OCAD for Course Setters

A Self-Driven Workbook

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# Setting your first StreetO Course

## Introduction

Course setting is not just about choosing places to put the controls – it’s your job as Course Setter to provide your fellow street-orienteers with a map that complies with some common sense guidelines:

* If possible, the map should be printed at 1:10,000
* Map contrast is critical; if the map is clear and easy to read participants will be able to identify parks and laneways with ease. This is particularly important for night events.
* There are standard map symbols (e.g. scale bar, north arrow, logos) that should be present
* The courses you’ve set should comply with recommended distances.

Course Setting guidelines have been available on our websites for many years and are worth consulting no matter how experienced you believe you are. These guidelines were written by coordinators in years gone by and are updated every now and then. The most important of these guidelines include:

* The need to provide courses for all participants – even the slowest participant (say 2 to 2.5 km) should get 5-6 controls. Set the lower courses first – provide route choice for C and D runners – then add a few controls further out to provide distance for the A and B runners.
* The need to break up the initial mass start – provide as many “1st controls” as possible. Break the pack up even further by offering a choice for 2nd control too.
* Use obvious features as controls – a control description such as “tree” should only be used if it’s unambiguous and its position is clear from the detail on the map.
* Thought about which control numbers go where – placing all the 2 pointers on the periphery of the map makes it incredibly easy to work out what will be dropped – shuffling things around makes route choice much more interesting.

## Things you will Need

To set a course you will need:

* A copy of the LATEST version of the appropriate map; if you’re only going to use part of a bigger map, the map-librarian may crop it to size for you. In general, Nillumbik maps will be supplied pre-formatted – ie requiring only basic skills to complete your course-setting task.
* To confirm the START LOCATION for the event; check the fixture or websites
* To confirm the type of event for runners (e.g. SCORE or SCATTER) – Power Walking courses are always score courses.
* To confirm running times or course-lengths (refer to guidelines above).
* Confirm the type of control placements required; night events use light poles only.

Note that some clubs still have maps in formats other than OCAD; where this is so, ask for printed versions and complete the task with pen, circle template and photocopier (unless you’re confident in updating a scanned image using an appropriate graphics / drawing program.

The remainder of this document assumes that you’ve been given an OCAD file to use for course setting.

## Overview of the Process

If you’ve completed the introductions and exercises above, you have all the OCAD skills you need to build your course. Briefly, the steps are as follows:

* Save your map to a local directory; suggestion – create a directory called Maps in your data area.
* **Armchair Stage**
  + Open the map; check the map scale and adjust it if necessary (see <http://ocad.orienteering.com.au/Adjusting%20Map%20Scales%20in%20OCAD%208.htm> for information on how to adjust map scale).
  + Add the following:
    - START Triangle
    - Control Circles in approximate locations. Set the shortest course first – make sure that even the slowest person gets 6-8 controls for their 2.5 to 3 km.
* **Field Checking**
  + You need to verify each control location; there are lots of ways to do this.
  + Go for a drive/walk and check them
  + Use Google Street-View
  + Use the map library to look at previous courses on this map – this contains about 2,500 previous courses <http://street.orienteering.com.au/maps/courses/streeto/>. The maps are sorted into directories by map name.
* **Final Production**
  + Now that you have all of your control locations you can complete the map
  + Move your **control circles** to the correct location
  + Add **control numbers** and move them to an appropriate place near the control circle. Be careful that the number is in a clear spot and does not overlay any important map detail.
  + Add **control descriptions** to a clear spot on the map
  + Add your name as Course Setter
  + Add the date of the event
  + Add any warnings or embargoes that are appropriate for the area
  + Do a **Trial Print** of the map - at 1:10,000 if possible
  + SAVE your file – I generally add the event date to the filename. Odds are you’ll set on this map sometime in the future, so it’s worth cataloguing things this way.
* **Checking your Map**
  + Check the fixture again; make sure that you’ve got location, course types correct.
  + Count the number of controls on the map; use a highlighter to mark them off
  + Now count control numbers from 1 to 20 – this makes sure that all numbers are there and none are duplicated.
  + Check the control descriptions; the Course Setting Guide has lots to say about what makes a good control description (and what doesn’t…).

# How OCAD Works

## Introduction

The screen has three main areas:

* TOOLBARS that run along the top of the screen provide access to commonly used operations.
* A TOOLBOX that runs down the right side of the screen provides access to mapping symbols that are available.
* A drawing area in which you view or create your map.

