# <u>Creating Figure Ground Maps in ArcMap 10.x: Basic procedures to</u> <u>download, open, manipulate and print spatial data</u>

These procedures outline:

- A. Retrieving Property Data
- B. Uncompressing the Downloaded Files
- C. Opening Shapefiles or DWG files in ArcMap 10.x
- D. Setting the Appropriate Projection
- E. Measuring Distances
- F. Preparing the Layout
- G. Creating Figure Ground maps in ArcMap 10.x
- H. Convert to PDF Additional Data Contact

In order to use these instructions, you must have ArcMap 10.x. In this example, we are going to use shape files depicting a combination of topography and assessed parcel boundaries for the City of Toronto that have been downloaded from the Ryerson University Library website.

#### A. Retrieving Property Data from the Ryerson University Website

The files that will be used in this example are all found on Ryerson University's Geospatial Map and Data Centre website. We find a combination of topography and assessed parcel boundaries for the City of Toronto including: Etobicoke, North York, Scarborough, and Toronto (Downtown) for the year 2010. City map layers include: Street and Property Boundary Lines, Building Lines, Garages, Railway Tracks, City Paths and Utilities infrastructure (hydro-poles, hydrants, traffic lights, and general light poles).

 Browse to the Ryerson University Library website (<u>www.library.ryerson.ca</u>) and go to **Collections**. Browse through the drop down menu and *click* **Map & Data Resources**. This will take you to the Geospatial, Map & Data Centre page.



2. *a. Click* on **Geospatial Resources**. This will take you to the Geospatial Resources page where you can read about and link to tutorials such as this one that give step by step procedures of how to use and manipulate various spatial data.



- *b. Click* on **Toronto Resources**. This will take you to the Geospatial Resources that focus on the city of Toronto
- c. Click on GIS/AutoCad

## 3. a. Click on Property Data Maps (2010 Update)



Note: do not click on the HERE link unless you want a PDF version

b. Next *click*: *Link to* Index Map



- 4. a. Use the Zoom 🖾 tool on the right to zoom in to the desired site.
  - b. Use the Information 1 tool do download tile.
  - c. In this example we will be downloading site 51H11 (Ryerson Campus).



- 5. You will then be asked for your Matrix user name and password (the same as your Ryerson e-mail and password), fill this information out then *click* Login.
  - a. Read the City of Toronto End User License Agreement then *click* I Agree.
  - b. In the view data page *click* <u>51H-11.zip</u>.
- 6. Once the file is *clicked*, you will be prompted to Open or Save each file.

# **B.** Uncompressing the Downloaded Files

As you may have noticed while downloading the figure ground map, the extension for the file was .**zip**. This is a Zip file or compressed file. Files are stored in this format on the server to save space. The following section outlines the procedure for uncompressing these files. The extraction process varies depending on whether or not WinZip is loaded on your computer. Select one of the following options:

#### With WinZip

- 1. **Save** the file to an appropriate location on your hard drive.
- 2. Browse to the location of the downloaded file.
- 3. *Right click* the desired file.
- 4. Scroll down to WinZip then *click* Extract to folder...

### Without WinZip

- 1. **Open** the file
- 2. **Drag** the desired files into an appropriate location on your hard drive

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## C. Opening Shapefiles or DWG files in ArcMap 10.x

ArcMap 10.x is software that allows the user to view, manipulate or create spatial data. ArcMap is part of the ArcGIS software package created by ESRI. This section will demonstrate how to open files in ArcMap 10.x. 1. The first step is to open ArcMap. *Double-Click* on the ArcMap 10.x icon or *Select* Start > Programs > ArcGIS > ArcMap. ArcMap should automatically

prompt the option to Add Data. Otherwise, *Click* the Add Data button 📉.

 In the Add data window, browse to the shape file that you wish to add (in this example it is GTA\_county.shp).

> **Note:** If there were more than one file in this folder, you can hold down the **CTRL** or **Shift** key to *select* multiple files and open them at the same time.

Look in:	GIS Files	• 1	🟠 🗓	a   🏛	• 🛯 🖴 🛛	🖆 🛈 🚳
₩51h-11.dv	ng.					
Name:	51h-11.dwg					Add
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R

3. Click Add.

Note: do Not *double click* the DWG file.

Your data view (main viewing window) should show a file similar to the one below.



