are many classes in the file, their names all prefixed with "Survey-" so that you can distinguish them from your own classes.

4. Click the "disclosure arrow" to the left of the Survey class. Click OK to the handy message prompt and note that you can open and close the list of survey classes. Click again to open the list of classes.

5. Three columns to the left of each class name represent Visible, Invisible, and Gray. Locate the class **Survey-LEVEL_VALUE**, and click on the **Invisible** column to its left. All elements on the drawing belonging to this class are now invisible. Restore their visibility by clicking on the **Visible** column.

Both Design Layers and Classes can have their visibility controlled using the Navigation palette. However, they have different purposes: Design Layers are the physical location of the drawn objects while Classes are like a club membership, used for classifying different types of objects. You can edit classes to add graphic attributes to them so that all members of that class look the same.

Change the Scale

After you import the file at 1:1, you may wish to change the scale. 1:1 is a good starting point, as that's likely the scale at which the file was created. But you may wish to work at a different scale.

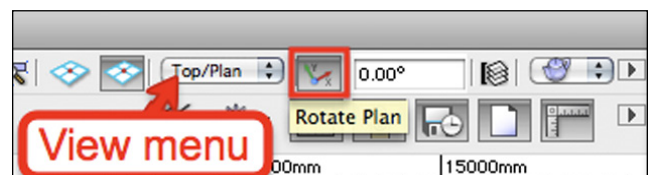
1. Click on the **Scale** button on the View bar.
2. Choose the scale you want to work in and check the **All Layers** box. Also check **Scale Text** and then click OK.
3. Click the **Fit to Objects** button on the View bar to adjust the plan to fit on your screen.

Do not be concerned if the imported site does not fit on the drawing area. You can change the scale of your layer at any time, but you will see later that you can present the drawing at any scale when your design is complete.

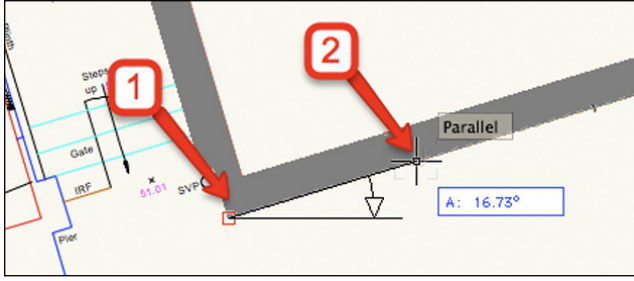
Rotate the Plan

The plan has been drawn at an angle. To be able to drawn orthogonally (square to the page), you can rotate the whole page to line up with the rulers, as if you were drawing with a parallel motion.

1. Click the **Rotate Plan** button on the Tool bar.



2. Click on the lower left corner of the house, and then click again anywhere along the lower edge of the house. The entire drawing will rotate to line up the house with the bottom of the drawing area.



- Tools such as the Rectangle tool, Wall tool, and so forth, will now easily snap horizontally and vertically and line up with the house, if that is desirable for your design.

- To return to a Top/Plan view, use the View menu on the View bar, shown in the screenshot after step 1.
- Save your file if you wish, using **File > Save**. We will not be using it again as it is a stand-alone example designed to teach you this process alone.

An important part of the import process is to always check the size of the imported elements. The use of an incorrect import unit will result in a file that is the wrong size.

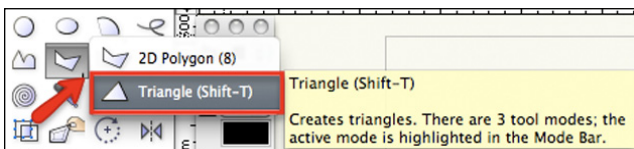
Note that PDF files or image files (scanned hand-drawings for example), can also be imported. Examine the **File > Import** menu to see the range of file types that can be imported.

Exercise 2: Drawing Up the Site

Now we'll use example files to look at how to locate points on site and to draw simple buildings. The sample file you'll use contains two simple polylines representing the footprint of a building. Later, you'll turn these into a building. There are also some triangles that represent triangulation points to the boundary. In this exercise, you'll learn how to use the Triangle tool to locate the final boundary point. In some geographies, triangulation is used with the building as a starting point for finding other points on the site. In other geographies, you may start from the boundary and triangulate inward to find the buildings. Whatever is the case where you work, the principle of triangulation is the same, and the tools you use are the same.

Triangulate to Locate a Boundary Point

- Open the file **2-Locating the Boundary.vwx**.
- On the Navigation palette, click the **Design Layers** button. There are two layers. The active layer is the Boundary layer. The two polylines are on the Buildings layer and the Layer Options menu is set to Show/Snap so that you can see the building shapes but not select them.
- Still on the **Navigation palette**, click on the **Classes** button. I have set up some classes for you to use in this file. Using a system of classes is best practice, as it helps to organize the objects you draw so that you—and other professionals—can distinguish them from one another.
- The active class is **Survey-Triangulation**. Right-click (Windows) or Ctrl+click (Macintosh), and choose **Edit**. Note that this class has been set up with a red dashed line to make these lines distinct from others. Click **Cancel**.
- Look at the **Polygon** tool on the **Basic palette**. Click and hold on the small triangle in the bottom-right of the tool. A menu will open showing another tool hiding behind the Polygon. Click on **Triangle**. On the Tool bar, choose the first mode: **Triangle by Three Sides Mode**.

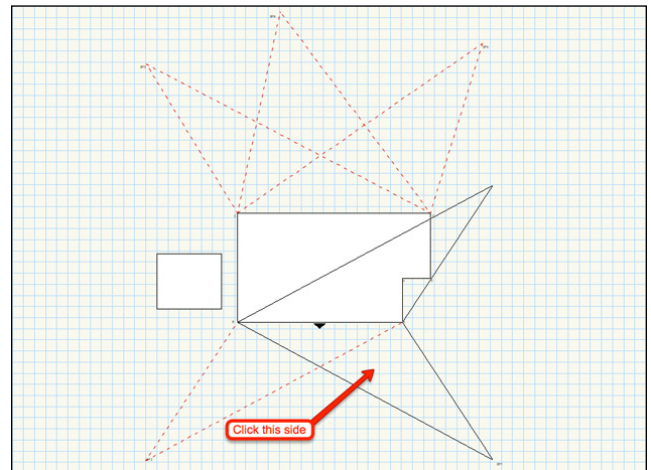


- Click on Point A on the building and then click on Point B. This sets the first side of the triangle. Press Z to help zoom to the points.

- On the dialog, enter the following values and then click OK.

- Side 1 (A to B): **Do not change**
- Side 2 (A to BP1): **14804 mm [48' 6 5/8"]**
- Side 3 (B to BP1): **26096 mm [85' 7 3/8"]**

- Vectorworks offers two triangles either side of the edge A to B. Click on the lower triangle. Vectorworks creates a triangle with its apex marking the point we were seeking.

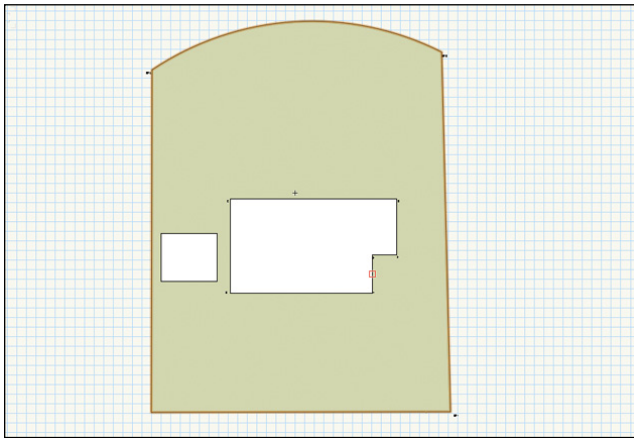


Draw the Boundary

Now that each boundary point is drawn on the plan, you will use the **Polyline** tool to draw the boundary line. When drawing around a shape like this, you can use the Space bar to temporarily activate the **Pan** tool. This will enable you to move to drawing around to reach points not on

the screen. You can also use the **Snap Loupe** (the Z key), to temporarily zoom the area under the cursor, and aid accurate drawing.

1. Use the **Navigation palette** to make **Survey-Site Floor** the active class.
2. Choose the **Polyline** tool in **Corner Vertex mode**. Click on the new point BP1, and then click on BP2. Click on BP3. Now use the U key on your keyboard, pressing it four times, to "shortcut" to the Polyline's **Point on Arc mode**.
3. Click on Point BP4 and then on BP5. Press the U key again, twice, to return to **Corner Vertex mode** and then click on BP1 again to close the polyline.



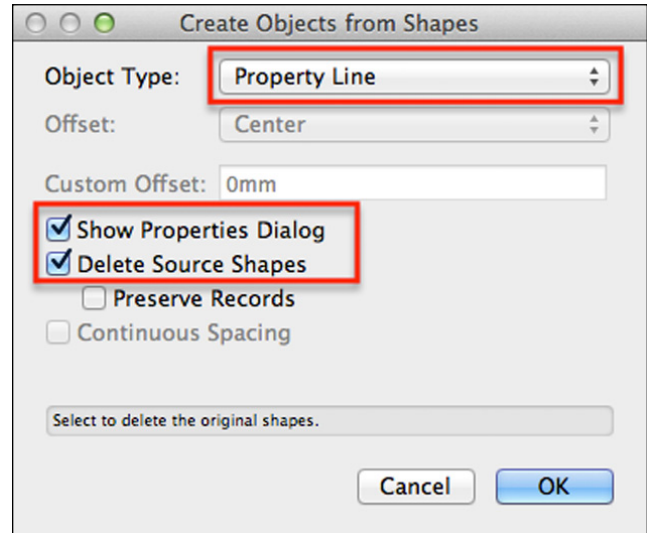
4. Select the Polyline if it is not already selected. Choose **Edit > Copy** and then **Edit > Paste in Place**. We will convert one of these objects to a floor and the other to a Property Line object.
5. Choose **Landmark > Architectural > Floor**. Click OK to create a Floor with a thickness of 0 and a height also of 0. The Floor is a "hybrid" object that can display a 2D appearance in Top/Plan view and a different appearance in a 3D rendered view.
6. Choose **Modify > Send > Send to Back** to send the Floor object to the bottom of the stack of objects.

Creating the Boundary/Property Line

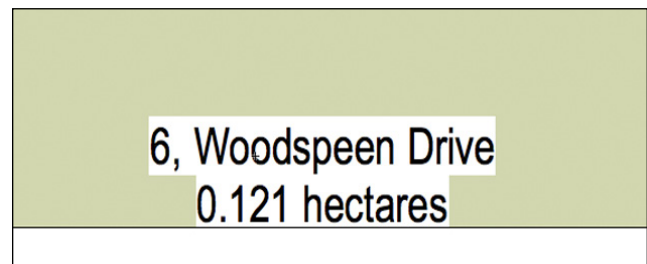
Property Line is a useful tool for displaying data about the site, including its area and the dimensions of the boundaries.

1. On the **Navigation palette**, make **Survey-Property Line** the active class.
2. Select the duplicate Polyline. Choose **Landmark > Create Objects from Shapes**. Complete the dialog as follows:

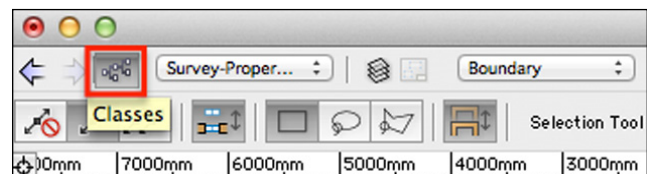
- Object Type: **Property Line**
- Show Properties Dialog: **Check**
- Delete Source Shapes: **Check**
- Click OK.



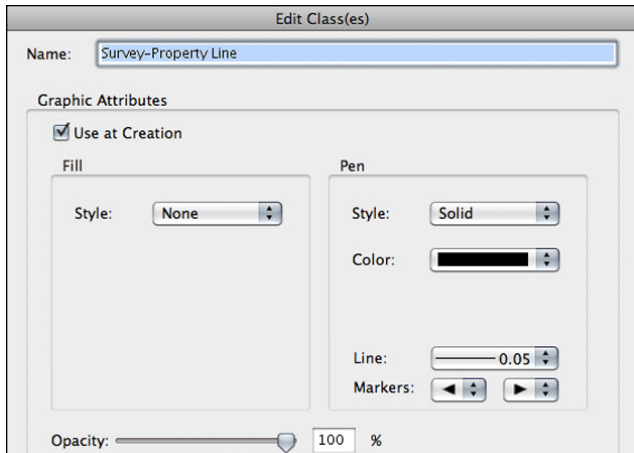
3. On the resulting dialog, change the following fields, leaving the others unchanged from their defaults:
 - Name: 6 Woodspeen Drive
 - Click OK.
4. The polyline is replaced with a Property Line in the same shape. Examine the Property Line. It shows valuable information about the area of the site and the boundary lengths.



5. Click the **Classes** button on the View bar to open the **Organization** dialog again, this time on the Classes tab.
6. Examine the list of classes in this file.



7. Select the class called **Survey-Property Line** and click **Edit**.
8. The graphic attributes of this class are displayed. In this case, the Property Line has a Fill Style of None, allowing the Floor color to show through it.
9. Click OK to close the Edit Class dialog and OK again to close the Organisation dialog.



10. On the Navigation palette, click on the **Classes** button. To the left of the name **Survey-Triangulation**, click in the center column to make all members of this class invisible. The objects are still present in the file, and can be used for reference at any time, simply by restoring the visibility of the class.

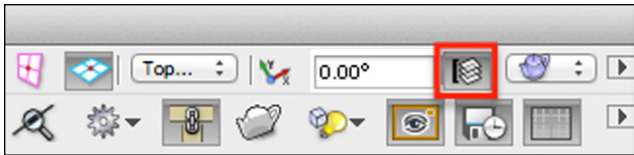
11. Choose **File > Close**. There is no need to save the file as I have provided the file for the following exercise.

Exercise 3: Draw a Building

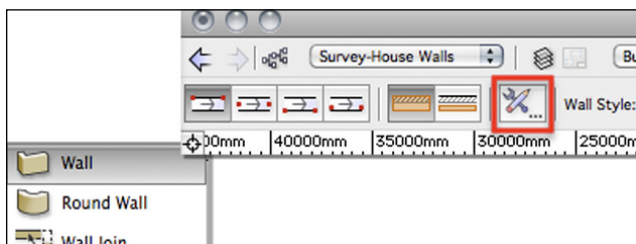
In this section, you'll learn how to put together a simple building, including walls, doors, windows, and a roof. The Vectorworks Wall object is very powerful. It allows windows and doors to be inserted directly into it. It is a hybrid object, containing both a plan and a 3D representation. If you have Renderworks, you'll see textures applied to these objects.

Draw the House Walls

1. Open the file **3-Create Building.vwx**.
2. Click on the **Unified View** button on the View bar. This will ensure that when changing to a 3D view, all layers will move in unison.



3. Using the **Navigation palette**, ensure that **Buildings** is the active layer and that **Layer Options** are set to **Show/Snap Others**. This means you can see objects on other layers but not select or modify them.
4. Click the **Classes** button and make **Survey-Garage Walls** the active class.
5. Click on the **Building Shell** icon on the Tool sets palette to open the Building Shell tools. Click on the **Wall** tool and then click on the **Wall Tool Preferences** button on the **Tool bar**.

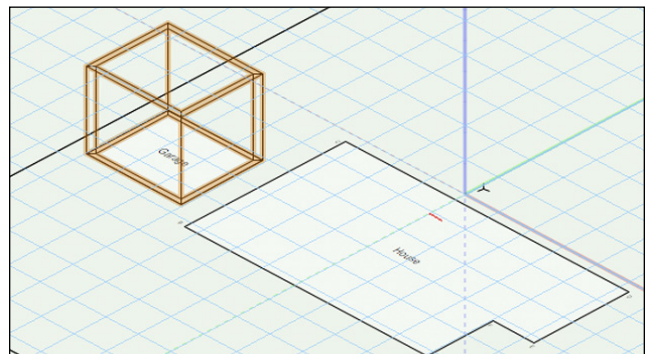


6. Set the following preferences:

- Overall thickness: **300 mm [11 3/4"]**
- Click the **Insertion Options** tab.
- Height: **3000 mm [9' 10"]**
- Click OK.

This has defined a wall with a thickness of 300 mm and a height of 3000 mm.

7. Click once on the lower left corner of the rectangle labeled "Garage." Continue in a clockwise direction, and click on all the other corners, returning to your original point and click to close the shape. You have drawn four walls.
8. Click on the **Wall Preferences** button again and click on the Insertion Options tab. Change the Height value to **5500 mm [18']**. Click OK.
9. Using **View > Standard Views > Right Isometric**, change to a 3D view. Note that the walls also have a 3D representation.



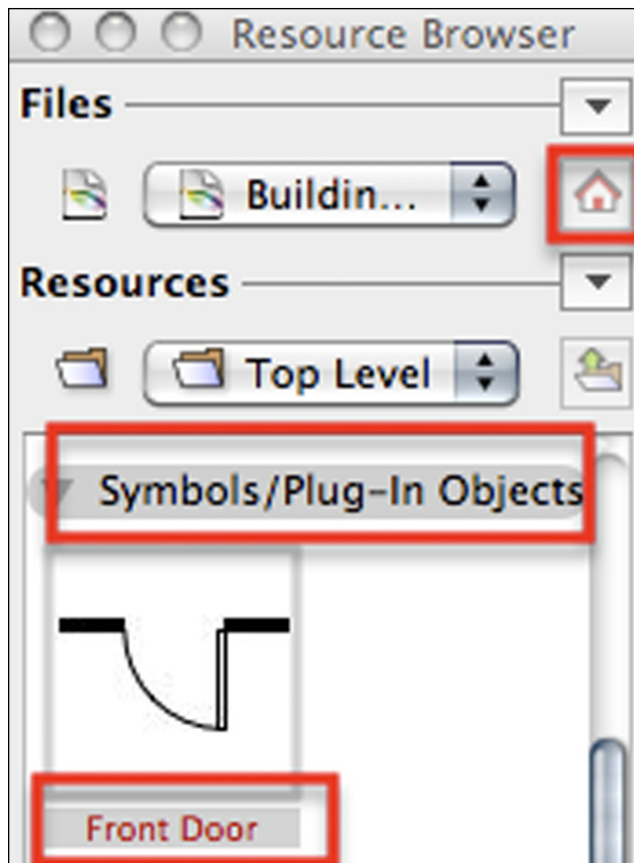
- Using the **Navigation palette**, make **Survey-House Walls** the active class.
- Click on the lower left corner of the house polyline (point B), and trace around the house polyline. You can draw in a 2D or 3D view—whichever you prefer. You can still use the Z key to ensure you are snapping on the correct points.

Note: As you draw, notice that the blue Data bar appears for each wall segment. You can use this to control the length of each segment if you are drawing a building from a series of measurements taken on site.

Insert Doors

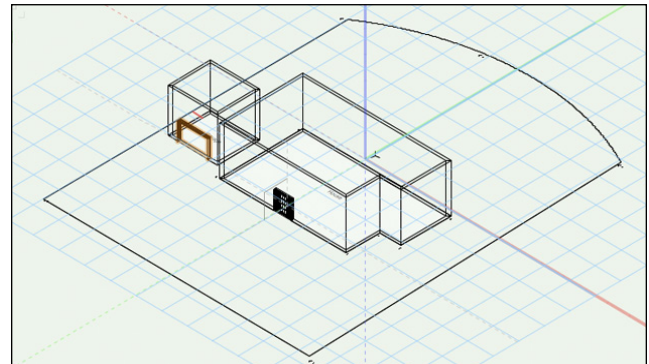
The Door and Window tools, also found in the Building Shell tool set, have a Preferences button on the Tool bar that allows you to configure a wide variety of door and window styles. These can be inserted into walls at the correct position to properly represent access to the landscape and to represent the building in 3D.

- On the Resource Browser, click on the **Home** button to the right of the palette to ensure you are looking at the resources of the current file.
- Scroll through the Resource Browser window until you see the heading **Symbols/Plug-in Objects**.

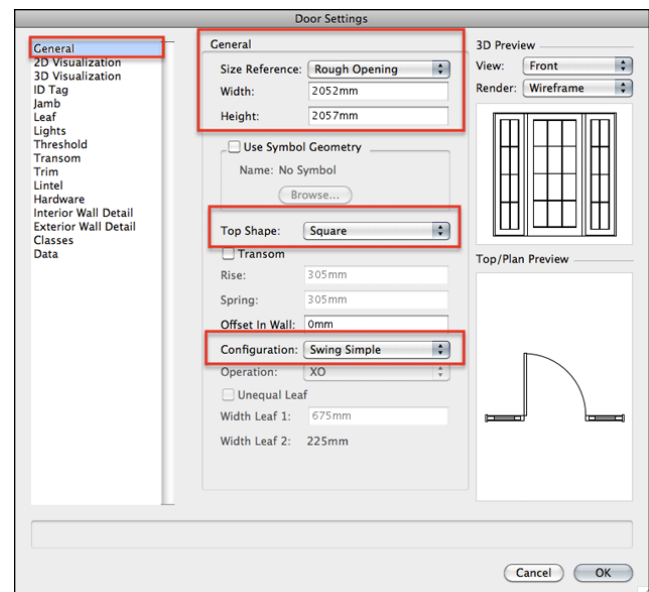


- Double-click the **“Front Door”** symbol to make it the active symbol. Notice this has activated the Symbol Insertion tool on the Basic palette and that the symbol name is displayed on the bottom of the Resource Browser palette.

- Bring the cursor the center of the front house wall, looking for the Midpoint cue. The wall will highlight in red to indicate that you are about to insert a symbol into it.
- Click once to set the position of the door in the wall. Click again on the outside of the wall to complete the insertion.
- Double-click the symbol called **“Garage Door”** on the Resource Browser and place this on the center of the front wall of the garage.



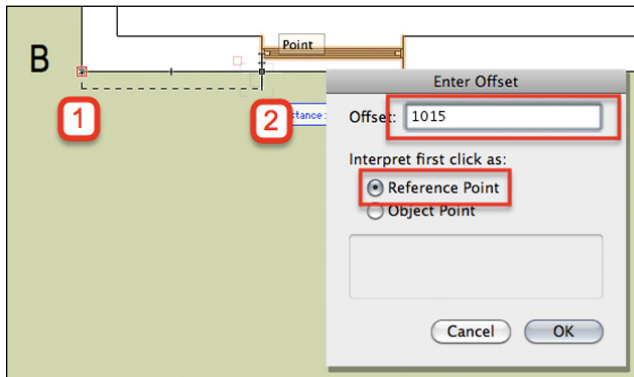
- Click the **Selection** tool. Select the front door. On the Object Info palette, click **Settings**. The Door Settings dialog opens.



- Click the **General** tab on the left, and examine the range of settings available for doors. In particular, notice that the Size Reference is set to Rough Opening, meaning the width of the doorway is being measured across the entire opening. This dialog is also displayed when clicking the Door Preferences button on the Tool bar. Click Cancel to close the dialog without making any changes.
- Choose **View > Standard Views > Top Plan** to return to Top/Plan view bar, (or use the Standard View menu on the View bar).
- Click **Flip** on the **Object Info** palette to change the opening direction of the door.

Insert Windows

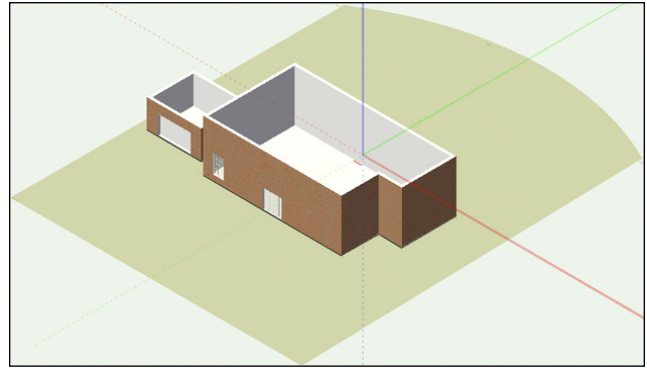
1. On the **Resource Browser**, double-click the symbol named **Ground Floor House Window**. Move your mouse onto the wall. It will highlight red. Click anywhere on the front house wall, to the left of the front door, and again on the outside (left edge) of the wall.
2. The window is inserted into the wall.
3. Click on the **Settings** button on the **Object Info palette** and note the range of settings for windows. Click Cancel.
4. On the **Object Info palette**, click **Set Position**.
5. Click on the lower left corner of the house (B), and then click on the left edge of the window. The **Enter Offset** dialog opens. It shows the current distance between the two clicked points. Change the Offset value to **1015 mm [3' 4"]**.
6. Click OK. The window moves to the desired position in the wall.



Apply Textures and Render

Note: You can only apply textures and use Renderworks modes if you have Renderworks installed.

1. Change to Right Isometric view using the View menu on the View bar.
2. Choose the **Select Similar** tool from the Basic palette. Click **Select Similar Tool Preferences** on the Tool bar. Ensure only Object Type is checked and click OK.
3. Click on one of the walls, which will select all of them.
4. On the **Object Info palette**, click on the **Render** tab. Change the following fields:
 - Part: **Left**
 - Texture: **Bricks**
5. Choose **View > Rendering > Fast Renderworks**. This will change the model from Wireframe to a rendered view. If you do not have Renderworks, choose **View > Rendering > OpenGL**. You will see the Brick texture applied to the outside of the house.