## The Toolbars

### Other Buttons

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|  | Open an existing OCAD file  Press it now – load an existing map |
|  | Save the file (or press Ctrl-S – the normal Windows SAVE shortcut) |
|  | Print the map (or Ctrl-P) |
|  | Measure the length of the selected line |
|  | Displays a grid to help you align or centre symbols |

### Zoom Controls



Let’s you zoom in and out to get a closer look or overview; the most useful are :

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|  | Zoom into the selected area |
|  | Zoom out |
|  | Fit to page |

### The Pointers



There are two pointers available in OCAD:

* The first/black pointer is used when you want to operate on an entire object. You can use this to select the object – then move it, delete it or make it bigger/smaller.
* The second/outline pointer is used to change the shape of an object – it allows you to move points within an object to change the shape.

### Drawing Modes



Lets you draw Line or Area symbols in a variety of ways:

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|  | The most commonly used mode; for drawing straight lines |
|  | Draws curved lines or curvy shapes; more difficult to use but worth mastering |
|  | Draws elliptical or circular lines or areas |
|  | Draws rectangular lines (boxes) or areas |

## OCAD Symbols

OCAD has three types of symbols as illustrated below. Right-click on some of the symbols and have a look at how symbols are defined. You can modify any of these – but do note that changing the definition of a symbol changes **EVERY** instance of that symbol on your map.



The dialog boxes show the properties associated with each symbol type. If you do need to change them, just update the properties and then press OK to save the updated symbol. Note that this changes everything that uses that symbol.

The Control Circles and Numbers are not clear

OCAD’s default colour for control circles and control numbers is purple – and RED/PURPLE seldom copies well. When printed out in black and white both of these are light grey and very hard to see. To fix this, change their colour to BLACK by editing the colour property as below.

There is no dot in the centre of the Control Circle

Just edit the Control Circle symbol and put a 1mm black circle at its centre. To find the centre of the circle, just turn on the GRID as discussed above.

## The Color Table

OCAD assigns each colour to a layer; the layers are printed on top of one another – in general, the layer or colour at the top is the one you see. The order of colours is shown in the **Symbol > Colors…** dialog box.



# Basic Operations

This section describes how to carry out the basic operations that you will use in both course-setting and perhaps later – map drawing.

We assume here that basic Windows operations like opening, saving and closing files are already understood by those present. If not, ask someone how to do this.

The following operations are described:

* Printing your map; you will need a printed copy of the map to plan your course
* Placing POINT SYMBOLS on the map (e.g. start triangle, control circles)
* Moving point symbols
* Drawing lines
  + Straight Lines
  + Curved Lines
* Using area symbols
* Adding TEXT to your map

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| **Exercise 1 – Printing your Map** | | |
| **Purpose** | **:** | Investigate the print dialog and discover the options available there.  Learn how to print a map |
| **Pre-requisites** | **:** | Load the map by using the File > Open dialog box  Zoom Out so you can see the area to be printed; use the Entire Map button at this stage  Note – you’ll have to do this on a machine that is connected to a printer. |
| **What to Do** | **:** | Use File > Print or press the PRINT button on the main toolbar to initiate the PRINT dialog; a box appears on the screen – this shows the area that will be printed at the current scale. |

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|  | Change from Portrait to Landscape by ticking the Landscape box.  If your map doesn’t fit on the page, you may need to adjust the scale. Play with the scale and see what happens.  You can select a range to be printed at this scale:   * Entire Map prints everything…if necessary on multiple pages * Partial Map allows you to specify a small part of the map – you can adjust the box shape to the area required. * The most commonly used function is One page; this shows you how much of the map will be printed on a single page (of whatever paper is in the printer).   When satisfied with the setup, press the OK button.  Your map will print on the specified printer. |