#### Setting the Appropriate Projection D.

A map projection is any method used in cartography (mapmaking) to portray the surface of the earth or a portion of the earth on a flat surface. Essentially, flat maps could not exist without map projections. Distortions of conformality, distance, direction, scale, or area always result from this process. The City of Toronto is generally viewed using the UTM NAD (Universal Transverse Mercator North American Datum) 1983 zone 17 N projection. The files used in the procedure above were automatically opened in ArcMap 10.x in the unprojected MTM 3Degree. The following steps will outline how to correctly project the data.

View Bookmarks Insert Selection

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1. From the main menu select View > Data Frame Properties.

🛃 Data View 

Layout View

Graphs

Reports Scroll Bars ~ ~ Status Bar



II Pause Drawing F9 🗿 Pause Labeling 2. Select the **Coordinate** System tab.

Data Frame Properties... C Refresh

3. In the Select a coordinate system window click Predefined > Projected Coordinate Systems > UTM > NAD 1983 > NAD 1983 UTM Zone 17N

4. Click OK



Ε. **Measuring Distances** 

1. Once the projection has been set you can proceed to measure distances using the Measure tool 🚞.

To measure a d	Distance 🕨	Kilometers
To measure an a draw a polygon. To measure a fe then click a featu	Area	<ul> <li>Meters</li> <li>Decimeters</li> <li>Centimeters</li> <li>Millimeters</li> <li>Miles</li> <li>Nautical Miles</li> <li>Yards</li> <li>Feet</li> <li>Inches</li> </ul>

2. The default may be set to kilometers so if you want to change the units, use the drop down arrow at the top of the **Measure** window then *click* **Distance**.

Use the zoom tool 🖭 to	
zoom into the desired	
location. Let us zoom into the	
Ryerson campus area:	

F.

Compared other to GIS software, creating a layout in ArcMap is a simple task. The following section describes how to create a basic layout including the fundamental map elements.

> 1. To change the View from **Data View** to



Layout View. Click View from the main menu and Select Layout View from the drop down menu.



2. Note: If your layout view is already in **portrait** view then skip to **step 4**. The figure ground map for Ryerson Campus is more appropriate if displayed on a portrait image. From the main menu, *click* **File** then *click* **Page and Print Setup**.

File	Edit View	Bookmarks	Inse
	New	Ctrl+	١N
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21	Print Preview.		
8	Print		
<b>\$</b> 7	Create Map Pa	ackage	
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~	Map Documen	t Properties	
	Exit	Alt+I	F4

In the **Page and Print Setup** window *click on* the **Portrait** radio button and *check on* the **Scale Map Elements** ... button. *Uncheck* the **Use Printer Paper Settings** box. Then *click* **OK**.

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You should notice that your layout view has changed to portrait.

3. a. Arrange appropriately by dragging the map. Stretch the image using the small blue squares so that it covers your layout (leave a little space for margins).



- b. Set Scale by entering an appropriate scale in the scale input box. Using trial and error, the scale used in this example came to 1:2300
- c. Finally use the **Pan** 🖄 tool to centre image.



4. *Click* **Insert** from the main menu. In the ensuing drop down menu, you can add a Title, Legend, North Arrow, and Scale Bar. Once inserted into the layout view, each item can be manipulated by *Double-Clicking* on it. Examples are listed below:



5. <u>Title</u> – *Click* **Insert** from the main menu. Select **Title**. In the **Text** textbox type in the title *Ryerson Campus Ground Map* then push **Enter** on your keyboard. *Double-Click* the Title to open the **Properties** window.

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*Click* Change Symbol. In the Symbol Selector window, you can change the properties of the text. *Click* the bolded **B** in order to make the text bold. Change the font size to 22. *Click* OK, then *click* OK again.

6. <u>North Arrow</u> - *Click* **Insert** from the main menu. Select **North Arrow**. In the **North Arrow Selector** window, chose an appropriate north arrow then *click* **OK**. *Click* and *drag* the north arrow from the centre of the layout and move it to the bottom left corner.



 a. Scale Bar - Click Insert from the main menu. Select Scale Bar. Click Properties to open the Scale Bar window. In the Division Units textbox, select kilometers. Click OK. Click OK. Click and drag the scale bar from the centre of the layout and move it to an appropriate position below the map.