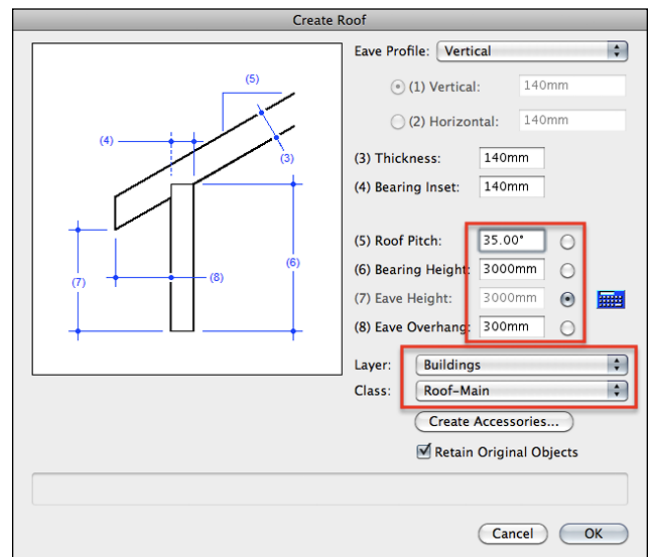


6. Return to a Wireframe view, using **View > Rendering > Wireframe**.

I will complete the remaining windows and doors in this model.

Create a Roof

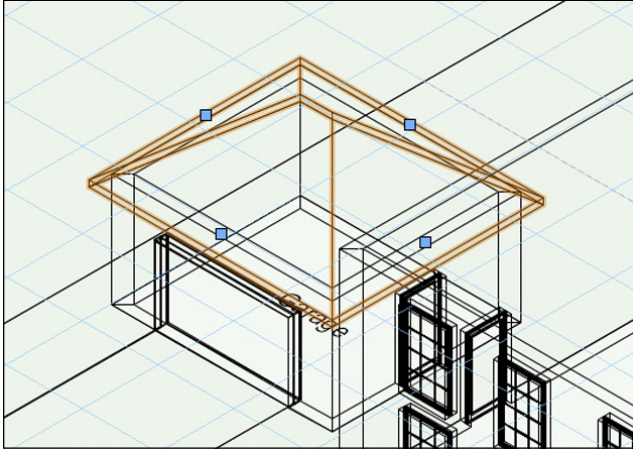
1. Open the file **4-Create Roof.vwx**. In this file, the remaining windows and doors have been inserted to save you time. The textures have been applied and a driveway has been added using the Hardscape tool. You'll learn about the Hardscape tool later. The Roadway (Straight) tool was used to create the road.
2. Choose the **Select Similar** tool from the **Basic** palette. Click **Select Similar Tool Preferences** button on the Tool bar. Check Class and Object type and then click OK.
3. Click on one of the garage walls. All the garage walls are selected, but not the house walls. Although they are the same type of object, they are members of different classes, helping Vectorworks distinguish between them.
4. Choose **Landmark > Architectural > Create Roof**.



5. Complete the dialog as follows:

- Eave Profile: **Vertical**
- Thickness: **140 mm [5 ½"]**
- Roof Pitch: **35°**
- Bearing height: **3000 mm [9' 10"]**
- Eave overhang: **300 mm [11 ¾"]**
- Notice that Vectorworks will create the roof on the active design layer, and in a class called Roof-Main.
- Click OK.

The roof is created and is made of four separate roof faces.



6. Repeat the process with the house walls to create a roof on the house.

7. The Create Roof dialog will remember the previous settings. However, the bearing height field will change automatically to the height of the house walls. Click OK.

8. With the Select Similar tool, click on one roof to select both. Click on the Object Info palette's **Render** tab.

9. Change the following fields:

- Part: **Top**
 - Texture: **Roofing Shake Brown**
- (Renderworks is required for these steps.)

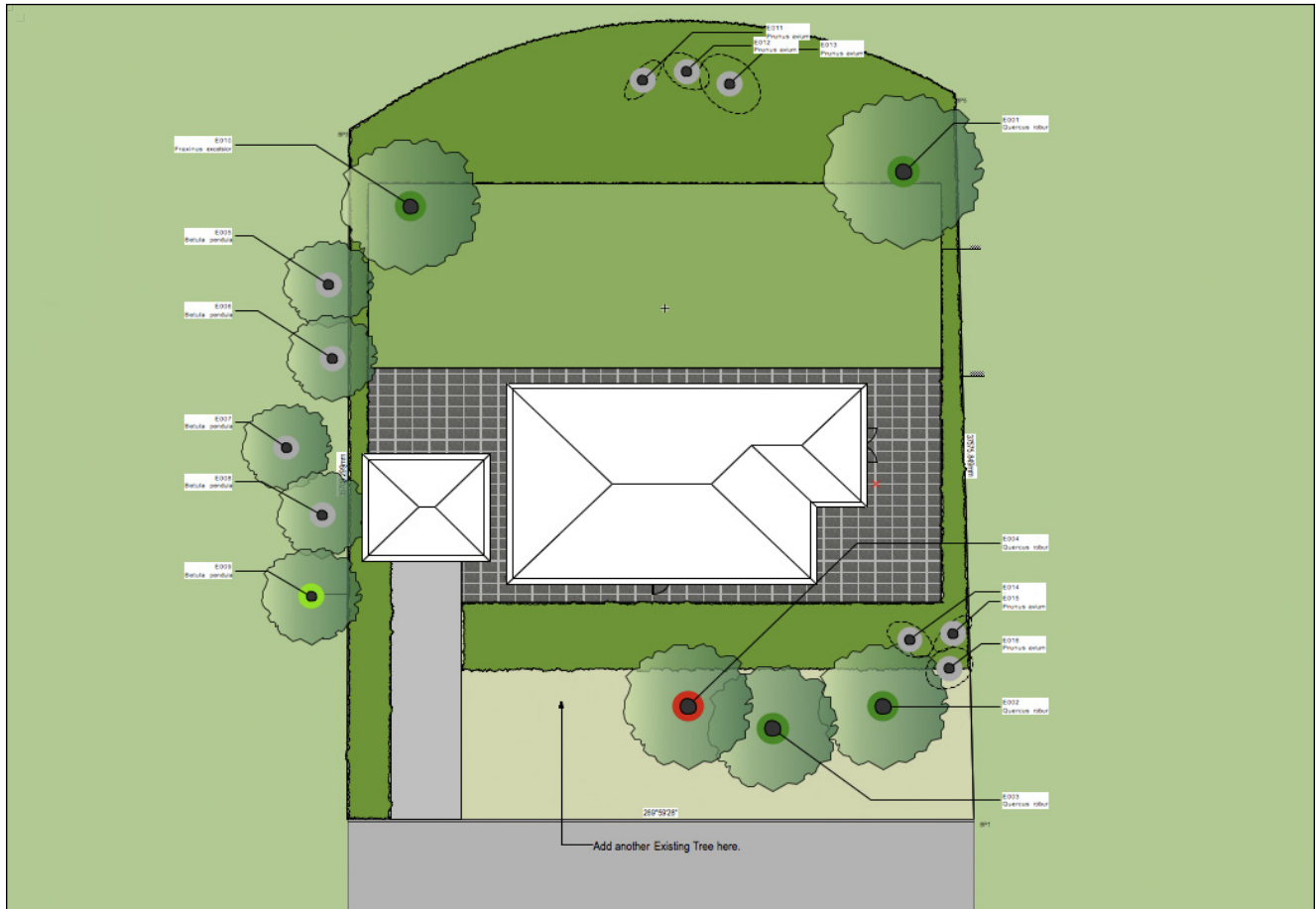
10. Click the Shape tab on the Object Info palette.

11. Render the file with Fast Renderworks.

12. Choose **File > Close**. There is no need to save the file.

Exercise 4: Existing Trees

Vectorworks Landmark includes a tool for documenting existing vegetation and for documenting the ultimate action for this vegetation. The tool, called Existing Tree, is located in the Site Planning tool set. In this exercise, you'll edit some trees already placed on the plan and place a tree on the plan. The file you'll work in contains extra elements, to give you a sense of completeness when working with the site. These objects were drawn with the Landscape Area tool and the Hardscape tool—both found in the Site Planning tool set. You'll see more about these in future exercises, but feel free to select them and examine their settings on the Object Info palette to get a feel for their functionality.



Place an Existing Tree

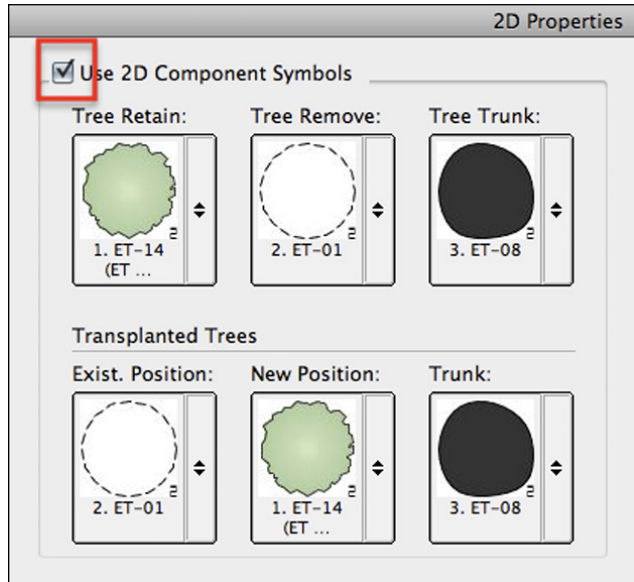
1. Open the file **5-Add Existing Trees.vwx**.
2. Using the **Navigation palette**, click the **Design Layers** button. There are many more layers in this file, to allow the easy separation of different phases of the design process.
3. Ensure **Existing Trees** is the active layer. Ensure **Exist Tree-Retain** is the active class.
4. Click the **Site Planning** tool set. Click the **Existing Tree** tool and then choose the **Existing Tree Tool Preferences** button on the Tool bar.
5. On the Object Properties dialog, define the tree as follows:

- Click **Tag and Number Options** and ensure that Auto-numbering is on. This tree will be numbered sequentially with a prefix of E. Click OK.

- Continue working on the Object Info palette completing the following fields:
- Origin: **Native**
- Height: **12500 mm [41']**
- Canopy Max. Diam.: **6500 mm [21' 4"]**
- First Branch Hgt: **1700 mm [5' 7"]**
- DBH: **800 mm [2' 8"]**
- Leave all other fields unchanged, but do not yet click OK.

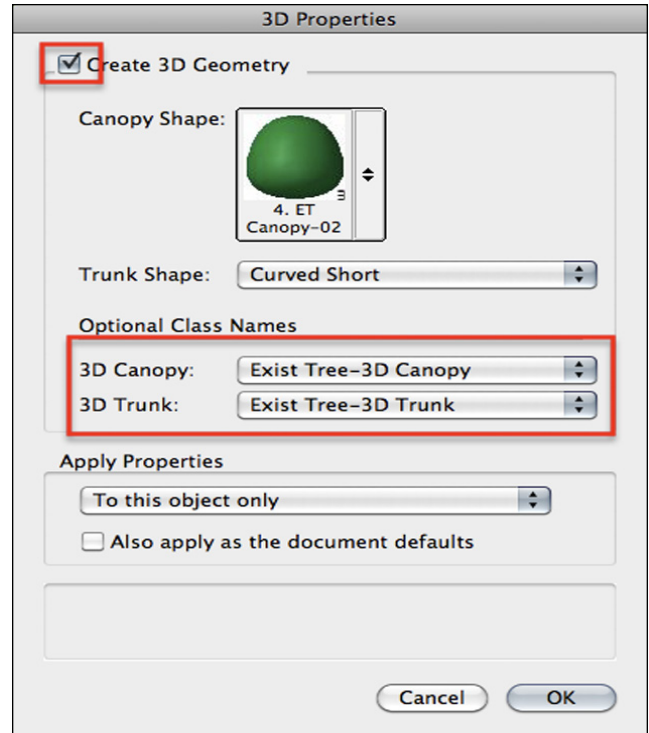
6. Click **2D Properties**.

- Check **Use 2D Component Symbols**.



- Note the different options for displaying trees with different tree actions.
- Click OK.

7. Click **3D Properties**.



- Check **Create 3D Geometry**
- Under Optional Class Names, choose **Exist Tree-3D Canopy** and **Exist Tree-3D Trunk**.
- Click OK.
- Click OK again.

8. Click once on the drawing and again to place the tree as indicated in the plan.

9. Press X to return to the **Selection** tool. The new tree is still selected.

10. On the **Object Info palette**, scroll to the bottom and change the Action field to **Retain**.

11. Notice the tree's graphic has changed. Change the Action field to **Remove**. The graphic changes again.

12. Select some of the other trees and examine their properties on the **Object Info palette**.

13. Choose **Tools > Reports > Choose Schedule**. On the dialog:

- Select **Existing Tree Schedule**
- Check **Place worksheet on drawing**.
- Click OK.

14. The cursor changes to a target. Click on the drawing area below the road. A report is displayed on the drawing that lists all the trees on the site. You can use this report on the drawing or export it to use in other project documentation.

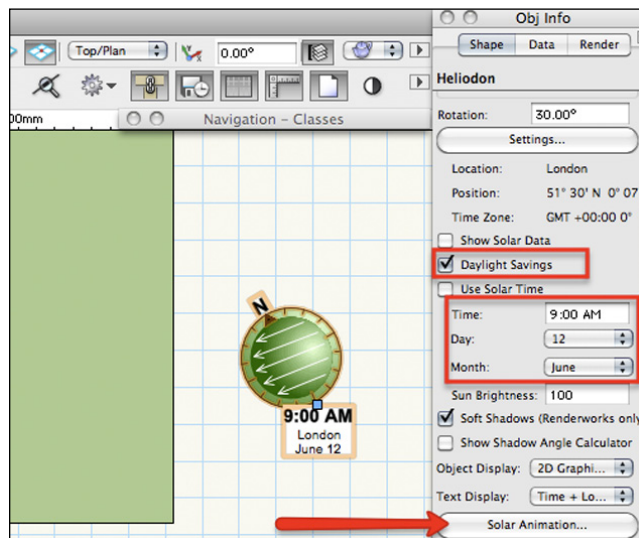
15. Choose **File > Close**. There is no need to save the file.

Exercise 5: Set the Sun Position

Vectorworks Landmark includes the Light tool that has many modes for providing different lighting effects to your model. For landscape design, the most important light source is the sun. The **Heliodon** tool, provides sunlight based on the location of the site, the date, and the time of day. It can also be used to create a solar animation movie.

Add a Heliodon

1. Open the file **6-Create Sunlight.vwx**.
2. On the **Visualization** tool set, click **Heliodon**. Click **Heliodon Tool Preferences** on the Tool bar.
3. On the dialog, choose the following:
 - the time format you prefer.
 - a symbol for your plan that will represent the sun and mark the direction of North.
 - the location of your site by choosing the region and the city. You can add other cities using the Edit Cities checkbox.
 - Click OK.
4. Click on the drawing once to position the Heliodon marker. Rotate the symbol so that its top points North. Click again to set the rotation.
5. Press X to return to the **Selection** tool.
6. On the **Object Info** palette, make the following adjustments:
 - Daylight Savings: Check (if appropriate)
 - Change the Time, Day, and Month settings to today's date.

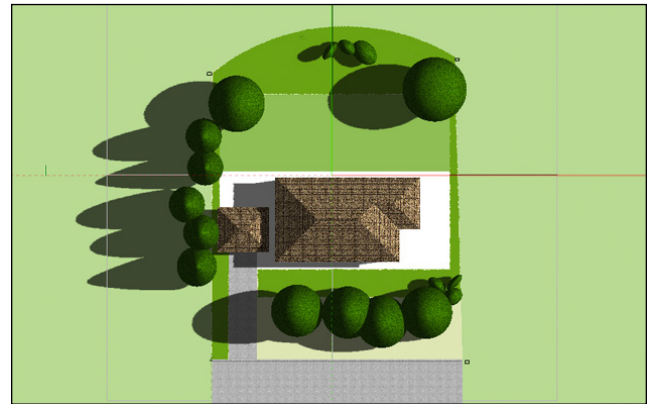


7. Click **Fit to Page** on the **View bar** to display the entire site on the screen.
8. From the **View bar**, choose the **Rendering** menu (a small teapot icon!), and choose **OpenGL**. Click the same menu again and choose **OpenGL Options**.

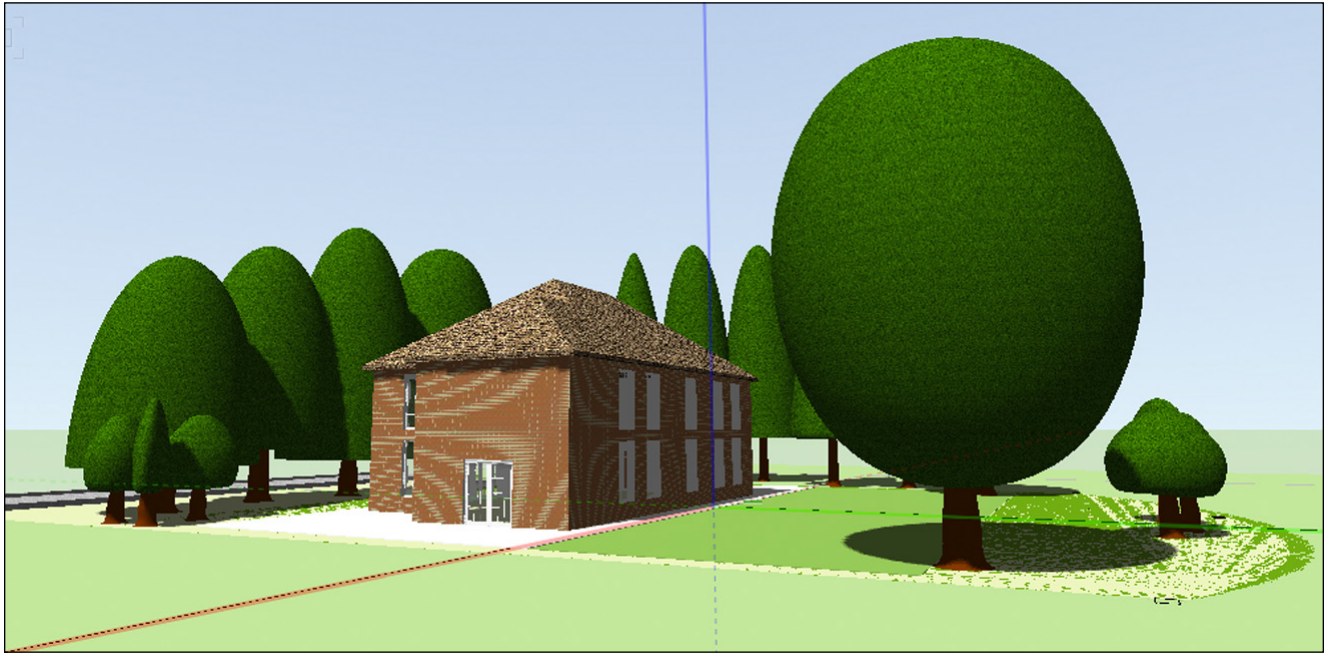
9. Change the following:

- Detail: **High**
- Use Shadows: **Check**
- Quality: **Medium**
- Click OK.

(Note: You will only be able to use shadows in OpenGL if you have Renderworks.)



10. Select the Heliodon if it is not already selected.
11. Change the view to Right Isometric. Choose **View > Perspective > Normal Distance**.
12. Click the **Flyover** tool on either the Basic palette, or the Visualization tool set. Click once on the corner of the house to set the center of rotation.
13. Click and hold with the left mouse button to change the view to a pleasing view.
14. On the Object Info palette, click **Solar Animation**. On the Solar Animation dialog, use the lower slider to change the time of day and assess the shadows falling across the site.
15. Click Cancel.
16. Choose **File > Close**. There is no need to save the file.



Section 3: Hard Landscaping

Objectives for this Section

After following the exercise steps in this section, you will be able to:

- Use the **Hardscape** tool to draw hard landscaping/hardscape
- Produce a worksheet showing hard landscaping quantities
- Create and use symbols within the design
- Use the **Custom Stair** tool to create steps
- Create free-standing garden walls
- Model a simple 3D structure and add dimensions to it

Example files required for this section:

- **1-Start Hard Landscaping.vwx**

In this section, you'll use a partly configured file to model some hard landscaping features. The aim of this section is to familiarize you with the **Hardscape** tool and the **3D Modeling** tool set so that you can use the **Push/Pull** facilities within Vectorworks to model something unique such as this structure to host a "green roof." (You'll learn about planting later.)

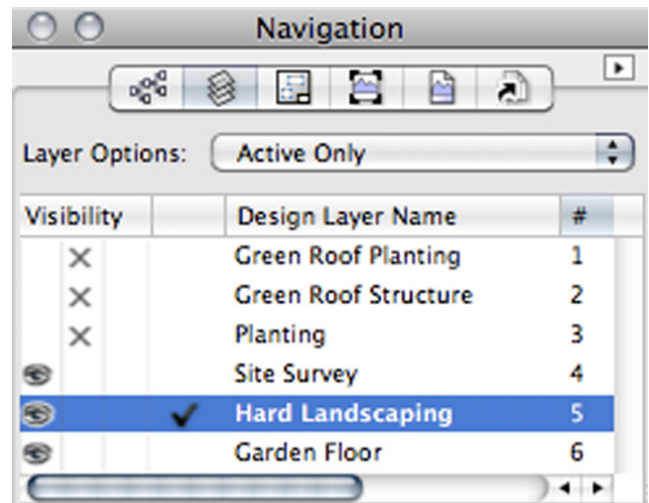


Exercise 1: Explore the Hard Landscaping File

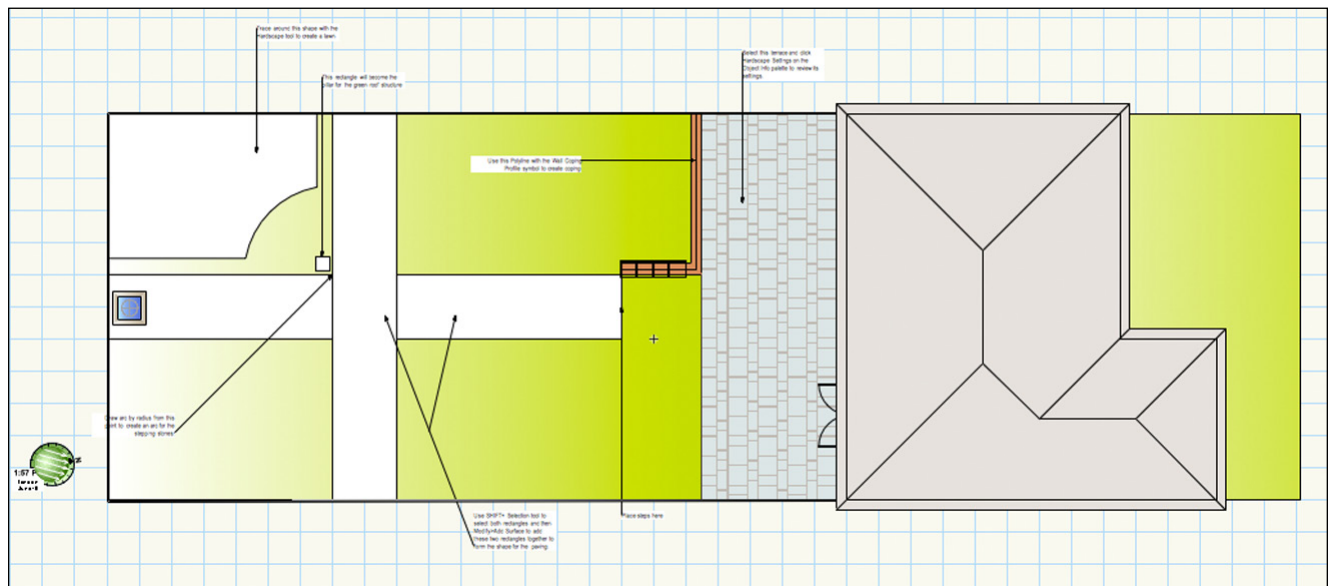
The file has many more layers and classes now. As stated earlier, the more you can structure your design workflow, the more flexible your file will be for presenting different aspects of the design.