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| **Exercise 2 – Checking the Map Scale** | | |
| **Purpose** | **:** | To estimate course lengths you must know the scale of the map. Most streetO maps are not calibrated – ie the default scale is not necessarily what it says on the map.  It’s remarkably easy to adjust the internal map scale so that it prints out correctly at whatever scale you select in the print dialog. Most (perhaps all) NE maps have been calibrated – but check anyway!  This exercise shows you how to check the scale and to set it correctly if necessary. |
| **Pre-requisites** | **:** | Load a map by using the File > Open dialog box |
| **What to Do** | **:** | Draw a straight line along the length of the scale bar  Press the ruler symbol in the Scale Bar; the Measure Result dialog tells you how long the scale bar is – both within the package and in the real world.  W:\ocad\scale 3.jpg  If the Real World distance is close to the distance specified by the scale bar then your map is calibrated. This means that when you print the map at 1:10,000 then the printed document is 1:10,000 and not some other random scale.  If the scale is incorrect – visit the [OCAD pages on the streetO web site](http://ocad.orienteering.com.au/Adjusting%20Map%20Scales%20in%20OCAD%208.htm) for a detailed explanation of how to fix this. |
| **An alternative approach** | **:** | *What if I’m not using an OCAD map?*  In days gone by, we simply measured the distance between points on either side of the map and then repeated this measurement using a Melways directory or Google Maps.  If the distance provided by the map/scale bar matched that given by the Melways, you’re OK. If not, you need to be aware of this when (a) printing and (b) setting course lengths |

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| **Exercise 3 – Drawing OCAD Symbols**  In all cases:   * Select a symbol from the toolbox * Select the required drawing mode   For example if you were drawing roads, you would select a road symbol and then select the STRAIGHT LINE drawing mode.  Note that line and area symbols allow you to specify a preferred drawing mode; if you select these symbols, the drawing mode will be selected for you automatically. You can of course change this, if you wish.  Strangely, even POINT SYMBOLS require you to choose a drawing mode. Let’s look at these now. |

## Point Symbols

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| **Purpose** | **:** | To understand what POINT SYMBOLS are  To place POINT SYMBOLS on the map  To move a POINT SYMBOL |
| **Pre-requisites** | **:** | A file or map is open |
| **What to Do** | **:** | **The START TRIANGLE is a Point Symbol; place a start triangle**   * Select a point symbol; click on the START triangle symbol. * Select STRAIGHT LINE drawing mode (I have NO idea why OCAD needs a drawing mode for a point symbol). * Move the mouse onto the drawing area – ie the map. Note that it has changed to a set of cross-hairs. * Position the cross-hairs where required and click. * The start triangle is placed at this location.   **Now, MOVE the Start Triangle**   * Using the EDIT OBJECT pointer (the black one), select the required symbol; a handle appears in or on the object (the position of the pull handle varies from object to object). * Click and hold on the pull handle. * Drag the object to its new location; let go and it stays there. |
| **Exercise** | **:** | Repeat the Above Process for other Point Symbols in the toolbox  Place 20 controls on your map. |

## Line Symbols

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| **Purpose** | **:** | To understand what LINE SYMBOLS are- and which symbols are LINE SYMBOLS  To place LINE SYMBOLS on the map  To change the shape of a LINE Symbol |
| **Pre-requisites** | **:** | A file or map is open |
| **What to Do** | **:** | **Drawing straight lines**   * Find the symbol for uncrossable fence in the symbol table – and select this by clicking on it. * Select STRAIGHT LINE drawing mode – by clicking on * Position the cross-hairs where required * Click and hold – to drag a straight line to the next location; to finish just click again and let go. * To draw a second segment of the same line/fence, just click-hold again and drag to the next point. Add 2-3 more segments.   **Changing the Shape of the Line**   * Select the Edit Point pointer (the outline pointer) * Select the line that you’ve just drawn * The corner points appear as little squares – pull handles * Click on one pull handle and drag it to a new location – then let go. |
| **Exercise** | **:** | Try drawing roads, tracks, fences and railway lines.  Note that you can actually draw curves by using lots of tiny straight line segments. Lots of our street maps are drawn this way – because the people concerned never got the hang of drawing curved lines. |
| **Try This** |  | **Drawing Curved Lines**  A little more difficult to understand and possibly not required for simple course-setting…but you’re here to learn, so let’s give it a try.   * Select a line symbol – e.g. river or watercourse * Select Curve Mode by clicking on * Position the cross-hairs where you want to start and drag a line in the direction you want the curve to go. Click and drag – the idea is to click and drag a series of tangents that will define the line required; to finish just click and drag again in the direction that the line is finishing – then let go. * Click somewhere in that direction and drag the line in a new direction * Do this a few more times until you start to get the hang of it. |
| **Exercise** | **:** | Try drawing your name using the curve tool.  Drawing contours is really easy – trace on of the contours with a line symbol of another colour. |