		Scale Bar 2
4 × 11 .	. 12 . 13 . 14	
Scale Bar Selector	? 🔀	Scale and Units Numbers and Marks Format
0 50 100 200 Miles	Preview	Scale Division value: Auto Number of divisions: 2
0 50 100 200 Miles		Number of subdivisions: 4
0 50 100 200 Miles Scale Line 3		When resizing Adjust division value
		Units Division Units: Kinmeters
Stepped Scale Line	Scale to fit page	Label Position:
Alternating Scale Bar 1	Properties	Label: Kilometers Symbol
0 50 100 200 300 400	More <u>Styles</u>	Gap: 3 pt
Alternating Scale Bar 2	Save     Reset     OK     Cancel	OK Cancel Apply

b. <u>Scale Text</u> – *Click* Insert from the main menu. Select Scale Text. *Click* Properties to open the Scale Text window. In the Page Units textbox, select centimeters. And in the Map Units textbox, select kilometers. *Click* OK. *Click* OK. *Click* and *drag* the scale text from the centre of the layout and move it to an appropriate position below the map.

-	icale Text Selector	? 🗙	Scale Text	?×
	1:1,000,000 Absolute Scale 1 cm = 10 km Centimeters = Kilometers	Preview 1 centimeter = 6.21 miles	Scale Text Format Preview 1 centimeter = 10 kilometers Style	
	1 centimeter = 10,000 meters Centimeters = Meters		<ul> <li>Absolute (example: 1:24,000)</li> <li>Relative (example: 1 inch equals 200 miles)</li> </ul>	
	1 inch = 83,333 feet		Page Units: Label: Centimeters V Centimeter	
	1 in = 16 miles Inches = Miles	Scale to fit page	Map Units: Label: Kilometers v kilometers	
	1 inch = 27,778 yards Inches = Yards	Properties More <u>S</u> tyles	Number Format	
	1 page unit = 0.22 map units Relative Scale	Save Reset		
			OK Cancel	Apply

Note the scale bar and scale text will change automatically as you zoom in and out



# 2. a. Right click Polygon > Properties > Drawing Layers



b. Uncheck everything except for:

- BUILDING\_LINE\_PDM
- BUILDING\_LINE\_UC\_PDM
- GARAGE\_PDM
- HISTORICAL\_SITE\_PDM
- c. Click OK

Note: *BUILDING\_LINE\_UC\_PDM* are buildings that were under construction when this data was collected. These buildings may not be complete.

3. a. In order to create a Figure Ground map, the buildings must be shaded black and open space left white). *Click* the '+' button and *double click* the appropriate square to the LEFT of the **Continuous** feature.



b. In the Symbol Selector window, *remove* outline colour by *changing* the outline width to 0.00 and make the fill colour Black. The following features should be filled in black and with no outlines:

- Continuous 5,0
- Continuous 1,0
- Continuous 4,0
- DGN Style 3,5,0
- c. Click OK.

Note: these numbers may vary from map to map.



Your final map should look something like this:



# H. Convert to PDF

Alternatively, you may opt to export your map and save it for later use rather than printing your map. ArcMap offers a variety of file types that you can save your map as. The following procedure will show you how to export your map, using one of the various file types.

1. Once you have completed Steps 1 through 8 above or you are satisfied with your map, you may begin the export procedure. *Click* File from the main menu and *Select* Export Map.

File	Edit View Bookmarks	Insert Selec
	New	Ctrl+N
eð	Open	Ctrl+O
	Save	Ctrl+S
	Save As	
8	Save A Copy	
	Add Data	•
	Sign In	
88	ArcGIS Online	
3	Page and Print Setup	
	Print Preview	
8	Print	
<b>\$</b> 7	Create Map Package	
	Export Map	
ď	Map Document Properties	
	1 C:\D\GettingStartedExa	ample.mxd
	Exit	Alt+F4

2. The **Export Map** window will open. In the **Save In** window, *browse* to the location that you wish to save your map. In the **File Name** text box, chose an appropriate name for your map. In the **Save as Type** textbox *select* the format that you would like to save your map in.

Country					
Save in:	C Arcuis		× .	G 🖻 🖻 🛄	· 🖭
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3. Click Save.

**Note**: to convert to an AI (Illustrator) file *click* **File > Export Map** Give the file an appropriate name. In the **Save as type** select *.AI* this time.

#### Additional Data: Retrieving Zoning By-laws

Click: <u>http://www.toronto.ca/legdocs/bylaws/2010/law1156-Schedule-A.htm</u>

## Contact MADAR Staff

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