Examine the Structure of the File

1. Using **File > Open**, open the file **1-Start Hard Landscaping.vwx**.
2. On the View bar, click the **Layers** button. Notice the design layers **Hard Landscaping**, **Planting**, and **Green Roof Structure** are at different Z elevations, -650 mm [-2' 1 5/8"], which makes it easy for you to draw objects at different levels in 3D space. Click OK.
3. On the Navigation palette, click on the **Design Layers** tab. The active layer is **Hard Landscaping**. This layer contains some 2D shapes that you will use to create a design as well as some previously completed objects. It also contains some instructions that you will be able to hide when you have completed the steps. Additionally, there is a ready-made water feature—which we will discuss later.
4. The **Layer Options** menu is set to **Active Only** so that you can see clearly what is on each layer.
5. Click on the **Site Survey** layer to make it active. There is a building with a roof and a very simple boundary, created with walls. A **Heliodon** object has been placed, siting this garden in London, UK.
6. Click on the **Garden Floor** layer to make it active. There are two **Floor** objects to act as a base for different levels in our model. Click on each in turn and notice the different Z values on the Object Info palette.
7. Click on the **Green Roof Structure** layer to make it active. There is nothing on this layer yet. You will be modeling something here soon.
8. The **Planting** and **Green Roof Planting** layers contain partially completed planting plans. You'll work with them fully in Section 4 of this guide.
9. Change **Layer Options** to **Show/Snap Others**.
10. Make **Hard Landscaping** the active layer, on the Navigation palette.

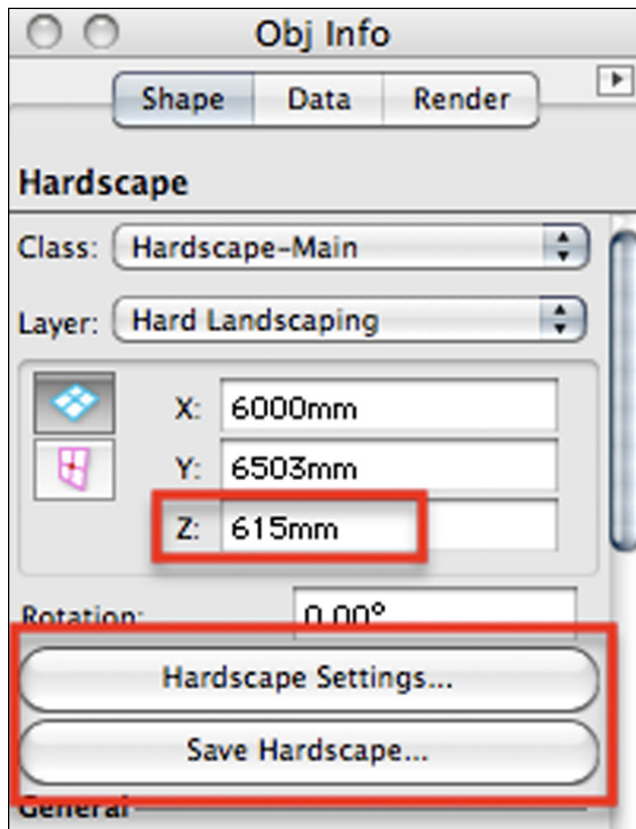


There is a terrace already completed in the file so you can examine its settings, before creating your own.

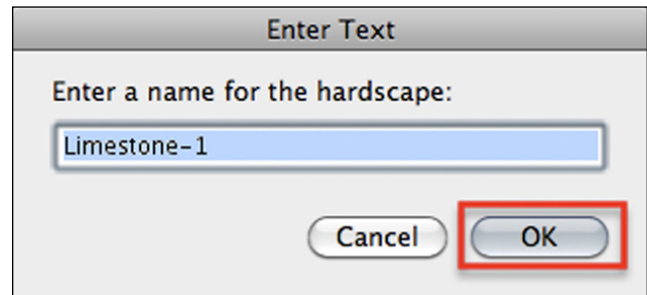


Examine the Terrace

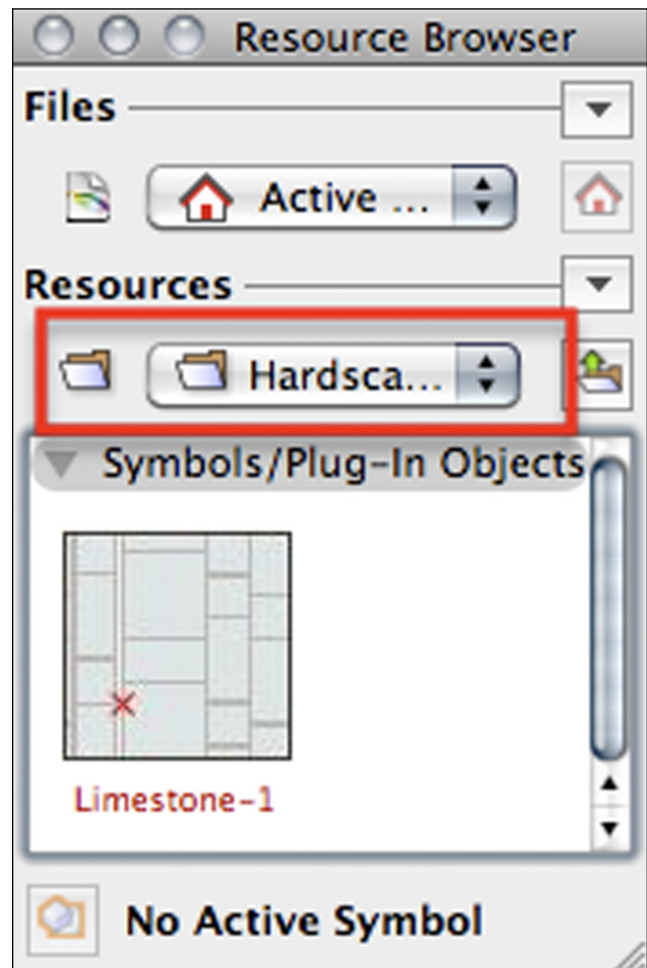
1. Using the **Selection** tool, select the existing terrace. On the Object Info palette, notice the Z field shows the object positioned at 615 mm [2']. This is because it is on a design layer positioned at -650 mm [-2'1 1/2"] and this object is 615 mm [2'] higher than the layer.
2. Click on the **Hardscape Settings** button on the Object Info palette. The Hardscape Object Settings dialog opens. This Hardscape Object has been created for you in advance, and certain elements have been configured, such as the joint pattern, the thickness in 3D, and the Renderworks Texture that will be applied in a rendered view. You'll learn more about these settings in a moment. Click OK to dismiss the dialog.



3. On the Object Info palette, click the **Save Hardscape** button. Click OK when prompted to name the Hardscape, and use the default name that Vectorworks Landmark offers.



4. On the Resource Browser, click the **Home** button to ensure you are looking at the contents of the current file. Under the word **Resources**, choose **Hardscapes** from the folder menu. The Hardscape definition has been saved, and you will re-use it later.



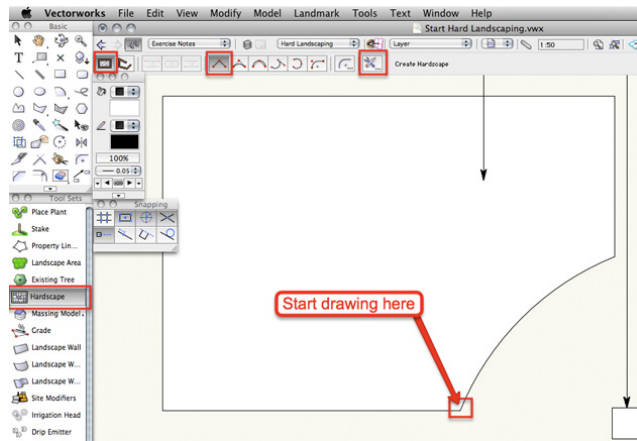
5. Keep the file open to use in the following exercise.

Exercise 2: Create Hard Landscaping Areas

Now, you will learn how to create a Hardscape Definition and draw with the Hardscape tool. The Hardscape tool is a very powerful tool for creating 2D and 3D representations of Hard Landscaping. You can draw with it, or create Hardscape from existing shapes. It can also keep track of the materials used in your design. In this exercise, you'll use the Hardscape tool to create a lawn. But maybe you are thinking that a lawn is surely a softscape. Well, I use Hardscape for lawn, because it's an easy way to create a 2D/3D lawn, and to quantify the area.

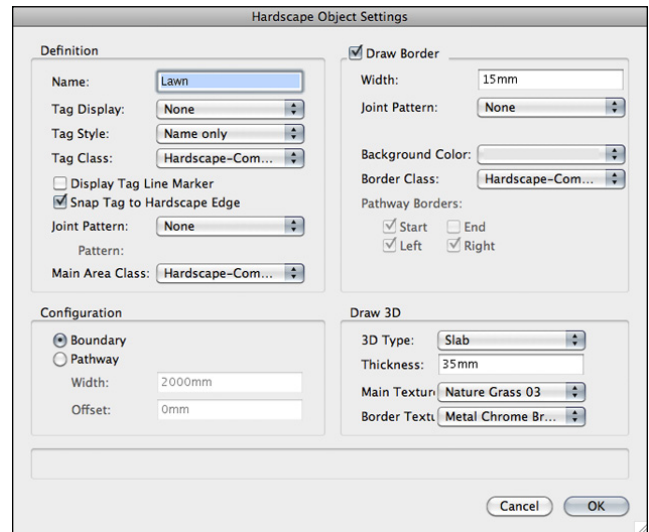
Create Lawns

1. Using the Navigation palette, make **Hardscape-Main** the active class.
2. On the **Site Planning** tool set, click the **Hardscape** tool. Look at the **Tool bar**. There are two modes for drawing **Boundary Mode** and **Pathway Mode**, for drawing areas and paths, respectively. There are also exactly the same modes as you have used with the Polyline tool.
3. Choose **Boundary mode**, and then **Corner Vertex mode**, and then click on the **Hardscape Preferences** button.

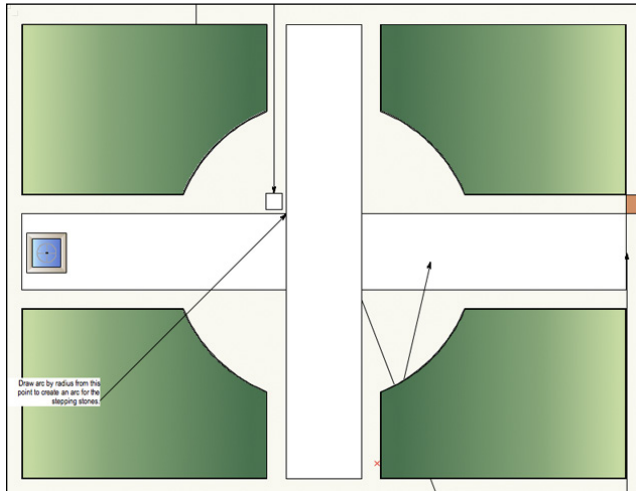


4. Complete the Hardscape Object Settings dialog as follows, leaving all other settings unchanged:

- Hardscape Name: **Lawn**
- Joint Pattern: **None**
- Main Area Class: **Hardscape-Component-Lawn**
- Draw Border: **Check**
- Width: **15 mm [5"]**
- Joint Pattern: **None**
- Background Color: Choose a pale Gray.
- Border Class: **Hardscape-Component-Border Joint**
- 3D Type: **Slab**
- Thickness: **35 mm [1 3/8"]**
- Main Texture: **Landscape Grass Fairly Green**
- Border Texture: **Metal Chrome Brushed**.
- Click OK to close the dialog.



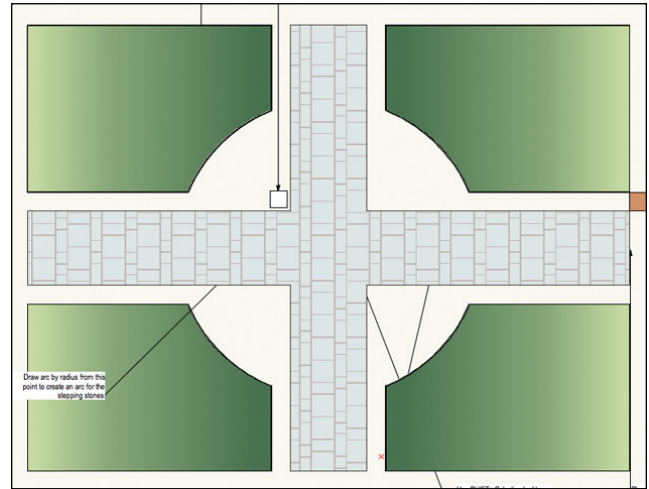
5. As indicated above on the screenshot, click on the point where the bottom of the arc meets the bottom straight edge of the lawn area.
6. As you move clockwise around the shape, continue to click on points up to and including the upper edge of the arc. Remember you can use the Snap Loupe (Z key), to zoom to each point without changing your overall view.
7. Move your cursor up to the **Tool bar** and change mode to **Point on Arc mode**. Click anywhere on the arc and again at the end of the arc. This will close the shape and display the lawn.
8. Choose the **Mirror** tool from the Basic palette. Click once on the center point on the two rectangles crossing the site. Move the cursor upward, snapping to the vertical cue, and click again. The Hardscape object will be mirrored.
9. Using the **Selection** tool together with the Shift key, click on the original hardscape object so that both are selected.
10. Use the **Mirror** tool again, this time drawing a horizontal reflection line through the center of the horizontal rectangle.



Create the Paved Areas

1. Click the **Selection** tool and press the Shift key. Select the two rectangles that cross the site horizontally and vertically.
2. Choose **Modify > Add Surface** to add these two shapes together and form a single Polygon.
3. Choose the **Landmark > Create Objects from Shapes** command. Complete the Create Objects from Shapes dialog as follows:
 - Object Type: **Hardscape**
 - Delete Source Shapes: **Check**
 - Click OK to close the dialog and create the Hardscape.

4. The resulting Hardscape will have the same settings as the Lawn, but we will change that now. Look at the Object Info palette and confirm that the object has become a Hardscape.
5. On the Resource Browser, locate the **Hardscape Limestone-1** resource that you created earlier. Drag the hardscape resource onto the new hardscape to transfer the settings.

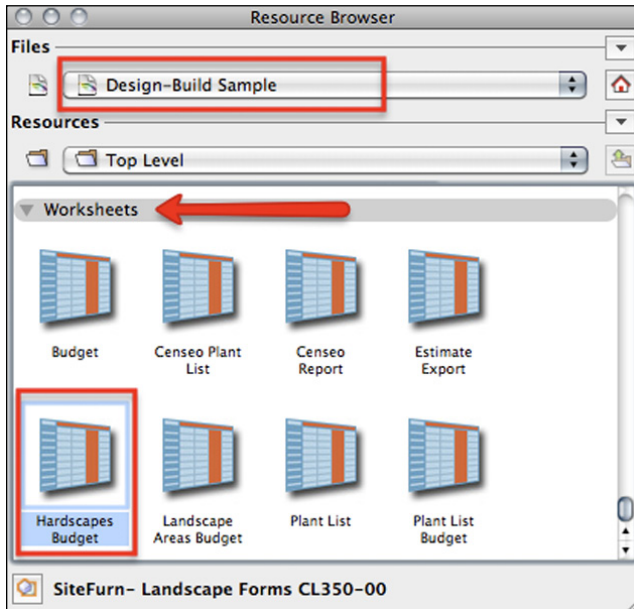


6. Click the **Selection** tool and select the Hardscape. Choose **Modify > Send > Send to Back** to place the Hardscape below the water feature.
7. Keep the file open to continue working with it in the following section.

Exercise 3: A Hardscape Report

As well as producing beautiful plans and 3D models, Vectorworks can count things, so you don't have to. In this exercise, you'll learn how to use one of the prebuilt worksheets to list the quantity of hardscape materials used in these areas. You will learn how to change the formatting of this worksheet to suit your own unit of measure and currency.

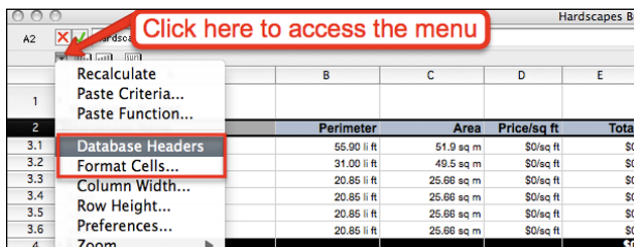
1. Make **Notes-Reports** the active class, on the Navigation palette.
2. On the Resource Browser, use the **Files** menu to list the contents of the **Design-Build Sample.vwx** file.
3. Scroll down to the Worksheets heading and locate the Worksheet called **Hardscapes Budget**.



- Drag this worksheet onto your drawing. Notice that it lists by name each area created with the **Hardscape** tool, with its perimeter, area (in the current document area unit setting), price (per sq ft), and the total cost.

Hardscape Budget				
Hardscape Name	Perimeter	Area	Price/sq ft	Total
Limestone	55.90 li ft	51.9 sq m	\$0/sq ft	\$0
Limestone	31.00 li ft	49.5 sq m	\$0/sq ft	\$0
Lawn	20.85 li ft	25.66 sq m	\$0/sq ft	\$0
Lawn	20.85 li ft	25.66 sq m	\$0/sq ft	\$0
Lawn	20.85 li ft	25.66 sq m	\$0/sq ft	\$0
Lawn	20.85 li ft	25.66 sq m	\$0/sq ft	\$0
Total	20.85 li ft	25.66 sq m	\$0/sq ft	\$0

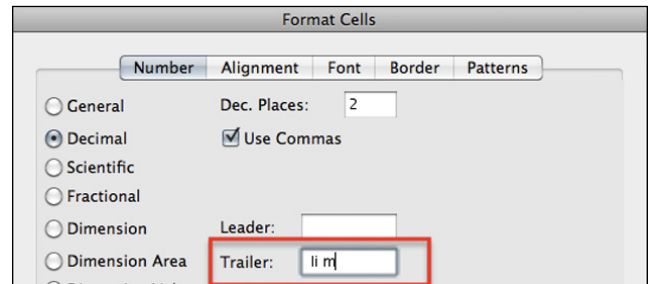
- Double-click the worksheet on the drawing to open it in its own window. If you're a spreadsheet user, many of the functions in worksheets are similar, but without as many fancy buttons as a modern spreadsheet.
- In the top left corner, notice a small arrow. Click on it to open the worksheet menu.



- Click **Database Headers**. A new row opens that contains all the clever calculations needed to read your design and list your hardscapes.

- Click in cell B3, just below the word "Perimeter." Open the worksheet menu again and choose **Format Cells**.

- If appropriate to your geography, change the Trailer field to "li m" (to represent linear meters), and then click OK.



- The new trailer will display on the worksheet.

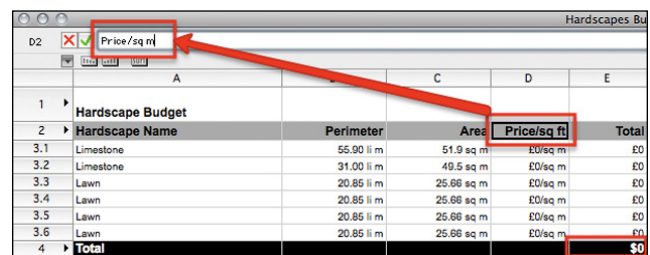
- Click on cell D3, directly below Price/sq ft.

- On the worksheet menu, choose **Format Cells** again and change the Leader and Trailer fields to appropriate currency symbol and area unit for your geography, and then click OK.

- Repeat the process for the Price column and cell E4 at the bottom of the Price column.

- On the worksheet menu, choose **Database Headers** to hide the row with all the clever bits (worksheet functions).

- Row 2 contains simple text as headings. Click on each cell that needs changing, and then edit the text in the edit box at the top of the worksheet window, and then press Enter.



- Click on cell D3.1. Enter a price per area measurement—for example 50.

- This worksheet has been set up to calculate the total price for each area based on the cost per square area. The values are correct wherever you are working, because of the unit settings in your file.

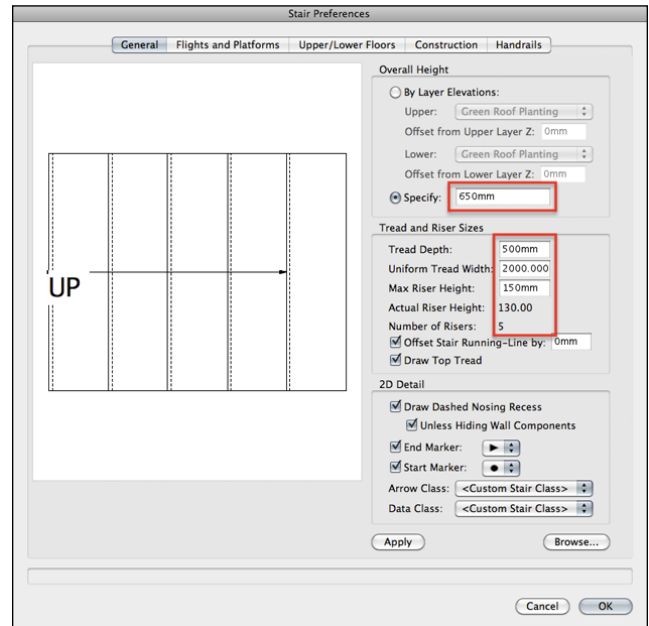
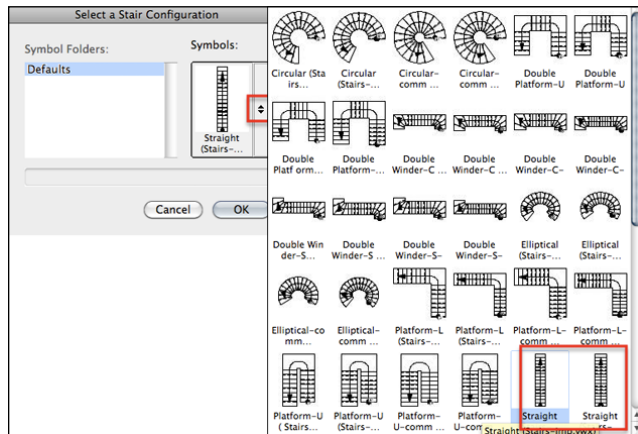
- Close the worksheet window by clicking on the red button at the top left of the window (Macintosh) or clicking the x at the top right of the window (Windows). The updated worksheet displays on the drawing. For now, select and delete the worksheet. It is now a resource of this file, and we will use it later.

Exercise 4: Create Steps

The Custom Stair tool is ideal for creating stairs in a landscape design. It has many built-in configurations, all of which can all be customized to suit different scenarios. In this exercise, you'll learn how to create a straight flight of stairs.

Create a Simple Stair

1. From the **Building Shell** tool set, choose the **Custom Stair** tool. On the **Tool bar**, click on **Custom Stair Tool Preferences**. Choose a straight stair from the list of options (imperial or metric, it doesn't matter). (If the following screen does not immediately appear, click **Browse** on the General tab of the Stair Preferences dialog.) Click **OK**.