## Area Symbols

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| **Purpose** | **:** | To understand what AREA SYMBOLS are- and which symbols are AREA SYMBOLS  To place AREA SYMBOLS on the map  To change the shape of an AREA Symbol |
| **Pre-requisites** | **:** | A file or map is open |
| **What to Do** | **:** | You can draw shapes or areas using any of the line drawing modes. All you have to do is complete the shape by joining the end of your line to the beginning:   * Use straight lines mode to trace out paved areas * Use rectangular mode for buildings and tennis courts * Use elliptical mode for football ovals * Use curve mode for vegetation or lakes |
| **Exercise** | **:** | Try drawing each of the above using the appropriate drawing mode  Select an area symbol with the Edit Point cursor; try moving some of the pull handles. |

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| **Exercise 4 – Adding Text Objects to your Map**  Lots of people still print out text from Microsoft Word, cut it out and stick it on their map. You really don’t need to do this – everything you need to do to produce a good map is available in OCAD.  The diagram below shows the attributes associated with a text object: | | | |
|  | | | As you can see, each text object has a specific font, colour and size.  Once you place a text object on your map, you can only change these attributes by changing the attributes of the parent object (ie the symbol that was used to create it). The problem is that this changes all text objects that were created with this symbol.  **Advanced Note:**  OCAD allows you to create your own symbols. The easiest way to do this is to pick one that’s close, duplicate it and then modify its attributes to what you need.  You can then select the object on the map, select the new symbol in the toolbox and use Change Symbol to switch the selected object to the new one. |
| **Purpose** | **:** | Add TEXT objects to your map | |
| **Pre-requisites** | **:** | A file or map is open | |
| **What to Do** | **:** | **ADDING Text**  Select a TEXT symbol from the toolbox.  Select straight line drawing mode (I’ve never understood why OCAD doesn’t do this automatically).  Move the cursor to where you want the text to be and click.  Type your text.  **MOVING Text**  Select the Edit Object cursor (the black one) from the toolbar  Select the Text Object to be moved; the pull handle for text is usually on the bottom left of the text object  Click on the pull handle and drag the text to a new location | |
| **Exercise** | **:** | Add Control Descriptions to your map  Use another / brighter / bigger / bolder font to add a warning or title to your map  Use a tiny font to add your name as Course Setter.  Note that Control Numbers are text objects; add control numbers to your map and – if necessary - move them to an area where they don’t cover stuff up and they can be seen clearly.  **Bonus Points** – make the control numbers clearer by playing around with the attributes of the Text Object. (Hint: Right-click on this symbol in the toolbox and select Edit…) | |

# Tips and Hints

This section provides some additional topics that may be of value to you in your course setting endeavours.

## Commonly Used Procedures

### Making Symbols Bigger/Smaller

Right click on the symbol in the ToolBox and select **Enlarge/Reduce.**

### How Many Control Circles/Numbers do I have?

Right-click on the symbol in the ToolBox and choose **Select by Symbol**… A dialog box appears – choose **All objects with a selected symbol** and press **OK**. The number of these in your map is shown in the status bar in the bottom left corner.

### Checking Course lengths using OCAD

If your map is scaled correctly, you can use OCAD to measure course lengths. Just:

* Select a line symbol from the toolbox
* Select Straight Line Mode from the toolbar
* Click and drag, click and drag, click and drag to draw segments – then click to finish.
* Press the RULER button in the toolbar and the distance will be displayed.

To measure the length of an existing line – use the Black Arrow (edit object) to select the line and then click on the RULER button in the toolbar.

### Print Sample Maps – without Control Circles

Easy! Just right-click on the control circle and select HIDE – the control circles will no longer be visible on the map. Then do the same for the control number and press Ctrl-P to bring up the PRINT Dialog.

### Export the map to PDF (to take to OfficeWorks)

Pressing File>Export brings up the export dialogue box. In the list box at the top of this dialogue, select PDF and press OK:

* If a warning appears that says “Map contains hidden symbols” – be careful….there are hidden symbols on your map. Just make sure that this is what you want. If so, press **OK**.
* A Save-File Dialogue appears – save your PDF file in the same directory as your map.
* Always open the PDF in Adobe Reader or similar and verify it’s what you want. Do this before taking it to OfficeWorks.