2. Use the different tabs to set the following preferences, leaving unchanged all preferences not mentioned here.

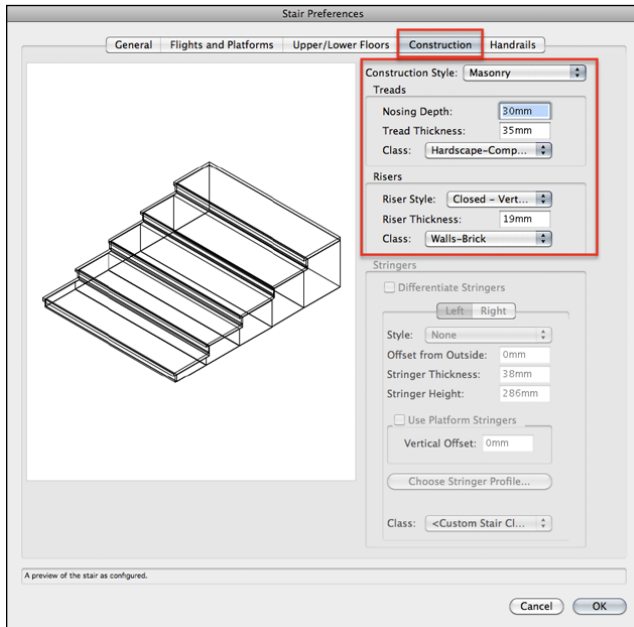
3. On the General tab, set the following:

- Overall height: **650 mm [2' 1 5/8"]**
- Tread depth: **500 mm [1' 7 7/8"]**
- Uniform Tread Width: **2000 mm [6' 6 3/4"]**
- Max riser height: **150 mm [5"]**

4. Notice these values work out the number of risers required.

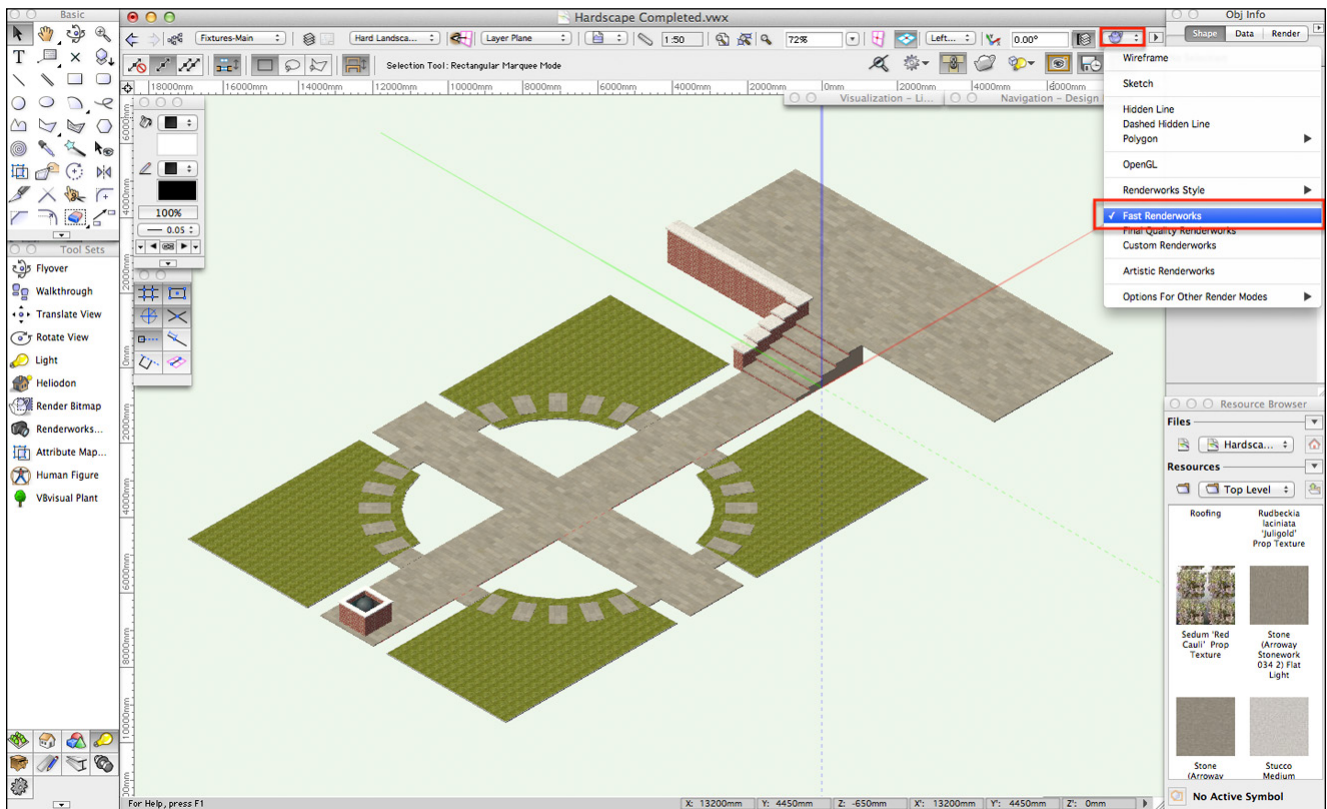
5. On the Construction tab, set the following:

- Construction: **Masonry**
- Nosing Depth: **30 mm [1 1/8"]**
- Tread Thickness: **35 mm [1 1/4"]**
- Class: **Hardscape-Component-Limestone** (to ensure that the steps will have the same finish as the hardscape)
- Riser Style: **Closed - Vertical**
- Riser Thickness: **19 mm [3/4"]**
- Class: **Walls-Brick**
- Click **OK**.



6. The cursor has a set of steps attached to it, with the insertion point at the center of the bottom of the steps.
7. Click on the drawing to the right of the paving, and click again to rotate the steps in a horizontal orientation so that they lead to the terrace.

8. Press **X** to shortcut to the **Selection** tool. Choose **Modify > Send > Send to Back** to place the stairs below the wall coping on the plan.
9. On the Object Info palette, notice that the stair has been placed in the **Vert-Trans-Main** class. This is because Auto-classing is enabled in this file. This class is imposing the brown color on the stair, as I have set it up this way.
10. On the **View bar**, click the **Classes** button. Highlight the **Vert-Trans-Main** class and click **Edit**.
11. Change the Fill Style to **Tile** and then choose **Random Coursed 600 & 300 Cool Gray**. The class will impose this fill on the Stair object instance as well as on any stairs you later create. Click **OK**, and **OK** again to close the Organization dialog.
12. On the Navigation palette, change the **Layer Options** to **Active Only**.
13. On the **View menu** on the **View bar**, select **Left Isometric**. The objects you have drawn on this layer all have 3D counterparts.
14. On the **Render menu** on the **View bar** (by the small teapot icon), choose **Fast Renderworks** (choose **OpenGL** if you do not have Renderworks). You can see only the elements on the Hard Landscaping layer, but you can see the design is taking shape.



Exercise 5: Draw Walls

In this exercise, you'll draw the remaining wall to retain the other half of the terrace and the steps. You will also learn how to step the walls so that they follow the incline of the steps. Then, you'll model some coping.

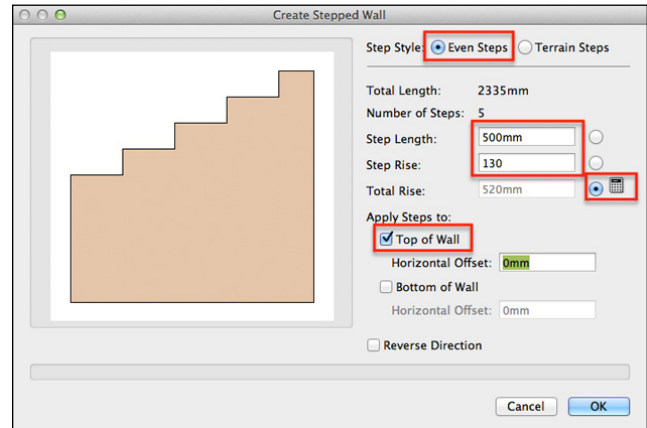
Use the Wall Tool to Draw Walls

1. Return to Top/Plan view using either the View menu on the View bar or Ctrl+5 (Windows) or Cmd+5 (Macintosh).
2. Use the Navigation palette to set the active class to **Walls-Brick**.
3. From the **Building Shell** tool set, choose **Wall**. On the Tool bar, click **Wall Preferences** and change the settings as follows:
 - On the Definition tab, set Thickness: **330 mm [1' 1"]**
 - On the Insertion Options tab, set Height: **1150 mm [3' 9¼"]**
 - Textures: **Use Object Textures**
 - Part: Select in turn **Overall**, **Right** and **Left**, then choose the texture **Bricks**
 - Click OK.
4. Starting at the lower left corner of the steps, click once to start drawing the wall. Click again on the lower right corner of the steps. Move the cursor down, and double-click on the end of the terrace to complete the walls.
5. Check the 3D view again and note that the wall sits on the active layer (with a Z value of -650 mm [2' 1½"]) and extends 500 mm [1' 7"] above the level of the terrace and the design layer.

Create a Stepped Wall

To match the wall on the other side of the steps, you'll now learn how to create a stepped wall.

1. Click the **Selection** tool and click on the drawing area to deselect the walls.
2. Select the Wall that sits to the right of the steps.
3. On the Object Info palette, change Height to **630 mm [2' 0¾"]**. This will become the starting height for the wall.
4. Choose **Landmark > Architectural > Create Stepped Wall**.
5. Change the following settings:
 - Step Style: **Even Steps**
 - Total Rise: **Check** to have Vectorworks calculate this.
 - Step Length: **500 mm [1' 7¾"]**
 - Step Rise to **130 mm [5 1/8"]**.
 - Apply Steps to Top of Wall: **Check**
 - Apply Steps to Bottom of Wall: **Uncheck**
 - Click OK.



Model Coping for the Wall

I have created coping on the stepped wall on the left side of the steps. You'll now use a profile shape that I've prepared for you and a polyline I've also prepared, to create coping for the long section of wall. Then, you'll mirror the coping to the other side of the steps.

1. Make **Walls-Stucco** the active class.
2. On the Resource Browser, click the **Home** button to ensure you are looking at the resources in the current file.
3. Locate the **"Wall Coping Profile"** symbol.
4. Double-click the symbol to make it active. Click twice on a blank space on the drawing area to insert a copy of the symbol. You'll learn more about symbols in the next exercise.
5. Click the **Selection** tool. Select the polyline along the top of the wall. Press Shift and also select the coping profile.
6. Choose **Model > Extrude Along Path**.
7. Press **Next** and then **Previous** to ensure that the polyline along the top of the wall is highlighted in red. This ensures the polyline will be the "path" object. Click OK.

The profile is extruded along the length of the wall to create a coping stone. Notice that the coping has sunk into the surface of the wall.

8. Double-click the coping. On the Edit Extrude Along Path dialog, click **Profile** and click OK. The Profile editor is displayed.

Notice that the center of the profile is on 0, 0. This is the part of the profile that is currently aligned with the original path polyline.

9. Click on the bottom center of the profile shape and drag it up to snap onto the origin, (0,0).
10. Click the orange **Exit Profile** button at the top right of the screen. The coping is now positioned correctly on the wall.
11. Click **Select Similar**. Click on one of the Extrude Along path objects to select them all.
12. Click the **Mirror** tool. Draw a horizontal mirror line through the center of the steps to mirror the coping to the opposite walls.
13. Return to Top/Plan view.

Exercise 6: Stepping Stones

In this exercise, you'll model a simple paving stone to use as stepping stones around the garden. You'll learn how to use the Duplicate Along Path command to accurately place and space objects along a curve. The symbol will be both 2D and 3D.

Create a Hybrid Symbol

1. Double-click the **Rectangle** tool on the Basic palette.
2. When the Create Object dialog opens, set the following fields, leaving all other fields unchanged:
 - Class: **Hardscape-Component-Limestone** (to pick up the graphic attributes from this class).
 - Layer: **Hard Landscaping**
 - Width: **500 mm [1' 7 5/8"]**
 - Height: **850 mm [2' 9 1/2"]**
 - Position at Next Click: **Check**
3. Click on the drawing away from the garden area—this is a temporary rectangle. The rectangle will be placed on the drawing area where you click.

Create Object

Rectangle

Class: **Hardscape-Component-Limestone**

Layer: **Hard Landscaping**

Plane: [dropdown]

Width: **500mm**

Height: **850mm**

X: 0mm

Y: 4141mm

☒ **Position At Next Click**

Rotation: 0.00°

Perim: 2700mm

Area: 0.425 sq m

Cancel **OK**

4. Choose **Edit > Copy** and then choose **Edit > Paste in Place**. You now have two rectangles, one sitting on top of the other, with the most recently drawn rectangle selected.
5. On the Navigation palette, click the **Classes** button and make **Hardscape-Component-Limestone** the active class.
6. Choose **Model > Extrude**. In the Create Extrusion dialog, enter an extrusion value of 35 mm [1 3/8"], leaving the other fields unchanged. Click OK.

7. With the extruded rectangle still selected, click on the **Object Info** palette's **Render** tab. Notice that the Texture is set to Class Texture, which means that the class texture is being picked up from the **Hardscape-Component-Limestone** class. Click the Shape tab.

8. Using the **Selection** tool, click and drag around both the rectangle and extrude to ensure they are both selected.

9. Choose **Modify > Create Symbol**. On the Create Symbol dialog, complete the fields as follows, leaving all other fields unchanged:

- Name: **Stepping Stone**
- Leave Instance in Place: **Check**
- Change 2D Objects from Layer Plane to Screen Plane: **Check**
- Assign to: Custom class: **Hardscape-Component-Limestone**
- Click OK and click OK again to place the symbol at the top level of file on the Resource Browser.

This has created a new symbol, with one instance of the symbol still on the drawing area, with a definition sitting in the Resource Browser. Each time this symbol is used, it will belong to the Hardscape-Component-Limestone class, and you will not have to remember to classify it.

Next, you will duplicate this symbol. When design elements need to be repeated, symbols are an efficient way to keep the file size down. On the **Object Info** palette, the object type has changed from Rectangle and Extrude to 2D/3D Symbol.

10. Make **None** the active class.

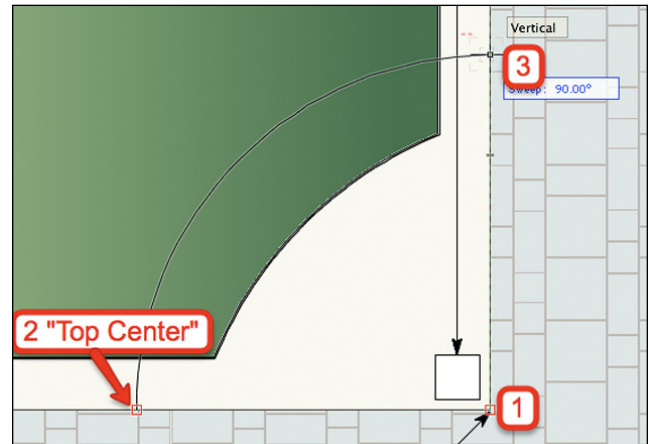
11. On the Resource Browser, click the **Home** button on the right of the palette to ensure you are looking at the resources of the current file. Verify that the symbol has been created.

12. From the Basic palette, choose **Arc**, and then choose **Arc by Radius** mode on the Tool bar.

13. Click on the point indicated on the screenshot and by the text in the file. This is the center of the arc.

14. Move the cursor to the left, and snap to the top center of the left "arm" of the paving, and then click.

15. Move the cursor upward and to the right to draw an arc that meets the vertical path and then click.

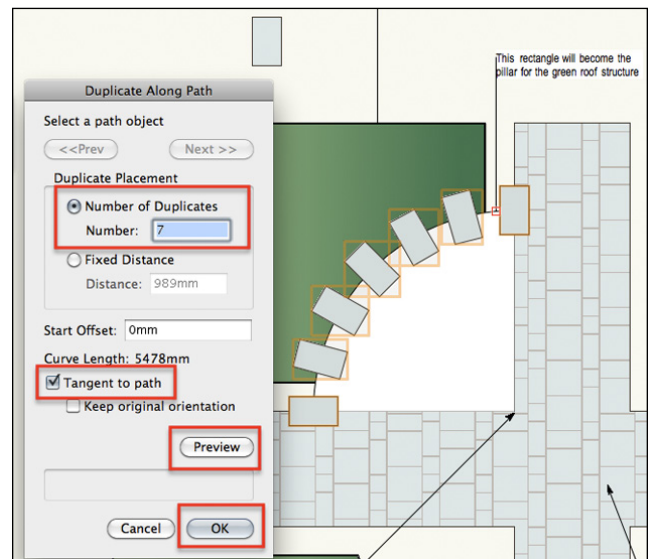


16. Use the **Selection** tool + Shift key to select both the symbol and arc.

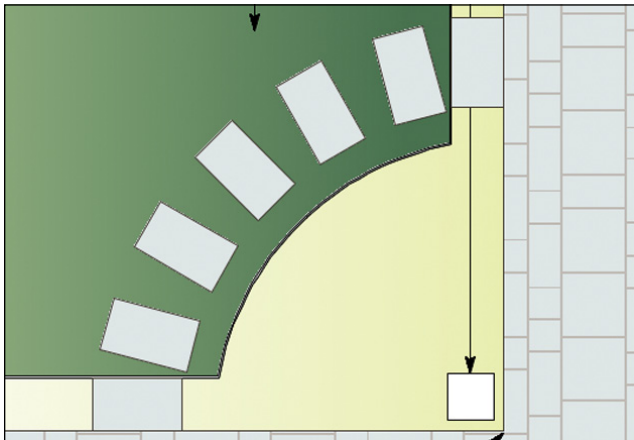
17. Choose **Edit > Duplicate Along Path**.

18. On the Duplicate Along Path dialog, enter the following information, leaving all other fields unchanged:

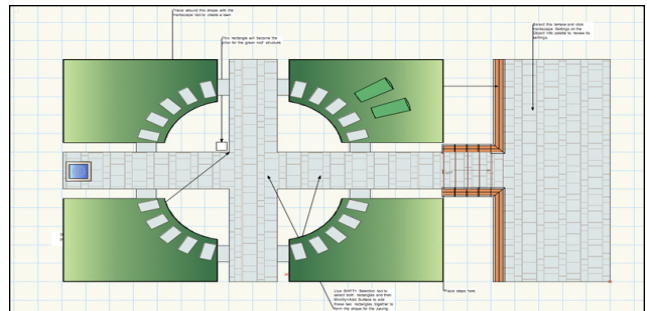
- Number of Duplicates: **7**
- Tangent to path: **Check**
- Click **Preview** to see the effect.
- Click OK to complete the operation and close the dialog.



19. Use the **Selection** tool to select the arc and then delete it using the Delete or Backspace key on your keyboard.
20. Notice that the first and last symbol instances have been centered on the start and end of the arc. Use the **Selection** tool to click on one of the end symbols.
21. From the Basic palette, click the **Move by Points** tool and then choose the first mode, **Move** mode. Ensure that **Object Retention** mode is not clicked and that only one copy will be made. Move by Points can be used to copy objects, but on this occasion you will just move objects.
22. Move the mouse along the top edge of the symbol, looking for the Center Left cue, and click (remember, the symbol has been rotated when copied, but remembers its original orientation). Move the cursor vertically, to the edge of the lawn hardscape, and click again. The symbol now fits neatly into the planting border.
23. Move the cursor to the symbol instance at the other end of the arc. Press Ctrl (Windows) or Cmd (Macintosh) to select it (with the Move by Points tool still selected). Repeat the move process to move the paver horizontally.



24. From the Basic palette, choose the **Select Similar** tool (often referred to as the "magic wand"). On the Tool bar, click on the **Select Similar Tool Preferences** button (the wrench and pencil icon). Check **Symbol Name** and then click OK.
25. Click on one of the symbol instances. They will all be selected.
26. From the Basic palette, choose the **Mirror** tool. Draw a vertical reflection line as you did earlier to mirror the lawn, using the top Midpoint cue of the central vertical path to find the center of the design.
27. Click **Select Similar** again, with the same settings, and select all of the symbols.
28. Use the **Mirror** tool again to reflect these through a horizontal reflection line, using the Midpoint cue on the horizontal path to find the center of the design.



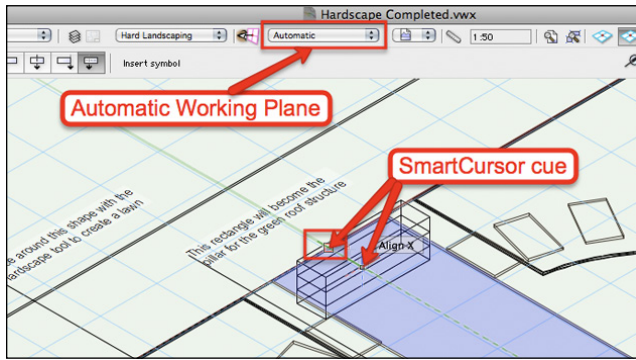
29. The symbols have been placed on the **Hard Landscaping** layer, as have the lawn hardscapes. Both elements have a thickness of 35 mm [1 3/8"]. In a 3D view, their surfaces will be level, which makes it hard for Vectorworks to determine what to show. Using the **View menu** on the Tool bar, choose **Left Isometric**. Use the **Select Similar** tool to select all of the paving symbols.
30. On the Object Info palette change Z to 10 mm [3/8"] to set the pavers slightly above the lawn.

Exercise 7: Add Benches and Loungers

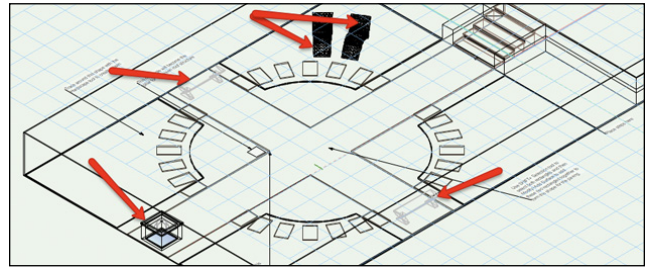
To add some interest to the scene, you'll now add some benches and loungers from the symbol libraries. I have already imported the relevant symbols into the file for you to use. The Concrete Straight Bench is from The **Objects-Landscape and Site.vwx** file that is a favorite file on your Resource Browser. The lounge symbol (SiteFurn-Landscape Forms CL350-00) is from a larger library of Landscape Forms furniture, which is available to download from the Vectorworks Service Select portal, for Vectorworks Service Select subscribers only.

Place some library symbols

1. Make **Fixtures-Main** the active class.
2. On the Resource Browser, double-click the **Concrete Straight Bench** symbol to make it the active symbol.
3. Move the cursor to the top of the vertical path, and use the SmartCursor to obtain a snap on the center of the path. Notice the surface of the paving highlights in blue. Vectorworks is using Automatic Plane mode to detect the 3D surface of the paving.

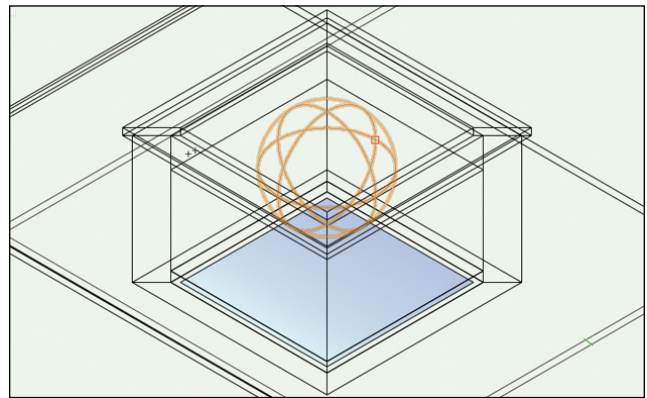


- Click once to place the center of the bench. Click again without moving the cursor to complete the insertion. Repeat, placing a second bench at the bottom of the vertical path.
- On the Object Info palette, notice that the Z value is already set to 35 mm, as Automatic Working Plane mode detected the surface of the paving.
- On the Resource Browser, locate the symbol **SiteFurn-Landscape Forms CL350-00**, and then double-click it to make it active.
- Bring the cursor onto the upper right lawn and click to place the first lounge. Move the cursor to rotate the symbol into a position you are happy with, and then click again to complete the symbol instance insertion.
- Repeat to place another lounge on this lawn. Again, these symbols will be sitting on the surface of the lawn.



Examine the Water Feature

- On the left end of the horizontal path is a water feature that has been created for you. Select each of the elements in turn with the **Selection** tool and examine its properties on the Object Info palette.

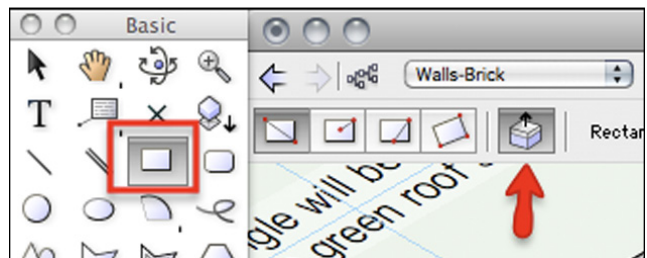


- The walls have been drawn with the Wall tool. The coping has also been drawn with the Wall tool—but with a greater offset from the layer at the bottom—and a different height and thickness. The body of water has been created by drawing a rectangle and then extruding it. The sphere was created with the **Sphere** tool in the **3D Modeling** tool set. You'll learn more about 3D modeling in the following exercise.

Exercise 8: Draw Brick Pillars and a Flat Roof Structure

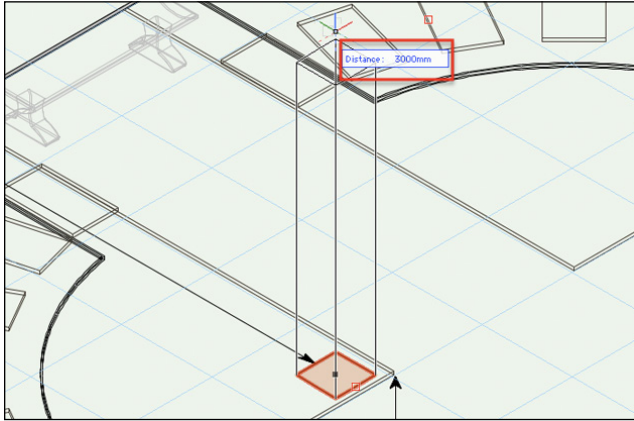
Extrude the First Pillar

- Your model should still be in a 3D view. If it is not, change your view to Left Isometric.
- Make **Walls-Brick** the active class.
- Locate the small rectangle in the top left quadrant of the garden (the one labeled to become a pillar for the green roof).
- Choose the **Rectangle** tool from the Basic tools, and on the Tool bar choose the first mode. Note the **Push/Pull** mode. This mode should be on by default, but if it is not, turn it on.



- Trace over the existing rectangle by clicking on one corner and then on the diagonally opposite corner.

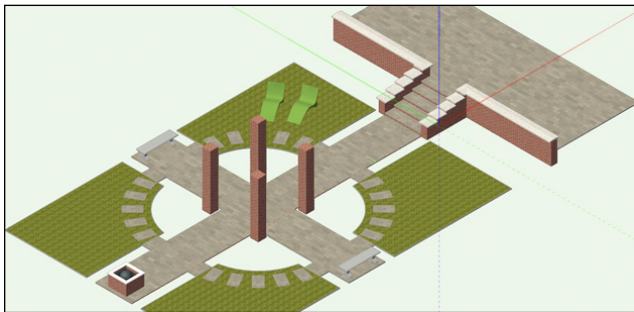
6. Move the cursor onto the face of the rectangle—it will highlight in red. Click on the face, and move the cursor up to Push/Pull the rectangle into an Extrude. Press Tab and in the Data bar, enter **3000 mm [9' 10 1/8"]**, press enter on your keyboard, and then click to complete the extrude.



Mirror the Pillar

1. The pillar will remain selected. Choose the **Mirror** tool, and mirror the pillar through the center of the path.
2. Using the **Selection** tool, select both pillars, and then use the **Mirror** tool again to mirror through the center of the path on the opposite axis.
3. You will now have four pillars around the center of the paving. Using the **Render** menu on the View bar, choose **Fast Renderworks** to see the pillars rendered. The textures set up in the Walls-Brick class have been applied because the extrudes have been created in this class.

Note: If you do not have Renderworks, you will not have textures, but you can still render the scene with OpenGL to see solid colors.

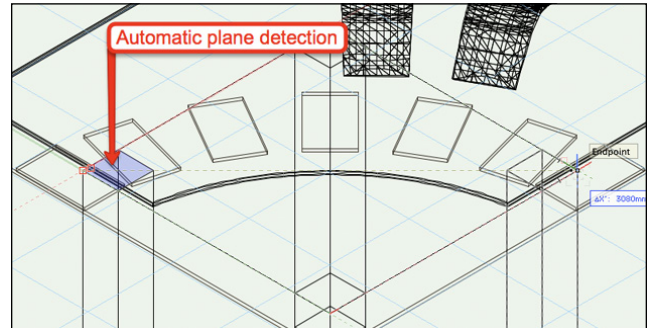


4. Use the same rendering menu, choose **Wireframe**.

Extrude the Roof

1. Make **Wood** the active class, using either the View menu, the Classes button on the View menu, or the Navigation palette.
2. Click **Rectangle** on the Basic palette.

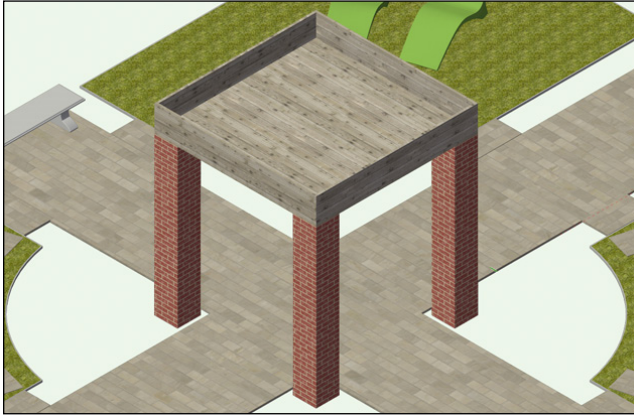
3. Hover the cursor over the top surface of the left-most pillar in the 3D view. Notice the automatic plane detection spring into action again, coloring the top surface blue. Click on the outer-most corner of the rectangle and then draw a rectangle across all four pillars to form a flat roof.



4. Click on the surface of the new rectangle and pull the rectangle up. In the blue Data bar type **500 mm [1' 7 7/8"]**, press Enter on your keyboard and then click the mouse to complete the extrude.
5. On the Tool bar, click **Center to Corner** mode. Hover the mouse over the center of the top surface of the roof extrude, to obtain a center snap point. Click on the center and move the mouse toward a corner.
6. When the Data bar appears, press Tab and enter **1500 mm [4' 11"]** in the X field, press Tab to move to the Y field and enter **1500 mm [4' 11"]**. Press Enter on your keyboard to fix these values, and click to draw a rectangle slightly smaller than the original.

Make a Solid Subtraction

1. Move the cursor over the face of this new rectangle and click to start the Push/Pull process. Move the cursor down, press Tab and enter **-420 mm [1' 4 1/2"]** in the Data bar. Press Enter on your keyboard to fix the value. Hold down Alt on your keyboard and then click to complete the operation. This will cut the new extrude from the original and create a Solid Subtraction.
2. If you have Renderworks, render the scene with Fast Renderworks. Notice that the wood texture (defined in the Wood class) has its grain running vertically, which is not desirable in this case.
3. With the Solid Subtraction selected, click on the Object Info palette's Render tab. Scroll down until you find the Rotation field and type **90**. Press Enter. The texture will rotate 90°.



4. Return to Wireframe render mode.
5. Change the view to Top/Plan.

Create the 2D Plan View

The structure is complete in a 3D view, but in Top/Plan, it doesn't display any fills, unlike the other objects on this design layer, which are both 2D and 3D. Now, you'll learn about a new feature for Vectorworks 2013 in which a 2D plan view of a 3D model can be generated automatically.

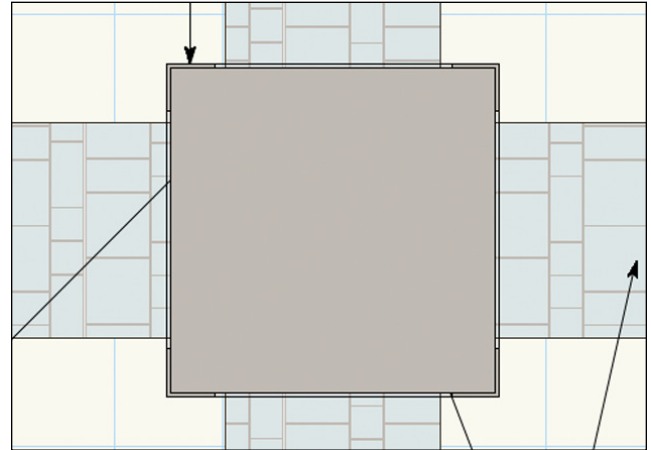
1. Make Fixtures-Main the active class.
2. Click the **Selection** tool. Click and drag around the structure to select all its elements.

3. Choose **Landmark > Architectural > Create Auto-hybrid**.

4. Notice that Vectorworks has created a 2D plan view of the structure. Currently, only the pillars of the structure are visible on the plan. Notice on the Object Info palette that the cut plane is set at a height of 1000 mm.

5. On the Object Info palette, change Cut Plane to **3200 mm [10' 6"]**.

The 2D display is updated to show the structure as it looks at the new cut plane height.

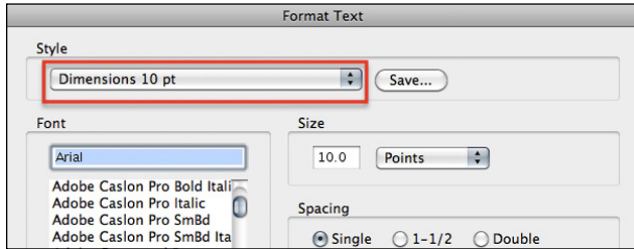


Exercise 9: Add Dimensions to the Structure

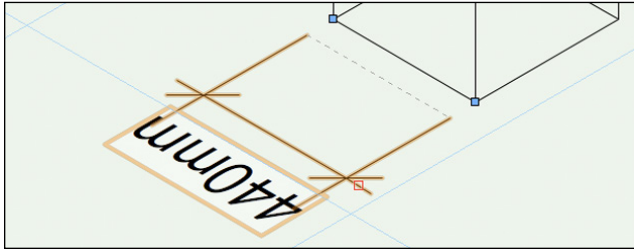
Now that the 3D structure is complete, you'll add dimensions to show you can use the model for construction detailing. You'll move the entire structure to a new layer so it can be isolated easily from the rest of the design.

Using the Linear Dimension Tools

1. Click the **Layers** button on the View bar to open the **Organization** dialog. Highlight the layer **Green Roof Structure** and then click Edit.
2. Note that the Green Roof Structure layer is at the same elevation as the Hard Landscaping layer, that is the lower level of the garden. Click Cancel and click Cancel again to close the Organization dialog.
3. Click the Selection tool and select the structure. As all the elements have been enclosed within a single Auto-Hybrid object, one single click selects it.
4. On the Object Info palette, change the Layer field to **Green Roof Structure** to place the object on that layer.
5. The object will no longer display.
6. Make **Green Roof Structure** the active layer. Change the view to Left Isometric.
7. The Auto-hybrid is still selected after being moved to this layer. Using the **Selection** tool, click on a blank space on the drawing to de-select it.
8. On the **Dims/Notes** tool set, choose **Constrained Linear Dimension**. On the Tool bar, change **Dim Std** to **Arch** (there are many different dimension styles for you to experiment with).
9. Choose **Text > Format Text**. On the Format Text dialog, from the Style menu, choose Dimensions, 10 pt. This is a predefined series of settings that are displayed in the rest of the dialog.
10. Click OK.



11. Click on two points at the base of one of the pillars. Move the cursor away from the base and click to place the dimension on the model.



12. Place dimensions to show the span of the pillars.
13. Click at the top corner of the solid subtraction that represents the roof. Move the cursor down to the lowest point on the solid

subtraction and click. Move the cursor away from the solid subtraction and click again to place the dimension text.

14. Repeat this process to add a dimension to the pillar. Dimensions can be placed on any 3D plane.

Vectorworks includes a wide range of dimensioning tools for different types of geometry. Explore the **Dims/Notes** tool set.

15. On the Navigation palette, click on the **Classes** button. In the visibility column, to the left of the **Dimension** class, click in the middle column to hide the dimensions. Dimensions are automatically assigned to the Dimension class.

16. On the Navigation palette, click the Layers button and change **Layer Options** to **Show/Snap Others**. Return to Top/Plan view.

17. On the Navigation palette, notice the small x beside the Green Roof Structure layer. The layer is currently invisible. Click in the left-most column under **Visibility**, to restore the visibility of this layer when you work on other layers.

18. Save your file and enjoy a sense of achievement. Maybe have a cup of tea to celebrate.

19. Alternatively, you can open the file provided for the next section.

Summary

Congratulations! You've covered a lot in Section Three. Think back to the objectives we set at the start of the section. Within this sample garden, you can now:

- use the Hardscape tool to draw Hard Landscaping/Hardscape areas
- produce a worksheet showing Hard Landscaping quantities
- create symbols and use ready-symbols within the design
- use the Custom Stair tool to create steps
- create free-standing garden walls, stepped and with coping
- model a simple 3D structure
- add Dimensions to the 3D structure.

In the following section, you'll complete a planting plan for the planting beds and create the planting for the green roof on the structure.

Section 4: Planting Design

Objectives for This Section

After following the exercise steps in this section, you will be able to:

- Use classes to change the display properties of the planting plan
- Use the different modes of the Plant tool, to place plants into a design scheme
- Create a new Plant Definition
- Create a Landscape Area for calculating plant mixes
- Create a Worksheet to list the plants used in the scheme

Example files required for this section:

- 1-Start Planting.vwx.

Exercise 1: Explore the Planting File and Plant Graphics

Examine the Resources

1. Open the file **1-Start Planting.vwx**.
2. Click on the **Home** button on the right of the Resource Browser, to ensure you are looking at the contents of the current file.
3. Scroll through the Resource Browser and notice many plant symbols already present in the file. I have created these in advance, but you'll learn how to make your own soon.
4. Notice that the symbols have their names displayed in red. This means they are more "intelligent" than ordinary symbols, and have an association with a specific tool (in this case, the Plant tool).
2. These layers are currently invisible. Click on the left-most column under the **Visibility** heading next to these layers, to make them visible. The planting plan is displayed that you will complete in this section.
3. Make **Planting** the active layer.

Examine the Classes

1. Click on the **Classes** button on the Navigation palette. Take a look at the classes in a little more detail.
2. There is a series of classes called **Plants-Component-...** You will use these to control the way the plant symbols look.

Examine the Layers

1. On the Navigation palette, click on the **Design Layers** button. Notice that there are two layers you have not worked with yet: **Planting** and **Green Roof Planting**.

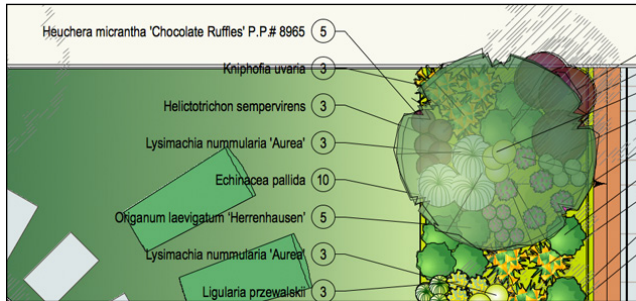
The symbols you see on the drawing are included with Vectorworks, and can be customized to look just as you want them. This exercise will take you through the different ways you can display these symbols, and the part that classes play in this process. For example, plants can display shadows, sketchy outlines, and reduced detail. This section will introduce you to some of those options before you learn how to create your own plant definitions.

Control Plant Tag Visibility

1. On the Navigation palette, click on the **Classes** button. Locate the **Plants-Component-Tags** and make the class invisible. Make them

visible again. Note that the class enables you to control the tags independently of the symbol.

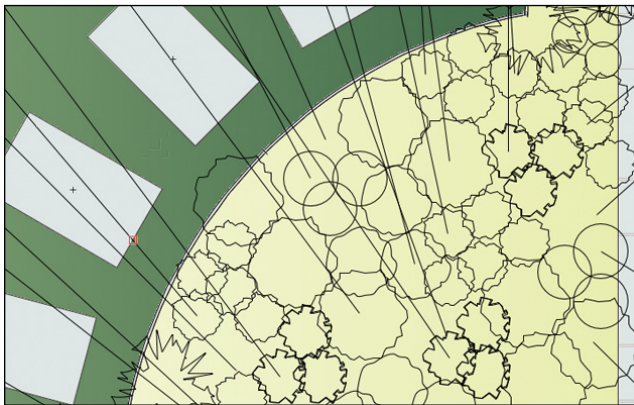
- The plant tags, displayed by the plants can have different configurations and you'll see how to change them soon. I have arranged their position previously, and as the planting beds are all the same, I have only labelled one bed of each type.



Control Plant Graphics

- Zoom the view to display the plants in the top left planting area.
- Make the following classes invisible and notice the effect on the drawing. The use of classes make things very flexible:

- Plants-Component-Bloom
- Plants Component-Canopy
- Plants-Component-Color Fill
- Plants-Component-Interior Linework



- Make the classes visible again. Classes within the plant symbols offer control over what displays on the planting plan.

Manage Sketchy Outlines and Shadows

- Make the **Plants-Component-Outline** class invisible.
- The individual outlines around the plant symbols within groups have been hidden. Notice, however, that the groups of plants have a sketchy outline around them



- Click **Selection**. Select one of the plant groups.
- On the Object Info palette, scroll down to the Annotation/Render heading. Change Outline to **Two Outlines**. Note the different options.

The combination of the sketchy outline render and the hidden Plants-Component-Outlines class is one way to display groups of plants. Now, we'll explore another.

- Make the **Plants-Component-Outline** class visible.
- On the Object Info palette, check **Mass Plants**. This method of massing hides everything from the symbol apart from the rear-most polyline within the plant graphic, so you may lose background color. If you need more control, use the class visibility method.
- Uncheck **Mass Plants** to restore the graphic.
- Select one of the "**Betula lenta**" trees on the far left of the plan.
- Uncheck **Plant Shadows in Plan View**. Notice the shadows are no longer displayed. Check the box again to restore the shadows.

Exercise 2: Placing Plants

Now that you've seen how the plant symbols that are included with Vectorworks Landmark are set up to make an attractive and flexible drawing, you'll learn how to place new plants in the scheme using the Plant tool. You are going to plant the empty bed to the right of the bottom right lawn.

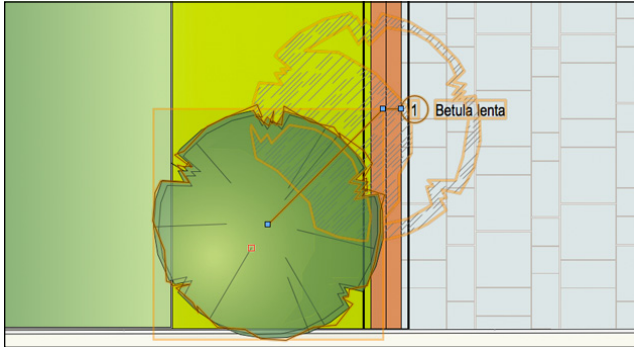
Use the Plant Tool

- Choose **Text > Format Text**. On the Format Text dialog, choose the style **Plant Tags Arial Narrow 10pt**.
- On the **Site Planning** tool set, click on the **Plant** tool. (The first time you click on the tool, the Plant Settings dialog will open automatically.

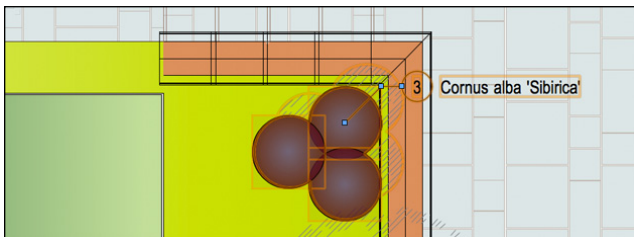
After that, you will need to use the Plant Tool Preferences button on the tool bar.)

- On the left, click Definition. Select the **Betula lenta** symbol. (Do not change any other fields.) Click OK.

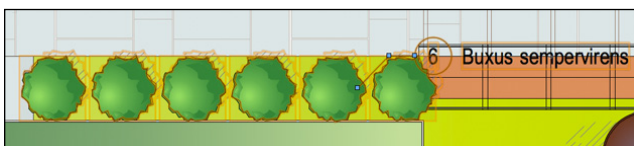
- On the Tool bar, notice the different modes available for placing plants.
- Click the first mode: **Single Plant Placement Mode**.
- Click once on the planting bed to place a single instance of the **Betula lenta**. Notice the tag is produced automatically, on the right of the symbol, with an approach angle of 45°.



- On the Tool bar, click on the second mode button: **Poly-Vertex Placement** mode. Click Plant Tool Preferences again and select **Cornus alba 'Sibirica'**. Click OK.
- Click on the drawing in the upper right corner of the planting bed to place the first plant. Move the cursor to where you would like to place the second plant, and click again. Move the cursor to the position of the third plant. Double-click to complete the group.



- Still using the Plant tool, select the third mode: **Poly-Edge Spaced Mode**. On the Tool bar, to the right of the Plant Tool Preferences button, you will find a menu listing the plants available in this file. Select **Buxus sempervirens** from the list.
- To the left of the wall and below the path, notice there is an unplanted strip. The Buxus will be planted here. Click at one end of the strip and then move the cursor to the other end of the strip. Double-click to complete the row of plants. Vectorworks Landmark has spaced the plants using the spacing value already set up in this plant. You will see how to do this yourself soon.



- On the Object Info palette, change Spacing to **550 mm [1' 10"]**. Notice the number of plants increases to fill the space.

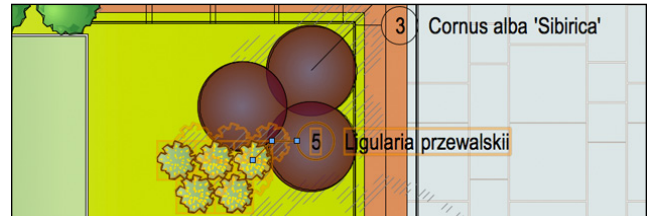
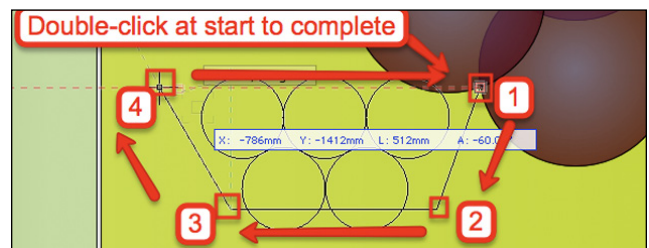
- Choose **Plant** and then choose **Triangular Array** mode on the Tool bar. Click Plant Tool Preferences and click Definition. Choose **Ligularia przewalskii**. Click Insertion Options. Change the following:

- Custom Spacing: check and type **300 mm [1']**
- Notice that you can also override the Spread and Height values from the default for the plant as required for the design.
- Click OK.

- Click on the planting bed where you would like to place a group of Ligularia. With this mode, you draw the outline of the space you want to fill with plants. Continue to click around the area you want to plant, returning to the start point and double-click to complete.

- The plants are drawn automatically within the space and take on the spacing set up within the Plant Settings.

Rectangular Array mode works in the same way as the Triangular Array mode but places the plants on a rectangular grid instead of triangular.



Complete the Planting Plan

The easiest way to complete the plan, when you have a number of plants in the scheme, is to use the Pick-Up Mode of the Plant tool.

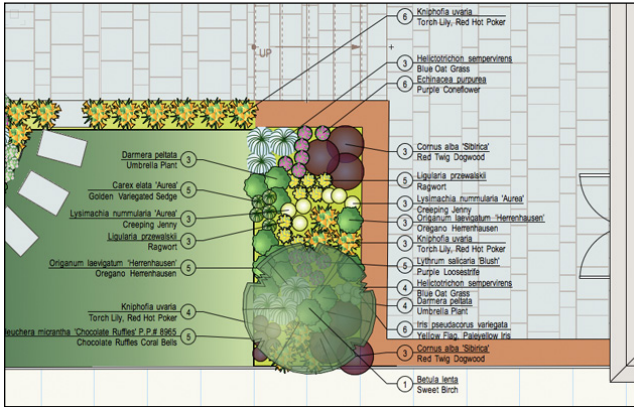
- When placing plants, you may find it useful to suspend snapping temporarily. Hold down the Back quote key to do this.
- Choose **Plant** and then choose **Pick-Up Mode** on the Tool bar. The cursor changes to an eyedropper.
- Click on another plant grouping in the scheme and look at the Tool bar. The active plant is now the one you clicked on. The mode the plant was placed in has also been selected.
- Click on the planting bed to place the plant in the appropriate way.

You can also add plants to the scheme directly from the Resource Browser.

- Click the **Home** button on the Resource Browser. Scroll through the resources and locate any of the plants. Double-click the plant symbol

to make it the active symbol. Click on the plan to place the plant using the appropriate mode.

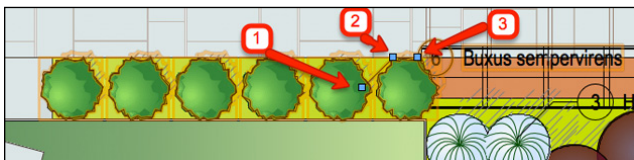
- Continue planting using either method to complete the scheme, and although the plant tags look a mess, don't worry about it.
- Using the **Selection** tool, click on the tree—the very first tree you placed in the scheme. Choose **Modify > Send > Send to Front**. This will bring the tree canopy graphic above the rest of the plants.



Align the Plant Tags

Now that the plants are placed, you will be wondering about the tags. Each tag can be moved individually, but we can also use the new alignment/Distribute Leader Lines command to do the bulk of the work.

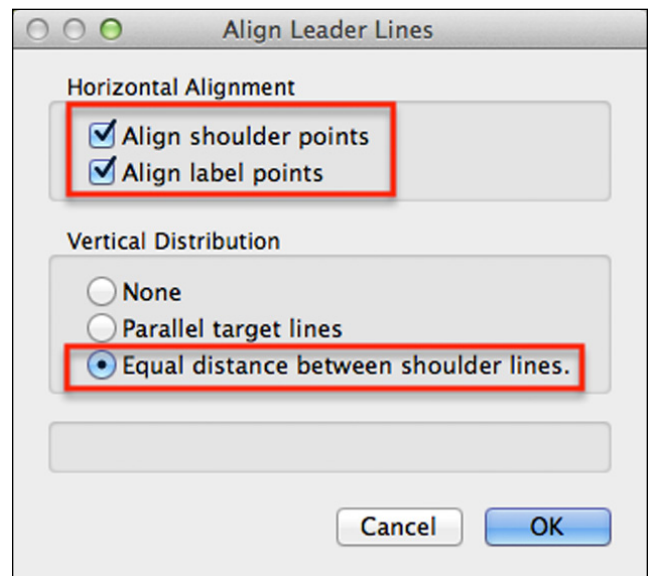
- Click **Selection**. Select the row of Buxus sempervirens that you placed earlier.
- Click on the blue handle at the plant end of the tag (labeled 1 in the image below). Move the cursor onto a different plant within the same group and then click to place the handle in its new location.
- Click on the blue handle between the two end points (labeled 2 in the image below). Move the handle to a new location that aligns with the plant tags above and click again.
- Click on the blue tag at the text end, labeled 3 on the image below), move the cursor upward, and click again. Moving this tag changes the angle of the text. This can be useful when arranging the tags on a complex plan.



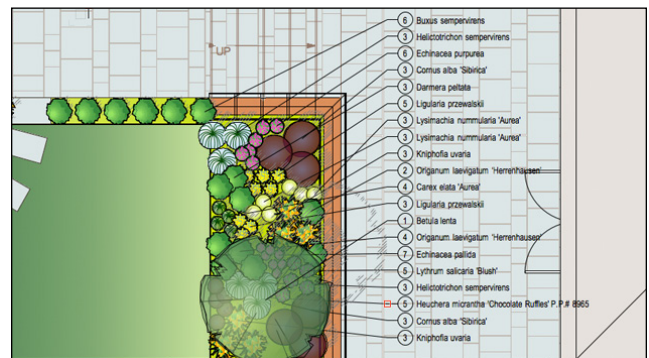
- Choose **Edit > Undo** to restore the orientation of the text.