### Export the Map to JPG (to post on Facebook)

The StreetO Wild Bunch on Facebook provides post-event entertainment and discussion for many street orienteers. An exported map from the course setter will be much better quality than a scrunched/scanned map from a participant.

The EXPORT process is much the same – set the Export Resolution to 150 dpi to get a good image that’s not too big; this can then be posted in Facebook by going to the SOWB Group and selecting **Add Photo or Video**.

## Common Mistakes and How to Avoid Them

### Map Contrast is Poor

This is the most common problem with streetO maps. The causes are several:

* Area fills – particularly light-grey – look great on the screen and OK on the laser printer – but do not copy well. Photocopies appear washed out and are difficult to see parks/laneways etc
* People duplicate on a photocopier rather than print originals. Most photocopiers are nothing more than a laser print engine with a scanner attached. The cost of printing superb originals is identical to the cost of producing crappy photocopies. Ie if you use work or your own laser printer – print originals.
* **If going to OfficeWorks** – take a PDF copy of your map and ask them to print it in black and white. Perfect copies on heavier paper for just 10 cents per map. Keep the receipt and drop it in the cash tin at the event to reimburse yourself for expenses.
* **If you must use a photocopier** – do a trial print first. If it comes out poorly try to adjust the light/dark settings for the copier. You may need to produce another original with a darker background for best results.

### Control Circles are Hard to See

You may have been given a map where the start triangle, control circles and control numbers were purple. When printed in black and white, all of these are printed as grey. Grey control circles on a grey or grayish background can be hard to see.

The solution – edit these controls by right-clicking on each of them in the toolbox. Change the colour of each to BLACK.

### Control Circles do not have a Dot in the Centre

Edit the Control Circle symbol in the toolbox; click on the black/filled-in circle and adjust the diameter to 1 mm. Then, select straight line drawing mode and click in the centre of the circle.  
  
Don’t know where the centre is? Fix this by turning on GRID LINES (dashed grid on the upper toolbar).

### Accidentally Moving Map detail

I loaned one of my maps to a local school to set the course; without realising it, they selected all roads and inadvertently bumped them 1-2 mm to the right. The resulting map (of Smith’s dell) confused a lot of people – did those streets join up or didn’t they?

**Avoidance:**

* Be careful when updating the map; if you think you’ve bumped something – press Control Z to undo the last operation. The undo/redo buttons -  - allow you to step back and forward through recent changes.
* OCAD provides the ability to protect or hide symbols on the map; the safest way to update a map is to:
  + Right click in the symbol table and **SELECT ALL**
  + Right-click again and select **PROTECT**
  + The right-click on just the symbols you want to change and select **NORMAL** (or press F2)

## Useful Links

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| <http://www.ocad.com/en/support/learn-video/> | A series of short how-to videos that cover commonly used OCAD functions |
| <http://ocad.orienteering.com.au/Adjusting%20Map%20Scales%20in%20OCAD%208.htm> | A nascent (stillborn) web site that was going to provide tips and hints to Melbourne streetO people. |
| <http://ocad.orienteering.com.au/Partial%20Map.htm> | Using part of a map (normally not an issue – we try to give you a map that is specific to the course you will set |
| <http://ocad.orienteering.com.au/Adjusting%20Map%20Scales%20in%20OCAD%208.htm> | Adjusting the map scale in OCAD; a more detailed explanation of the scale adjustment process |
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## Where to get StreetO Maps

In general, ask your club streetO Coordinator and s/he will either provide the map or arrange for one to be sent to you.

Within NE, Geoff Hudson and Ian Stirling can generally provide Eastern suburbs maps.

## Drawing a New Map?

A lot of the information you will need is available on the Internet:

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| Aerial Photography | Ask around; high-res imagery is available from a number of sources. |
| Contours | The Build Map function at <http://services.land.vic.gov.au/maps/interactive.jsp> provides access to Victorian contours.  Lots of orienteers have access to contour information - ask around. |
| Base Maps | We used to scan an old Melways page – if you don’t want to tear yours up talk to any streetO coordinator – the group gets so many Melways donated that we all have heaps of old copies.  More recently, we use council GIS data. This data is georeferenced and includes very accurate road centres and property boundaries – really good for mapping parks. |
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