- Move the shoulder handle (labeled 2) on the Helictotrichon sempervirens to a position just below the Buxus tag.
- Click and drag around the lower right planting bed, press Alt and while still pressing Alt, release the mouse. All the plants in this bed will be selected.
- Choose **Modify > Align > Align/Distribute Leader Lines**.
- On the Align Leader Lines dialog, change the following:

- Horizontal Alignment: check both options
- Vertical Distribution: Equal distance between shoulder lines.
- Click OK.



- Click on the shoulder of the top tag in the selection. Move the cursor down the page to create a vertical line and click again.
- Vectorworks will take a moment to work out the tags as you've given it a complex task. When it's complete, the tags will be aligned and evenly spaced.

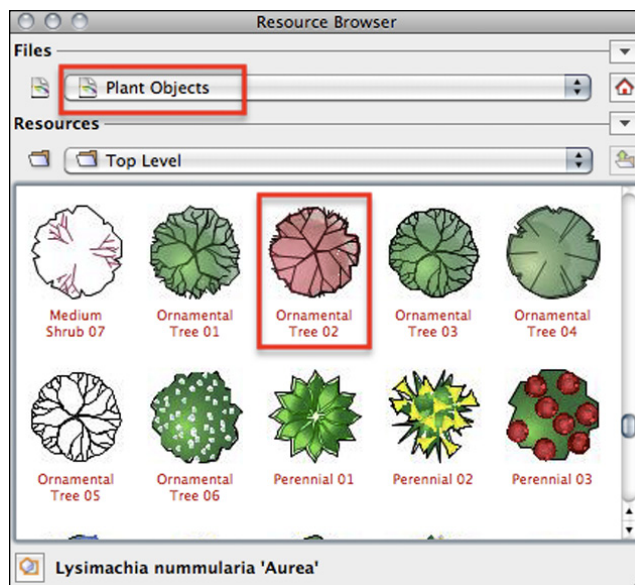


Exercise 3: Define a New Plant

Now that you've seen many of the different options for displaying and placing plants on the plan, you'll see how to use the Plant tool to create a new plant definition. The process requires you to choose the symbol you would like to use for the plant, add relevant data so that they symbol knows which plant it is representing, and, optionally, add your choice of 3D representation.

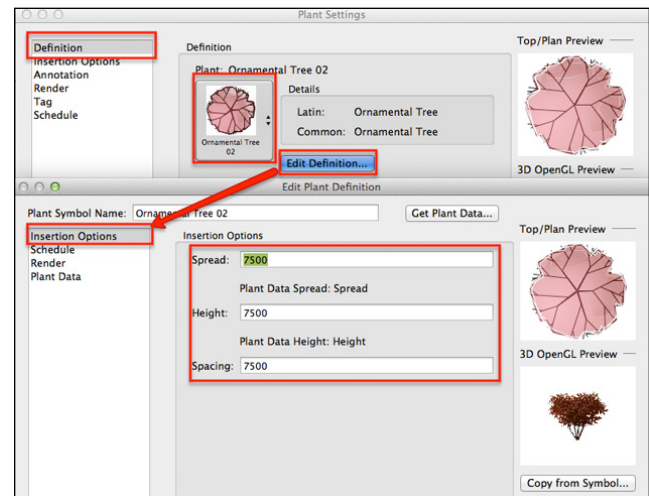
Choose a 2D Symbol

1. On the **Resource Browser**, click the **Files** menu and choose the **Plant Objects.vwx** file. This file was added as a favorite in Section 1: Installation and Setup.
2. The file contains a number of different resource types including Gradients, Symbols, and Textures. Locate the **Symbols/Plugins**. From here, you can choose from a range of plant symbols.



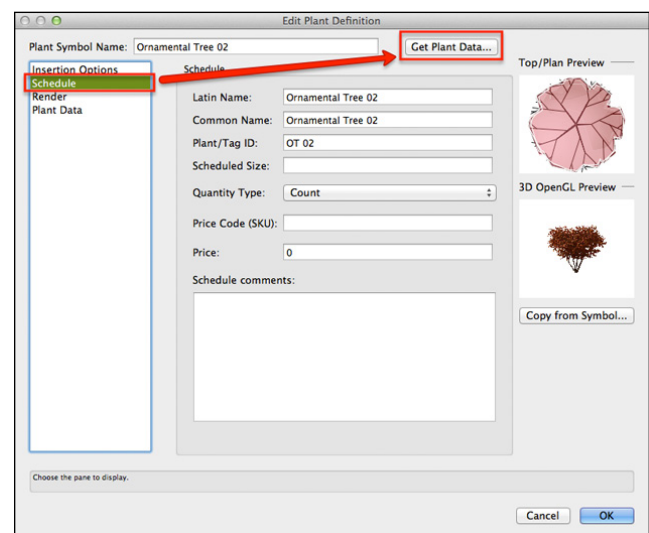
3. For the purpose of this exercise, choose the **Ornamental Tree 02**. Right-click (Windows) or Control+click (Macintosh) the symbol and choose **Import** to bring the plant symbol into the current file. When prompted to preserve folder hierarchy, click OK.
4. Click the Site Planning tool set. Click **Plant**.
5. If the Plant Settings dialog does not open immediately, click **Plant Tool Preferences** on the tool bar.
6. Click **Definition**. On the Plant Settings dialog, choose the **Ornamental Tree 02** symbol and click **Edit Definition**. Here you can see the 2D plan graphic for the plant and a preview of the default 3D representation for this plant.
7. Click **Insertion Options** and change the following fields:

- Spread: **7500 mm [25']**
- Height: **7500 mm [25']**
- Spacing: **7500 mm [25']**

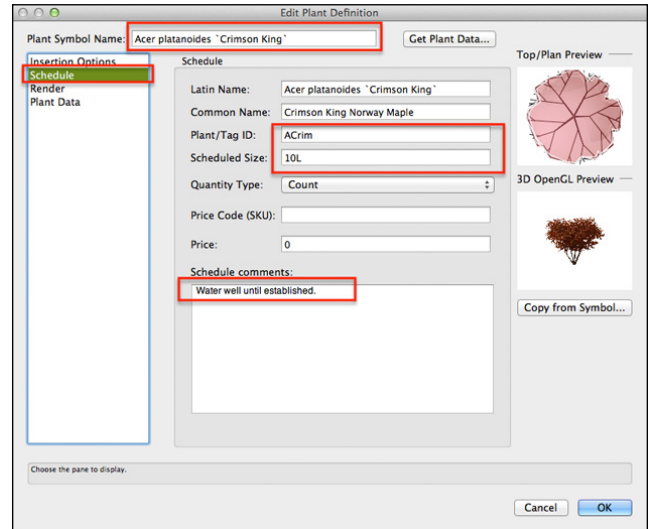
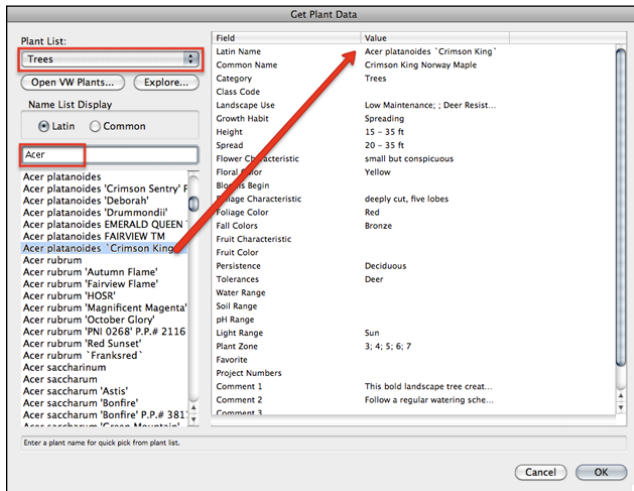


Add the Plant Data

1. Click **Schedule**.



2. Click on the **Get Plant Data** button.



3. Under Plant List, select **Trees**. The list of trees from the database is loaded.

4. In the name box, type **"Acer,"** to take you directly to the Acers in the list. Scroll through the list and locate **Acer platanoides 'Crimson King,'** clicking on its name to highlight it.

5. The data for this plant are displayed in the pane on the right of the dialog box. Review the information, then click OK.

6. The plant data have replaced some the generic information that was present in the generic plant. You can add information here to show on your Plant Schedule. Only add information if you need to show it at a later date:

- Plant/Tag ID: **ACrim** (This can be any code you prefer, but it must be unique.)
- Scheduled Size: **10L** (This can be any text to describe the proposed purchase size.)
- Schedule Comments: **Water well until established.**

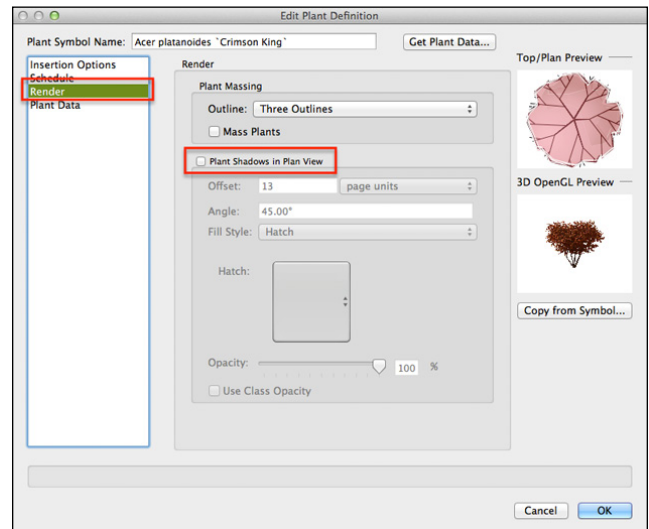
7. Highlight either the Latin Name or the Common Name—whichever is most appropriate in your geography—and copy it using Ctrl+C (Windows) or Cmd+C (Macintosh).

8. Move the cursor onto the Plant Symbol Name field. Click and drag the cursor to highlight the contents and then press Ctrl+V (Windows) or Cmd+V (Macintosh) to paste the plant's Latin Name or Common Name into the field. This is the name by which the symbol will be known on your Resource Browser.

Set Default Outline and Shadow Effects

1. Click **Render**.

2. Uncheck **Plant Shadows in Plan View**. By default, this plant will not have shadows when placed on the plan, but you can always turn them on if you need to on the Object Info palette.



Review the Plant Data

1. Click on Plant Data. The data you attached earlier, from the plant database is displayed.

2. Select Floral Color and then click **Edit**. Change the data to **"Bright yellow."**

3. Click OK. The base definition of the plant has been set and the above settings have become the default for each time the plant is used.

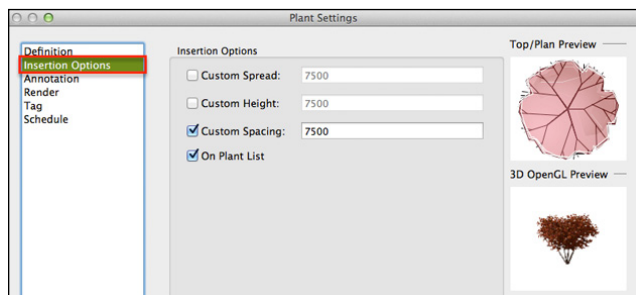
4. The remaining tabs on the left of the dialog enable changes to the default settings as you'll see in a moment.

- Click OK. Click **Single Plant Placement** mode on the Tool bar.
- Click once on the top right corner of the plot, at the front of the house. The plant is placed. Press X to return to the Selection tool.

Override Insertion Options and Set Tag Options

Now we'll look at how the default settings can be overridden whenever this plant is placed.

- With the plant selected, click **Plant Settings** on the Object Info palette.
- Click **Insertion Options**. Notice the default Height, Spread and Spacing fields are displayed. Each value can be customised so that each instance of the plant can differ from the default if required.

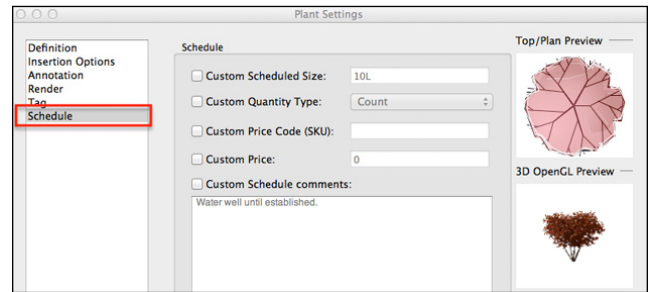


- Click **Annotation**. Here, you can further customize the plant annotation, adding lines to connect plants in a group, and add a cross into the center. Plants can also be rotated in groups or rotated along a path. They can also be scaled so that each plant appears a slightly different size. Leave the settings as they are.
- Click **Render**. You can change the render settings from the default also. Leave the settings as they are.
- Click **Tag**. Change the following fields, leaving all others unchanged:

- Tag Bubble: **Circle (Quantity Only)**
- Tag Top: **Latin Name**
- Tag Center: **None**
- Tag Bottom: **None**
- Enable Tag Shoulder Line: **Check**

These settings will create the same style of tags that have been used in the remainder of this design. The tag settings are not stored with the plant definition. Rather, they are set at the time of using the Plant tool and it may be a good idea to set your favorite tag style within your template.

- Click **Schedule**. Here you can override any of the schedule settings that are stored within the plant definition.



- On the Object Info palette, click **Plant Settings** and note that you can further customize this plant if you need to. Click OK.
- The design no longer fits on the page. Don't worry: in Section 4, you'll learn how to present plans at any scale on any sheet size.
- Look at the Resource Browser and click on the **Home** button to ensure you are looking at the contents of the current file.
- Under **Symbols/Plug-in Objects**, locate the Acer symbol. Notice also all the other plants we have used in this scheme.

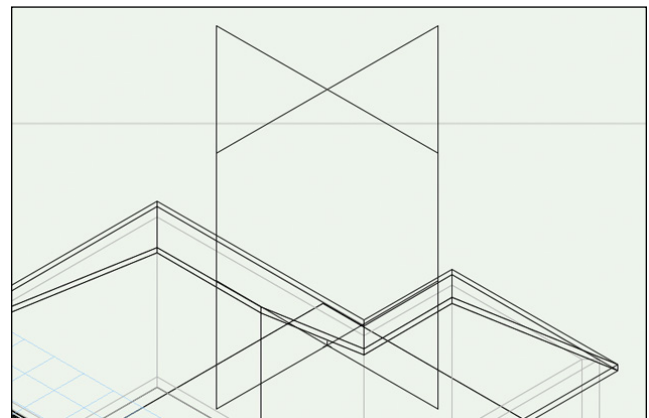
Edit the 3D Plant

The 3D element of the plant can be made from:

- Modeled 3D geometry, or
- An Image Prop (Renderworks only)

An Image Prop is the most efficient method, and there are many library files of image props for planting. You can also make your own if you have an image editing application and the skills to remove the background from a plant photograph.

Image Props are flat images, stuck onto two crossed 3D planes. They have a "transparent mask" around them so that their background is obscured and they cast the correct shadows when rendered.



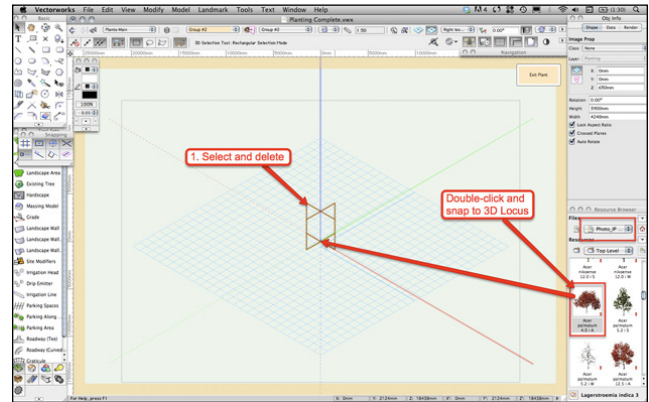
The Wireframe view shows the rectangular planes on which these images are held. When the view is rendered using Renderworks, the transparent mask will obscure anything that is not the plant itself.



There are libraries of Image Props added as favorites on the Resource Browser, and some of those used in this example were made using an image editing application before they were imported as an Image Prop into Vectorworks.

The following steps are dependent upon Renderworks being part of your licensed installation. If you do not have Renderworks, you can skip these steps and move to the following exercise.

1. Change the view to Left Isometric.
2. As the plants are hybrid (2D and 3D) objects, they are now displaying their 3D element.
3. Double-click the Acer symbol and invoke the Edit Plant dialog. Choose **3D Graphics**, and click OK.
4. Change to Left Isometric View. Select the existing Image Prop, and then delete it. A 3D Locus will remain in its place.
5. On the Resource Browser, navigate to the file **Photo_IP Deciduous and Broadleaf A-Ae.vwx**. Under the Symbols/Plug-in Objects heading, locate the symbol “**Acer palmatum 4.0 i A.**” Although this is not the exact species we want, it is a good visual representation.
6. Double-click the symbol and move the cursor to the 3D Locus in the center of the symbol editor. Click once on the 3D Locus, and then click again to complete the insertion.



7. On the top right of the screen, click the large orange **Exit Plant** button. (You may need to move a palette to see it, depending on how your workspace is laid out.)
8. Click the **Selection** tool and click on a blank space on the drawing area to ensure nothing is selected. On the View bar, click **Fit to Objects** to center your scene on the screen.
9. From the Render menu on the View bar, choose **Fast Renderworks**. Notice the plants you placed earlier all have a 3D view which is displayed when a Renderworks mode is used to render the drawing.



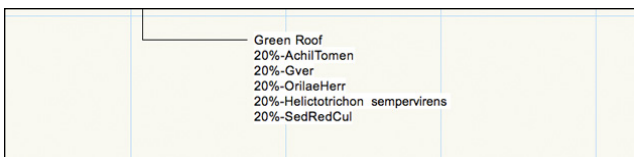
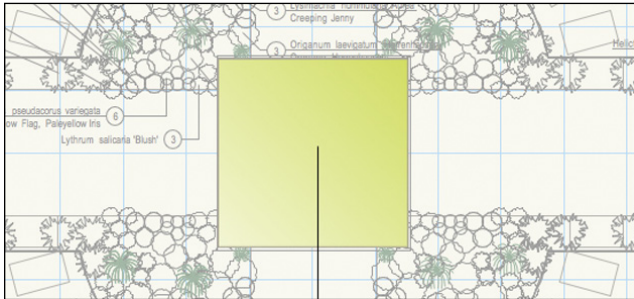
Exercise 4: Create a Landscape Area

You’ve now learned how to place individual plants into a scheme, and to place them in groups, using classes and plant styles to change the display options. But what if you want to plant a larger area, or a standard mix of plants? The Plant tool is not ideal for this, as it would be very laborious to have to place each individual plant. Instead, Vectorworks offers the Landscape Area. The Landscape Area uses the same Plant definitions as the Plant tool, so you still need to set up the plants as before, but it enables you to mix them by percentage, at specific planting rates. It’s ideal for larger areas, bulb mixes, wildflower mixes, and much more. In this exercise, you’ll see a ready-made Landscape Area, examine its settings, and then learn to create your own.

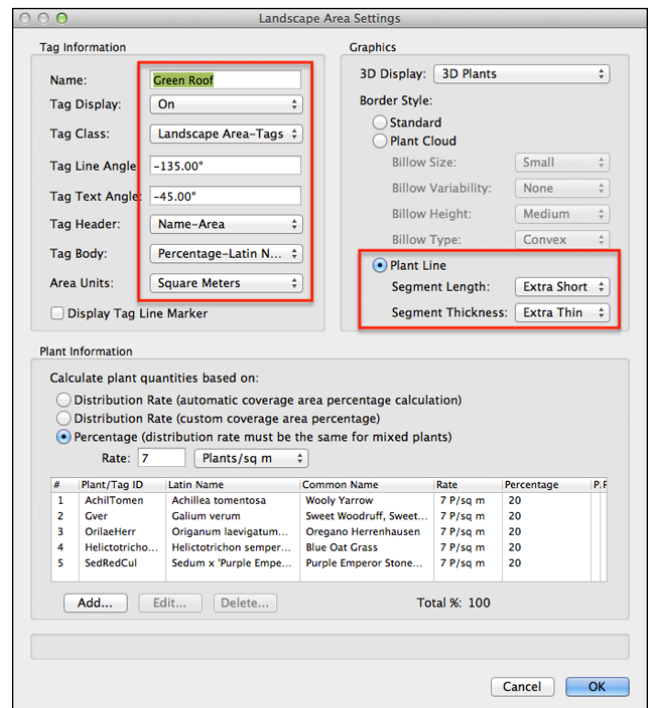
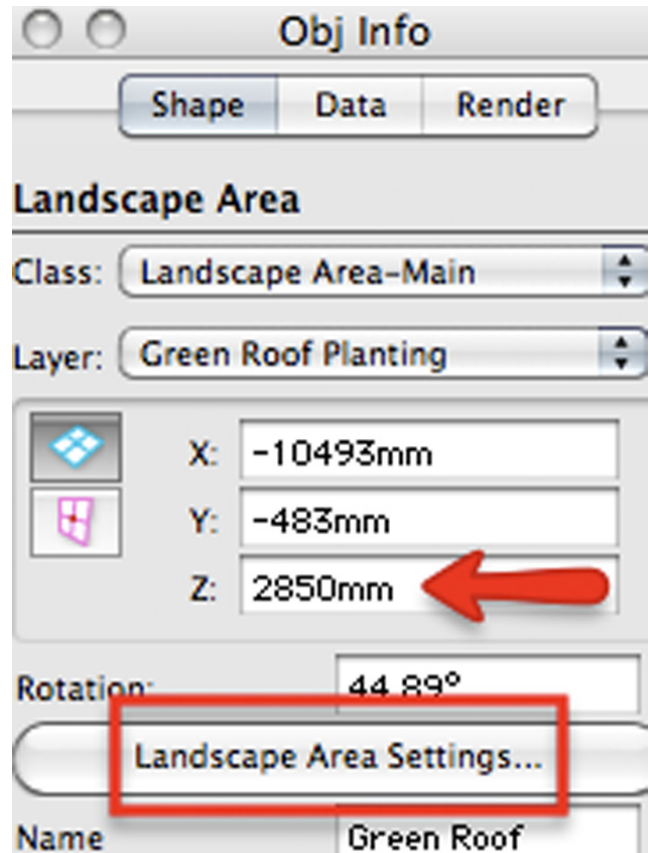
Explore a Landscape Area

1. Return to Top/Plan using either the **View > Standard Views > Top/Plan** menu command or the Standard Views menu on the View bar.
2. Using the Navigation palette, make **Green Roof Planting** the active layer. Change **Layer Options** to **Gray/Snap Others**.

- On top of the roof structure that you created in the Hard Landscaping Section, you will find a green rectangle with a tag on it.
- With the **Selection** tool, click on the rectangle to select it.



- Look at the Landscape Area tag. This area contains five plant species, 20% of each. The name of the area is shown at the top.
- Look at the Object Info palette. This object is a Landscape Area. The Landscape Area has a Z elevation (position in 3D space) of 2850 mm [9' 4 1/4"].
- Click on the **Layers** button. The Green Roof Planting layer has a Z elevation of 0. Click OK to dismiss the dialog. The Z elevation of the Landscape Area is relative to 0. Elements on the Planting and Hard Landscaping layer are relative to their Z elevation of -650 mm [2' 1 5/8"]. The Landscape Area sits on top of the roof structure.
- On the **Object Info** palette, click on the **Landscape Area Settings** button to open the Landscape Area Settings dialog.

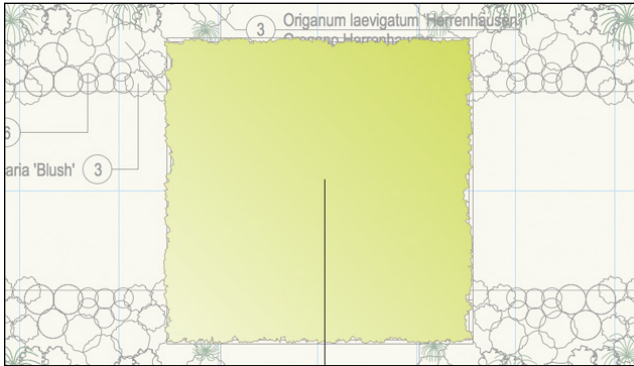


- Take a look at the settings. This Landscape Area has a name, that appears in its tag. The tag is on, but it needs a separate class so it can be controlled independently.

10. Make the following changes:

- Tag Class: **Landscape Area-Tags**
- Tag Header: **Name-Area**
- Tag Body: **Percentage-Latin Name**
- Area Units: **Choose the most appropriate for your geography**
- Border Style: **Plant Line**
- Click OK

11. The tag now displays the area of the object as well as the name. The border is now a pretty, wiggly, plant line.



12. Look at the **Object Info** palette. The Landscape Area is a member of the **Landscape Area-Main** class. Click on the **Classes** button on the View bar to open the Organization dialog.

13. Click in the **Landscape Area-Main** class and then click **Edit**. Notice the fill style is set to Gradient, and a yellowish green gradient has been selected. The Pen is a solid pale brown.

14. Click OK and then OK again to return to the drawing area.

15. Change your view to Left Isometric. Notice that the plants are showing as Image Props, like the other plants in the scheme.

16. On the Object Info palette, click on **Landscape Area Settings** again. Change the following:

- 3D Display: **3D Poly**
- Click OK.

17. The 3D Plants are hidden, and replaced with a flat 3D plane. Click **Landscape Area Settings** again and return the setting to **3D Plants**. Click OK.

The Texture Bed option is for working with a Site Model, which is beyond the scope of this Getting Started Guide.

Create a New Landscape Area

1. Return to Top/Plan View.

2. Using the Navigation palette, make **Landscape Area-Main** the active class.

3. From the **Site Planning** tool set, click on the **Landscape Area** tool and then click on the **Landscape Area Tool Preferences** button on the Tool bar.

4. Adjust the following settings:

- Name: **Mixed Planting**
- Tag Display: **On**
- Tag Class: **Landscape Area-Tags**
- Tag Header: **Name-Area**
- Tag Body: **Percentage-Latin Name**
- Area Units: **Square Meters/Feet**
- 3D Display: **3D Plants**
- Border Style: **Plant Line**

5. Now you will add plants to the area. There are three different ways that plant quantities can be calculated. In this case, we will have control over the percentage of the area that each plant will cover, and the planting rate for each plant. Select:

- Plant Information: **Distribution Rate (custom coverage percentage)**

6. To add Plants, click **Add** and complete the Edit Landscape Area Information dialog as follows:

- Plant Symbol : *Kniphofia uvaria*
- Rate: 7/sqm
- Percentage: 30
- Click OK.

Edit Landscape Area Information

Plant Symbol:

Kniphofia uvaria

Latin Name:

Kniphofia uvaria

Common Name:

Torch Lily, Red Hot Poker

Plant/Tag ID:

Knuv

Rate:

7

Plants/sq m

Percentage:

30

Cancel

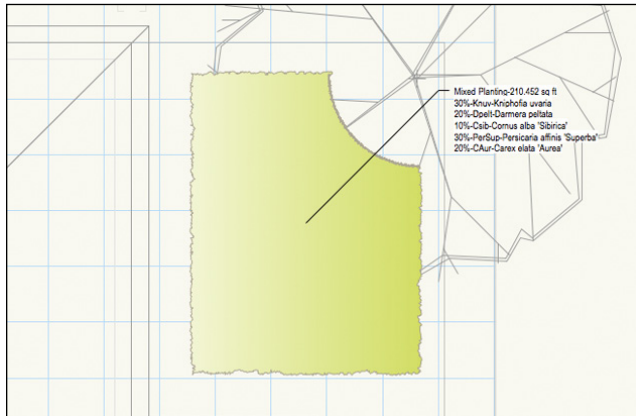
OK

7. Repeat the process, adding the following plants and settings:

- Plant Symbol: *Darmera peltata*; Rate: 5/sqm; Percentage: 20
- Plant Symbol: *Cornus alba* 'Sibirica'; Rate: 1/sqm; Percentage: 10
- Plant Symbol: *Persicaria affinis* 'Superba'; Rate: 5/sqm; Percentage: 30
- Plant Symbol: *Carex elata* 'Aurea'; Rate: 5/sqm; Percentage: 20

8. Click OK to close the Landscape Area Settings dialog.

9. Note that, like the Hardscape tool, the Landscape Area tool has all the same drawing functions as the Polyline tool, which enables you to draw complex shapes, by changing modes as you draw.
10. Move the cursor to the front garden. Use the **Corner Vertex Mode** and then **Point on Arc Mode** to draw an area on the front lawn to be planted, near the tree, similar to the one in the screenshot.



11. The Acer tree symbol is now behind the Landscape Area, because it is on the layer below. Change the view to Right. Notice that the Acer tree symbol is also 650 mm [2' 1 1/4"] lower than the front of the garden, because it is on the Planting layer that is set at this level.

12. Make **Planting** the active layer using the Navigation palette.

13. Click the **Selection** tool. Select the Acer. On the **Object Info** palette, change its **Layer** to **Green Roof Planting**. The tree moves to the layer and associates itself with the elevation of the layer, thus bringing it to the level of the house and front landscape area.



14. Return to Top/Plan view. Using the Navigation palette, change the **Layer Options** to **Show/Snap Others**. The Acer symbol instance is now above the Landscape Area.

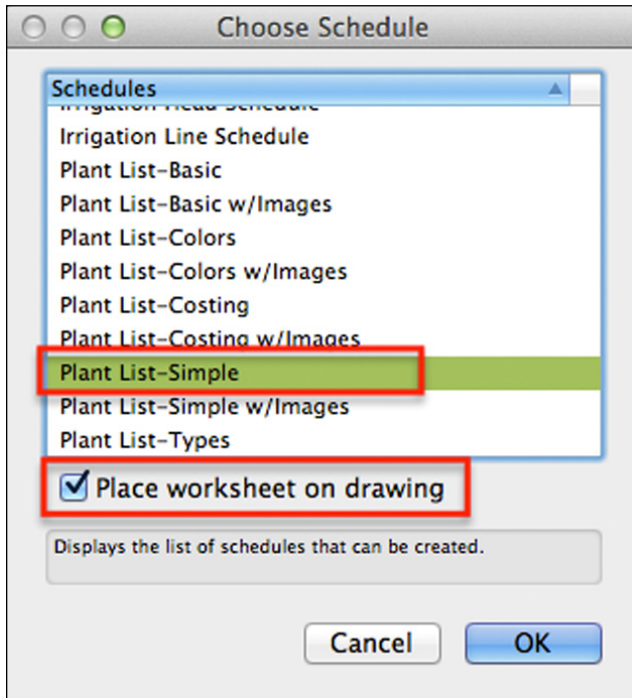
15. To view the steps covered in this exercise please click the play icon below.

Exercise 5: Create a Plant Report

Remember the Hardscape worksheet that you created earlier? The one that conveniently listed the areas of different materials used? You can do the same with your planting plan. Many objects in Vectorworks have a "record" attached to them, and the Plant is a perfect example. Think about the information you attached to the Plant symbol. Reports can be created to pull any of this information into a table that can be either placed on the plan, or exported to a spreadsheet application or other project documentation. As well as providing excellent reporting, they are also a very efficient way of updating information on the plan. In this section, you'll learn how to generate a simple plant schedule, and use it to update the information attached to the plants.

Choose a Schedule

1. Make **Notes-Reports** the active class.
2. Choose **Tools > Reports > Choose Schedule**.
3. On the Choose Schedule dialog, choose **Plant List-Simple**, check **Place Worksheet on Drawing**, and then click OK.



4. The cursor changes to a small target. Click on the drawing area where you would like to place the schedule.
5. This schedule lists all the plants used in the drawing, including those within the Landscape Areas.

Plant List - Simple				
ID	Qty	Botanical Name	Common Name	Scheduled Size
AchITo	12	Achillea tomentosa	Woolly Yarrow	1 L
Acrim	1	Acer platanoides 'Crimson King'	Crimson King Norway Maple	
Betula	8	Betula lenta	Sweet Birch	5Ltr
CAur	10	Carex elata 'Aurea'	Golden Variegated Sedge	1L
Calb	12	Cornus alba 'Sibirica'	Red Twig Dogwood	5L
Dpelt	13	Diarrhea peltata	Umbrella Plant	2L
Epai	10	Echinacea pallida	Pale Coneflower	2L
Epur	12	Echinacea purpurea	Purple Coneflower	2L
Gver	12	Gallium verum	Sweet Woodruff	2L
Helictot	49	Helictotrichon sempervirens	Blue Oat Grass	2L
HeuCho	10	Heuchera micrantha 'Chocolate'	Chocolate Ruffles Coral Bells	2L
Irispy	55	Iris pseudacorus variegata	Yellow Flag, Paleyellow Iris	2L
Knvy	87	Knight's sp. 'Aurea'	Knockout Rose, Red Hot Rose	2L
LAur	20	Larix laricina 'Aurea'	Snowy Wood Rush	2L
Ligpr	52	Ligularia przewalskii	Ragee	2L
LyBlu	78	Lythrum salicaria 'Blue'	Purple Loosestrife	2L
LyumH	51	Lythrum nummularia 'Aurea'	Creeping Jenny	2L
OrilacH	59	Origanum laevigatum 'Hemera'	Oregano, Hemera	2L
PerSup	44	Persea affinis 'Superb'	Flower of the Desert	2L
Rlac	24	Rudbeckia laciniata	Cutleaf Coneflower	2L
SedRed	12	Sedum x 'Purple Emperor'	Purple Emperor Stonecrop	2L

6. Double-click the worksheet to open it in a separate window.
7. In the Scheduled Size column, click in the Acer platanoides 'Crimson King' row. Replace the existing text with "Heavy Standard," and press Enter.
8. Close the worksheet window.
9. On the **Resource Browser**, click the **Home** button to ensure you are looking at the contents of the current file.
10. Right-click (Windows) or Control-click (Macintosh) on the **Acer platanoides 'Crimson King'** symbol. Choose **Edit**. Select **Definition** from the Edit Plant dialog, and click OK.
11. Click **Schedule**. Notice the Heavy Standard text has been added to the Scheduled Size field. The worksheet displays the plant record, but it can also update it.
12. Click **Cancel**.
13. Click the **Selection** tool, select the plant schedule and delete it. We will place it on our presentation plans in the following section.
14. To view the steps covered in this exercise click the play icon below.

Summary

So, that's another section completed! You've covered a lot in this section and have seen how symbols can be used to represent elements of your design, but not just visually. Elements of your design can store information, and you can retrieve this information to support your design and build process.

As a reminder, here's what you've learned how to do in this section:

- Use classes and plant settings to change the display properties of the planting plan
- Use the different modes of the Plant tool, to place plants into a design scheme
- Create a new Plant Definition
- Create a Landscape Area for calculating plant mixes
- Create a Worksheet to list the plants used in the scheme

In the next section, you'll learn how to pull all the different elements together to create presentation plans, technical details, and perspectives. You'll also learn the different options for printing.

Section 5: Presentation and Printing

Objectives for this Section

After you complete the exercises in this chapter, you will be able to:

- Create Sheet Layers and amend their properties
- Add a Title Block to a Sheet Layer
- Create Viewports of your design, showing it in different orientations
- Render a Viewport using a Renderworks Style
- Create a PDF of your design
- Print your design

Until now, you have been working on a series of stacked design layers, used to separate different stages of the process and to provide different 3D planes on which to place objects. You have also used Classes to distinguish between different types of objects and to apply different graphics to their members. Now, you'll learn how to make full use of all these elements to prepare all the project drawings you need.

Exercise Files Required for This Section:

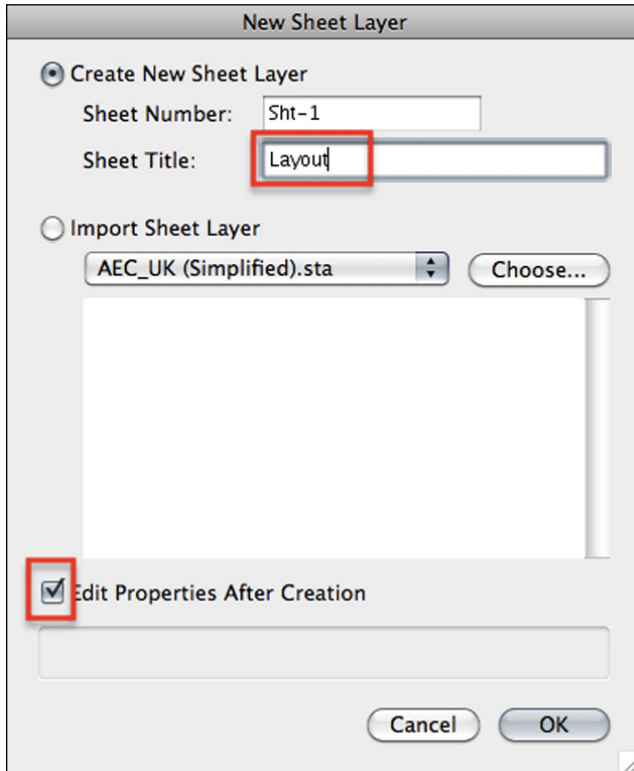
- 1-Start Presentation.vwx

Exercise 1: Create Sheet Layers

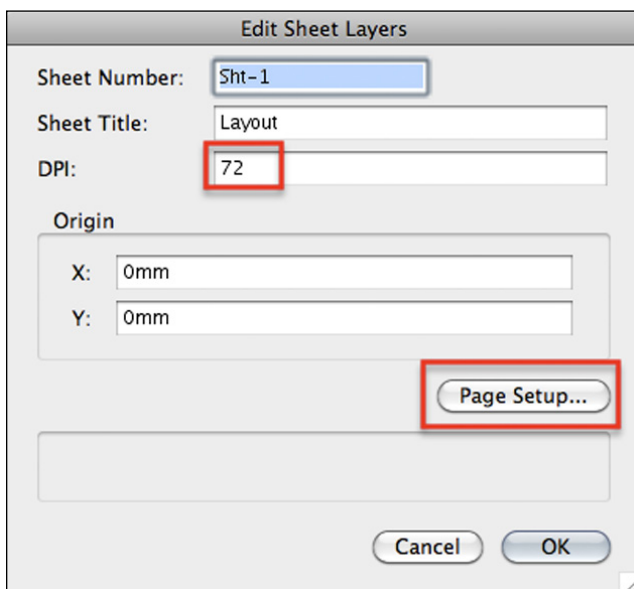
Although we set the scale on the layer and set the page size, I've mentioned several times that it really doesn't matter about page size on a Design Layer. Ultimately, on a Sheet Layer you can present your model from any angle, at any scale with as much information visible as you choose, on a Sheet Layer. A Sheet Layer is much more representative of a physical sheet of paper than a design layer.

Create Sheets

1. Open the file 1-Start Presentation.vwx.
2. Using the Navigation palette, make sure **None** is the active class.
3. Click the **Layers** button on the View bar to open the Organization dialog.
4. Click on the **Sheet Layers** tab. Click **New**.
5. In the New Sheet Layer dialog, complete the fields as follows:
 - Sheet Number: **Sht-1**
 - Sheet Title: **Layout**
 - Edit Properties After Creation: Check
 - Click OK.



6. On the Edit Sheet Layers dialog, note that you can set the DPI (dots per inch) for the layer. This setting affects the quality of any rendered images. Higher values will produce higher quality images, but they will increase rendering time. For now, leave this at 72 DPI, but be aware that you may want to increase it later.



7. Click **Page Setup**. You saw this dialog at the start of this guide when setting up your Design Layers. Check **Use Size Unavailable in Printer Setup** and then select **ISO A1 [US Arch D]**. Click OK.

8. Click OK again. On the Organization dialog, click **New** and then create two more Sheet Layers with the following settings:

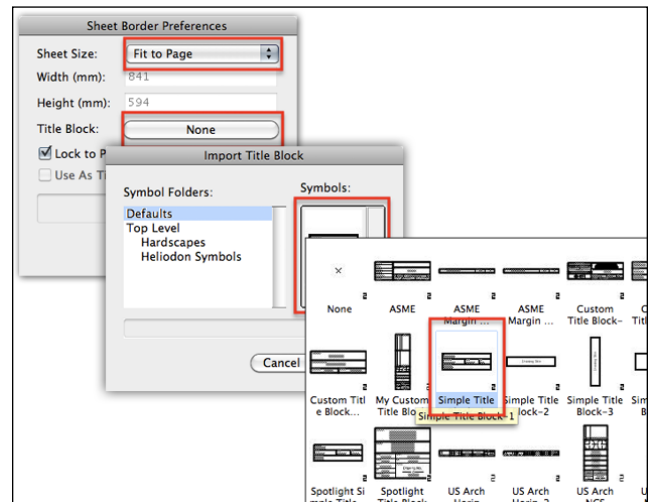
- Sht-2 Hard Landscaping; Page Size: ISO A1 [US Arch D]
- Sht-3 Planting; Page Size: ISO A1 [US Arch D]
- On the Organization dialog, check to the left of Sht-1 to make it the active layer.
- Click OK.

9. Click **Fit to Page**. Don't worry that you can't see your design anymore. It's all still there, on the Design Layers, and we'll return to it soon.

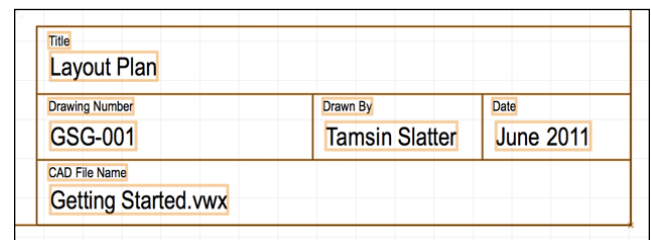
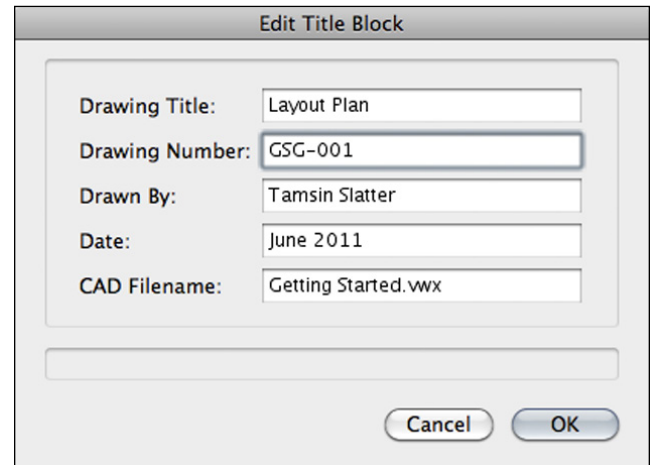
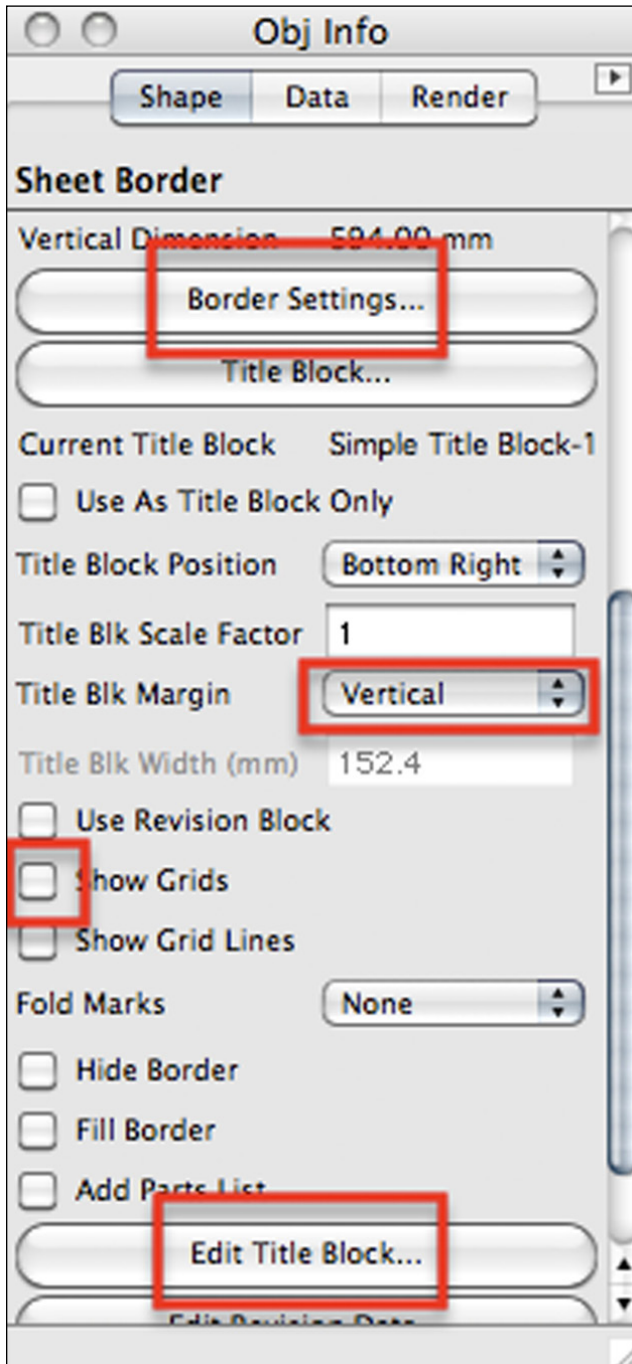
10. Notice that the Sheet Layer looks a little different than a Design Layer. It has a more distinct border and looks like a physical page. It has a scale of 1:1 that cannot be changed. The Viewports themselves will display objects at a chosen architectural scale.

Add a Sheet Border

1. Open the **Dims/Notes** tool set. Click on the **Sheet Border** tool, and then click **Sheet Border Tool Preferences** on the Tool bar.
2. When the Sheet Border dialog opens, change the following:
 - Sheet Size: **Fit to Page**
 - Title Block: Click the symbol preview and choose **Simple Title Block-1**
 - Click OK, and then click OK again.



3. The cursor is now carrying a "ghosted" Sheet Border and Title Block. Click once on the center of the page and again to set the rotation.
4. Press X on your keyboard to return to the Selection tool and avoid placing further Sheet Borders on top of this one.
5. On the Object Info palette, click **Border Settings** and adjust all four of the margins of the Sheet Border to **10 mm [3/8"]**. Click OK.
6. On the Object Info palette, change the following fields:
 - Title Block Margin: **Vertical**
 - Show Grids: **Uncheck**



7. Choose **Text > Format Text** and set **Style to Plant Tags Arial Narrow 10pt**. Click OK.
8. On the Object Info palette, click **Edit Title Block** and enter the following information into the fields:
 - Drawing Title: **Layout Plan**
 - Drawing Number: **GSG-001**
 - Drawn by: **Tamsin Slatter** (You can add your own name if you prefer!)
 - Date: **June 2012**
 - CAD Filename: **Getting Started.vwx**
 - Click OK.

9. Notice the fields have updated on the Sheet.
10. Choose **Edit > Copy**.
11. On the Navigation palette, click the **Sheet Layers** button. Make **Sht-2** the active layer.
12. Select **Edit > Paste in Place**. On the Object Info palette, click **Edit Title Block** and change the following details:
 - Title: **Hard Landscaping Plan**
 - Drawing Number: **GSG-002**
 - Click OK
13. Repeat the copy and paste process to place a sheet border on Sht-3. Click **Edit Title Block** and change the following details:
 - Title: **Planting Plan**
 - Drawing Number: **GSG-003**
 - Click OK

The sheets are now prepared and ready to display viewports.

Exercise 2: Create a Plan Viewport

Now you are going to present the Plan in a number of different ways on the same sheet of paper, using Viewports. Viewports are effectively saved views of the drawing, with their own class and design layer visibility settings, and render settings. Viewports are a live link to the design. As the design is amended, the Viewports will show the updated changes.

Create a Plan Viewport

1. Click the **Design Layers** tab and make **Green Roof Planting** the active layer. The design will be displayed.
2. Ensure you are looking at your design in Top/Plan view, using the View menu on the View bar. Use the **Selection** tool to click on a blank space to ensure nothing is selected.
3. Choose **View > Create Viewport**.
4. On the Create Viewport dialog, complete the following fields, leaving all other fields blank:
 - Viewport Name: 1
 - Drawing Title: **Master Layout**
 - Create on Layer: Choose **Sht-1 [Layout]**
 - Notice, but do not change, the Layers and Classes button, the Scale, and the View menus. You'll change these in moment.
 - Click OK.
5. The Viewport is created and placed on Sht-1 Layout, which is now the active layer. The viewport is selected. The viewport scaled at 1:50 is too large for the sheet.

Create Viewport

Viewport Name: 1

Drawing Title: Master Layout

Create on Layer: Sht-1 [Layout]

Source: Current Document

Select Source...

Layers...

☒ Display Planar Objects

☒ Project Screen Objects

Classes...

Scale: 1:50

Custom Scale 1: 50.000

View: Top/Plan

Set View...

Rendering: Wireframe

Render Settings...

RW Background: None

Projection: 2D Plan

Perspective Type: Custom

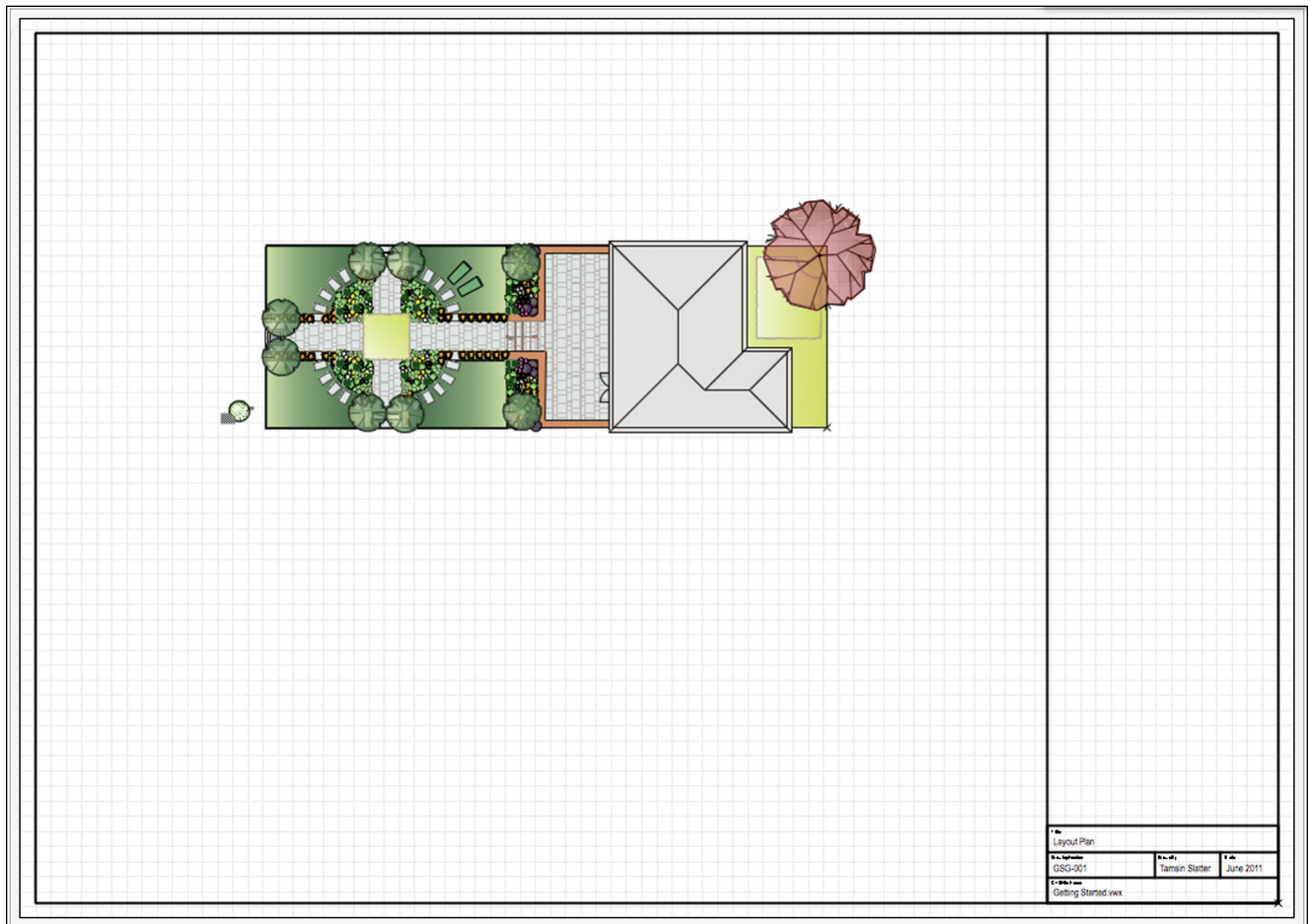
Perspective Dist: 8.720

Cancel OK

6. On the Object Info palette, change **Scale** to 1:100. The Viewport shrinks to 1:100.
7. Using the **Selection** tool, click and drag on the Viewport to center it on the main area of the page.

8. With the Viewport still selected, click **Classes** on the Object Info palette. Turn the **Plants-Component-Tags** class and the **Landscape Area-Tags** class to **Invisible** and then click OK.

9. The Viewport now shows a beautiful, overview plan of the design.



Exercise 3: Create a 3D Rendered View

Set up the View

1. Use the Navigation palette to make any design layer the active layer.
2. Change the view to **Left Isometric**.
3. Choose **View > Perspective > Normal Distance**.
4. Click the **Flyover** tool on the Basic palette. Click OK to dismiss the helpful dialog.
5. Click once somewhere toward the center of the garden to set the center of rotation. Click and drag on the left mouse button to change the view to something pleasing. Remember you can use Fit to Objects to bring the scene back onto your screen.
6. Choose **View > Create Viewport**.

7. Complete the Create Viewport dialog as follows, leaving other settings on their defaults:

- Drawing Title: **3D Perspective View**
- Create on Layer: **Sht-1 [Layout]**
- Click OK

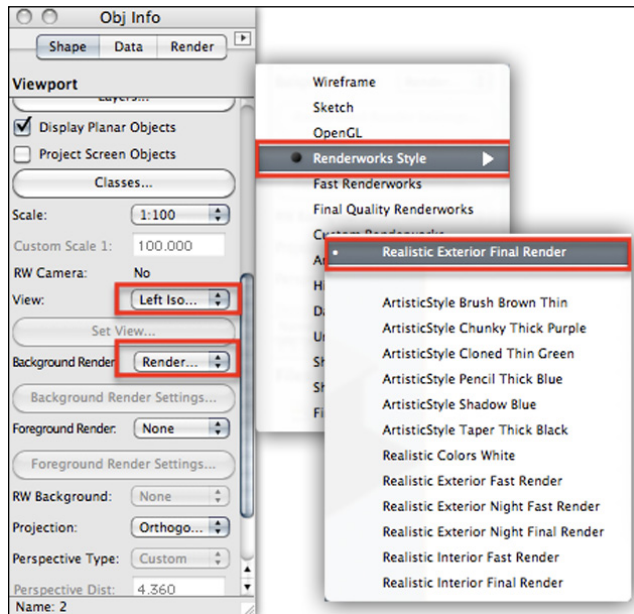
The perspective viewport is displayed in wireframe mode on the same sheet as the plan viewport.

Render the 3D View

1. Choose **File > Document Settings > Document Preferences**. Click on the Display tab and ensure that **Save viewport cache** is checked. This will ensure that once the viewport is rendered, it will be saved in this state so you do not have to render each time you open the file. Click OK.

2. Select the perspective viewport. On the Object Info palette, change the following field:

- Background Render: **Renderworks Style > Realistic Exterior Final** (If you do not have Renderworks, choose OpenGL instead).



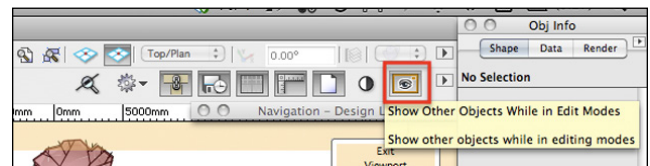
3. The Viewport will display a red striped border, indicating that it needs updating.
4. On the **Object Info** palette, click **Update**. The Viewport will turn black and take some time to render (this is dependent on your computer's specification), but the result will be very pretty! If you don't want to wait, you can press Escape to cancel the render process, but you can continue to work while the scene renders. Notice the teapot-shaped indicator that shows you rendering is processing.
5. Click the Home button on the Resource Browser. This built-in rendering style contains settings ideal for rendering outdoor scenes and uses the new physical sky that links the Heliodon sun object to a sunny sky background. Notice the Render style and the Physical Sky background have been imported into the file.



6. Move your viewports to create a pleasing layout on the sheet.
7. You can add more text, directly onto the Sheet layer. You can add supporting images to the Sheet layer using **File > Import > Import Image File**.

Add Drawing Labels

1. Double-click on the Plan viewport. When the Edit Viewport dialog opens, check **Annotations** and then click OK.
2. Notice that the other viewport's footprint is visible, but gray. If it is not visible, turn on **Show Other Objects in Edit Mode**, on the right of the Tool bar, above the Exit Viewport Annotation button.



3. Click the **Dims/Notes** tool set and click **Drawing Label**. There is no need to change the preferences.
4. Click once on the drawing to position the Drawing Label and again to set its rotation. Notice that the label automatically picks up the Viewport name, number, and scale.
5. Click **Exit Viewport Annotation** at the top right of the screen.
6. Repeat the process to add a Drawing Label to the perspective viewport. Once inside the Viewport editor, you can continue to use the SmartCursor to assist in aligning objects, so that your plan will look well laid out.

Exercise 4: Create Additional Viewports

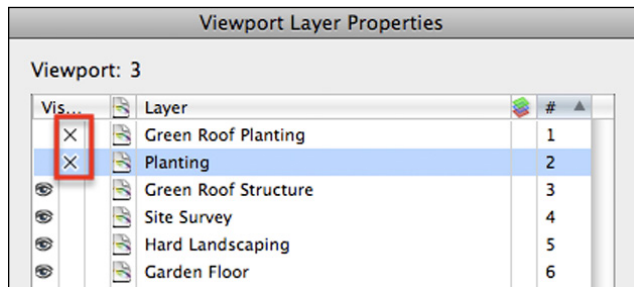
In this exercise, you'll duplicate the plan viewport and change the settings of the copy so that it presents only hard landscaping information. You'll then add the Hardscapes Budget report to the sheet.

Create a Hard Landscaping Plan

1. Click on the first viewport—the one showing the Top/Plan view. Select **Edit > Duplicate**.
2. Select the copy if it is not already selected. On the Object Info palette, change Layer to **Sht-2 Hard Landscaping**.

- Using the Navigation palette, click the Sheet Layers tab and make **Sht-2 Hard Landscaping** the active layer.
- Select the viewport. On the Object Info palette, change the following fields, leaving all other fields unchanged:

- Drawing Title: **Hard Landscaping Layout**
- Click the **Layers** button and make **Green Roof Planting and Planting invisible**. Click OK.
- Click the **Classes** button and turn on **Dimension**. Click OK.



- The Viewport is now displaying only Hard Landscaping Information, and the dimensions created earlier are visible. Double-click the viewport and click **Annotations**. Click OK.
- Select the Drawing Label. On the Object Info palette, change Number Style to **Drawing and Sheet**.
- From the **Dims/Notes** Tool set, choose **Constrained Linear Dimension**. Add further dimensions to show the width of the path and the tread depths of the steps.
- Click **Exit Viewport Annotations**.

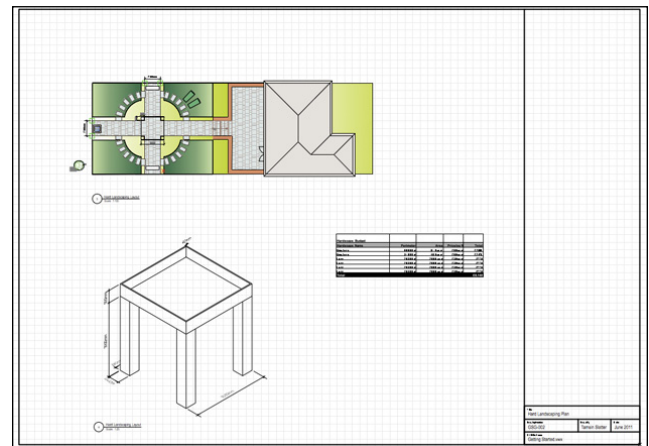
Create a 3D Construction Drawing

- Duplicate the Hard Landscaping Layout viewport.
- Move the copy downward on the page so it is below the original.
- Using the Object Info palette, change the following:
 - Drawing Title: **Green Roof Structure Detail**
 - Layers: Turn off all layers except Green Roof Structure
 - Scale: **1:25**
 - View: **Left Isometric**
 - Background Render: **Hidden Line**
 - Project Screen Objects: **Check** (to continue to display dimension text in a 3D rendered view)
- Double-click the viewport and select **Annotations**. Click OK.
- Use **Select Similar** to select the dimensions you placed in the viewport above and delete them as they are not appropriate to this view. Press X to return to the **Selection** tool.
- Select the Drawing Label and use the Object Info palette to change the Drawing Number to 2. Move the label to a position beneath the structure.

- From the **Basic** palette, choose the **Callout** tool, next to the Text tool.
- Click on a space to the right of the structure and then click on the top of the structure. In the Notes Manager Callout dialog, enter the text "Reclaimed timber." Click OK.
- Place another callout, labeling the Brick pillar with the text "Brick pillar." Click OK.
- Click **Exit Viewport Annotation** again to return to the Sheet Layer. Press X to return to the **Selection** tool.
- On the Object Info palette, click **Update** to render the viewport.

Add Hard Landscaping Worksheet

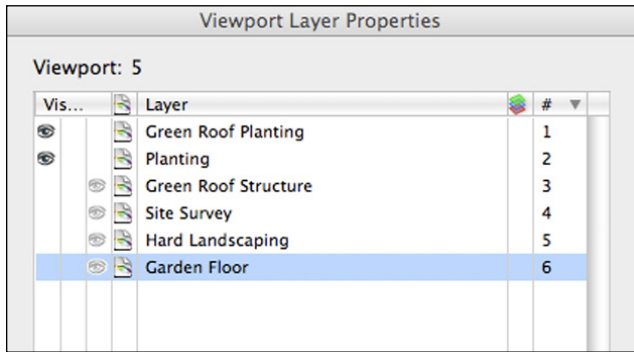
- On the Resource Browser, click the **Home** button.
- Scroll to the bottom of the Resource Browser and locate the **Worksheets** heading. Double-click the Hardscapes Budget worksheet. It will display on the Sheet Layer.
- Using the **Selection** tool, click and drag the worksheet to move it where you want on the sheet.



You can add additional text to a Sheet Layer if you wish.

Create a Planting Plan

- Duplicate the Hard Landscaping Layout viewport as you did earlier, using **Edit > Duplicate**.
- On the Object Info palette, change the layer to **Sht-3 Planting** to move the Viewport to this layer.
- Make **Sht-3 Planting** the active layer. Select the Viewport.
- On the Object Info palette, click the **Layers** button. Change the visibility of all layers except **Planting** and **Green Roof Planting** to Gray. Click OK.



5. On the Object Info palette, click the **Classes** button to change the visibility of the following classes, and then click OK:

- Dimension: **Invisible**
- Landscape Area-Tags: **Visible**
- Plants-Component-Bloom: **Invisible**
- Plants-Component-Canopy: **Invisible**
- Plants-Component-Color Fill: **Invisible**
- Plants-Component-Interior Linework: **Invisible**
- Plants-Component-Outline: **Invisible**
- Plants-Component-Tags: **Visible**

6. On the Object Info palette, make the following changes:

- Drawing Title: **Planting Plan**
- Scale: **1:50**

- The viewport is, once again, too large for the sheet. Double-click the viewport and choose **Edit Crop**. Click OK.
- Choose the **Rectangle** tool from the **Basic** palette. Draw a rectangle around the rear garden planting area, including the tags. Click **Exit Viewport Crop** at the top-right of the screen.
- The Viewport now displays only the area within the cropping rectangle.
- Edit the annotations of the viewport and change the Drawing Label number if you wish.

Add the Plant Schedule

- On the Resource Browser, click the **Home** button to ensure you are looking at the contents of the current file. Locate the worksheet **Plant List-Simple**, and double-click it. The worksheet will be displayed on the Sheet.
- Using the **Selection** tool, click and drag on the worksheet to move it to a position below the Planting Plan.

Exercise 5: PDFs and Printing

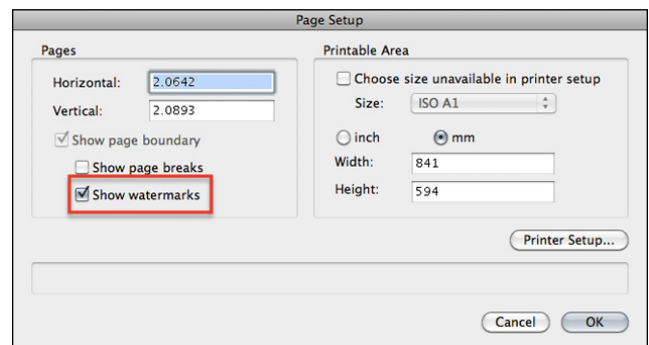
If you are printing from your own office, using your own printer, the process is simple. Your page size for the Sheets will already have been set up correctly during the Page Setup process, and, therefore, the plan will print to scale on the chosen media. If you don't have a large format printer in your office, your best option is to create a PDF of your sheets and then send those to be printed via e-mail, or a large-file transfer service. Alternatively, you could consider not printing at all, and instead share documents electronically with your clients and project colleagues, using a service such as Vectorworks Cloud Services with the Nomad app.

Student Watermarks

Before looking at any output from Vectorworks, it's worth spending a few moments talking about watermarked documents. Files produced from an Educational version of Vectorworks, will have a watermark on any output. Resources created by a student license, imported into another file will also watermark a file, even if the target file was created with a commercial license. These watermarks cannot be removed. College lecturers will expect to see these and not worry about it.

If you are using a student licence, and want to see the impact of the watermarks, you can view them on your screen as follows:

- Choose **File > Page Setup**.
- On the left of the dialog, check **Show Watermarks**. Click OK.

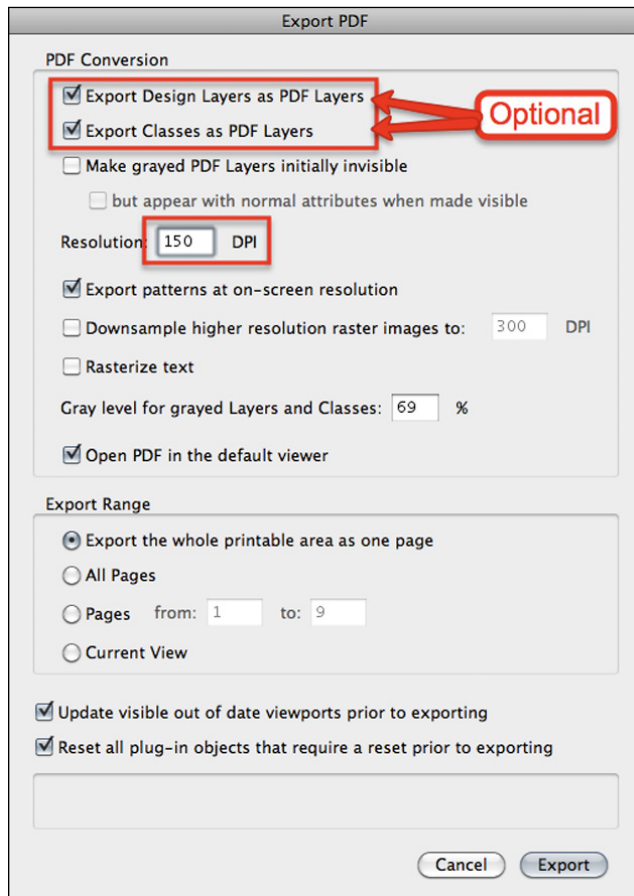


VECTORWORKS EDUCATIONAL VERSION

Export to PDF

PDF files can be created from either the Design Layer, with the active visibility settings, or from a Sheet Layer. You can create a single PDF, or create a series of PDF files from selected sheets as a batch process.

1. Choose **File > Export > Export PDF**.
2. The Export PDF dialog opens.



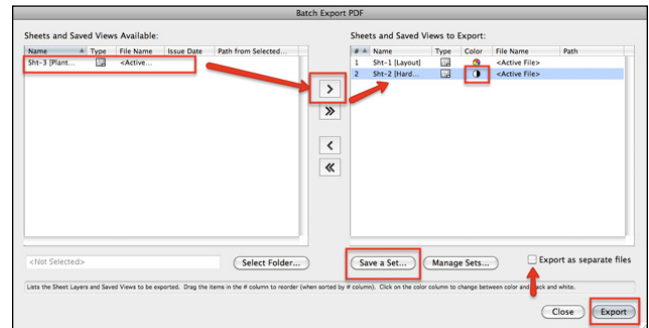
3. Check **Export Design Layers as PDF Layers**. This will allow you to create an interactive document, where you can turn elements on and off in your PDF, (provided that your PDF viewer application supports this).
4. Check **Open PDF in the default viewer** to see the file when it has been created.
5. Choose the Resolution setting you want for the final image. Remember that the higher the DPI setting, the larger the file will be. If the PDF DPI setting is higher than the current Sheet Layer, the document will render as part of the export process.
6. Click **Export**.
7. Choose a file name and location for the PDF file, such as "Planting Plan." Click **Save**.
8. The PDF file will open in your default PDF viewer application.

9. Return to the Vectorworks application.

Create a PDF File from Multiple Sheets

In this case, we have several sheets that make up the project. Using the batch facility, you can export your Sheet Layers individually, or as a single, multi-page file.

1. Choose **File > Export > Export PDF (Batch)**.

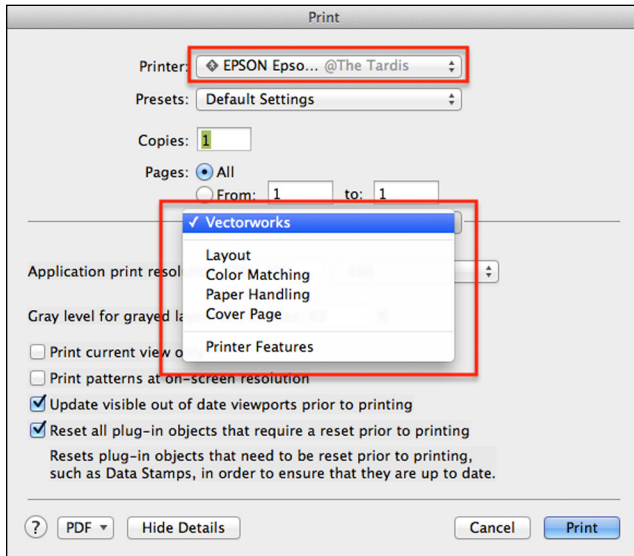


2. Choose which Sheets to export and use the arrow button to move them to the right side of the dialog.
3. To print a black and white copy, click on the Color column to change the setting.
4. By default, the batch export process will create a single, multi-page file. However, check **Export as Separate Files** if you wish to create separate PDF documents.
5. Click **Print** to start the export.
6. Complete the Export PDF dialog as described above. Remember, that each rendered viewport may need to re-render. Click **Export**.
7. Choose a file name and location for the PDF file and click **Save**.
8. The PDF file will be displayed in the default PDF viewer. Use the navigation in your PDF viewer to view each of the sheets.
9. Return to Vectorworks. Vectorworks will confirm that the export has been completed. Click OK cancel the message and close the Export PDF Batch dialog.

Print the Plan

With your own printer available, printing is simple, as long as your page area matches the page sizes available through your printer driver. It's important to ensure that the printer does not apply any scaling to the document, as the drawing is already at the correct scale.

1. Choose **File > Print** to open the Print dialog and set the following options:
 - Printer: Choose your printer
 - Settings menu: Choose the appropriate settings for your printer. Each printer will offer different options.
 - Click **Print**.



Summary

Well, that's the final exercise in our quick tour of Vectorworks Landmark. Let's revisit the objectives of this section. At the end of this section, using the exercise files provided, you will be able to:

- create Sheet Layers and amend their properties
- add a Title Block to a Sheet Layer
- create Viewports of your design, that allow you to show it in different orientations
- create a sunny exterior render of a Viewport using a Renderworks Style
- create a PDF of your design
- print your design

You've seen the value of creating a structured drawing, and building a 3D model as part of your design process. Sheet Layers and Viewports allow you to present that information in a wide variety of formats, without having to redraw anything at all. Sheet layers are used to pull together all the aspects of the design that you want to present. Sheet layers can include images, text, and worksheets, as well as the elements designed within Vectorworks.

Next Steps

So, you've completed this tutorial and have seen some of the wonderful things that Vectorworks Landmark can do to become the backbone of your design practice. Of course, as the name of the guide suggests, you've only just started! So, what's out there to help you move forward and look at Landmark in a lot more depth?

Vectorworks Help

Choose **Help > Vectorworks Help**. It will open in a separate window. Here you can search for full details on all the tools and menu commands to gain a much more in-depth knowledge of Vectorworks Landmark.

Vectorworks Service Select

Although not available in every geography, Vectorworks Service Select is a valuable source of information, including tech-tips and longer tutorials. There are also many more resources available for use in your plans.

For more information, please visit servicesselect.nemetschek.net.

Vectorworks Training Guides

If you like to learn at your own pace, or want a far more detailed guide to Vectorworks Landmark, you might find Tamsin Slatter's "**Residential Garden Design with Vectorworks Landmark**," a good read. It's also a great resource to have with you after a training course to give you a detailed overview of the landscape design process in Vectorworks Landmark. To find out more, please visit: www.nemetschek.net/training/guides.php

Further Training

Vectorworks offers training at its headquarters and at other locations. There is a wide range of classroom offerings and one-to-one options.

About the Author: Tamsin Slatter



After a twenty year career in the IT industry, with roles spanning support, training, sales, and marketing, Tamsin retrained as a landscape designer in the UK. The change offered Tamsin a welcome escape from the corporate world, the chance to work with nice people, learning about plants and how to draw. However, throughout her training, she had a nagging doubt about the viability of such a business. As one person, chained to a drawing board, Tamsin realized that business growth was limited by the amount of time dedicated to the speed of drawing and updating as well as the inability to share work with other professionals. Tamsin looked at a number of CAD packages before she chose to use Vectorworks Landmark.

Thanks to the growing interest in Vectorworks across the industry and to her mastery of Vectorworks for her own design practice, Tamsin was asked to write a training course. This she did and thus a business was born. Now Tamsin runs a team of trainers, to show other designers the delights of working faster, more efficiently, and finishing drawings on time! Her organization, Vectorworks Training, based in the UK, offers training to individuals, large and small practices and educational establishments. Training across the entire Vectorworks product range, Tamsin never tires of the software, as it makes such a difference to her clients' businesses. Vectorworks Training runs one-to-one training, group training, online training, and masterclasses that cover specific topics in-depth. The company also supplies and implements Vectorworks software.

Tamsin is the author of **"Residential Garden Design with Vectorworks Landmark,"** (commissioned by Nemetschek Vectorworks, Inc.), which covers the landscape design process in great detail.