

Standard Operating Procedures for Creating Grids and Graticules with ArcMap 10.3

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PURPOSE

Grids and graticules provide essential reference for a geologic map, and while it is simple to add one in ArcMap the default settings rarely provide the appropriate layout. The guidance provided in this SOP is based on Federal Geographic Data Committee (FGDC) symbology standards as well as previous USGS geologic map publications. Authors should choose a style that fits the scale and content of their mapping area, and ensure grids or graticules are easy to read without being obstructive.

Required systems/software for this SOP

ArcGIS Desktop 10.0 or higher

Basic ArcGIS features used in this SOP

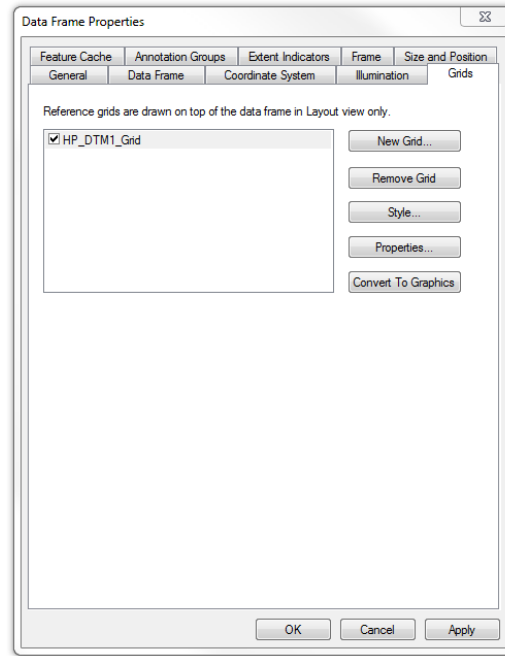
[Going between data and layout views](#)

[Page layouts](#)

WALK-THROUGH

1) To add a reference grid to a map the project must be in Layout view; it will not be visible in Data view. It is important to set up the map size and orientation to fit the map scale because resetting the layout will delete many map elements saved in the map document.

2) In Table of Contents window, right-click *Data Frame* (default name is Layers) > “Properties...” > Grids tab – this is where all grids are managed. Select “New Grid...” to open the Grid and Graticule Wizard dialog box.



The Data Frame Properties dialog box.

3) Select the type of reference you wish to create. Graticules use medians and parallels to partition the map while grids use map units – graticules are the standard practice.



The Grid and Graticule Wizard dialog box – it is helpful to save each with a unique name. The title of this dialog box will change as you progress through the wizard depending on what step you are on.

4) The second step in the wizard is to define the basic layout of the graticule, both the interval of lines and appearance of them. All of these parameters can be changed after it is created so best-guess estimates are fine. For maps with lots of content, tick marks may be preferred to lines. The FGDC standard symbology is a 0.25 millimeter black line for the Graticule and labels style.



It is common practice to use the same intervals for parallels and meridians, except in polar stereographic projections.

5) Next, the axes and label properties are set. It is recommended to match tick line styles to the previous step. Again, the style and number of ticks per major division can be adjusted later.



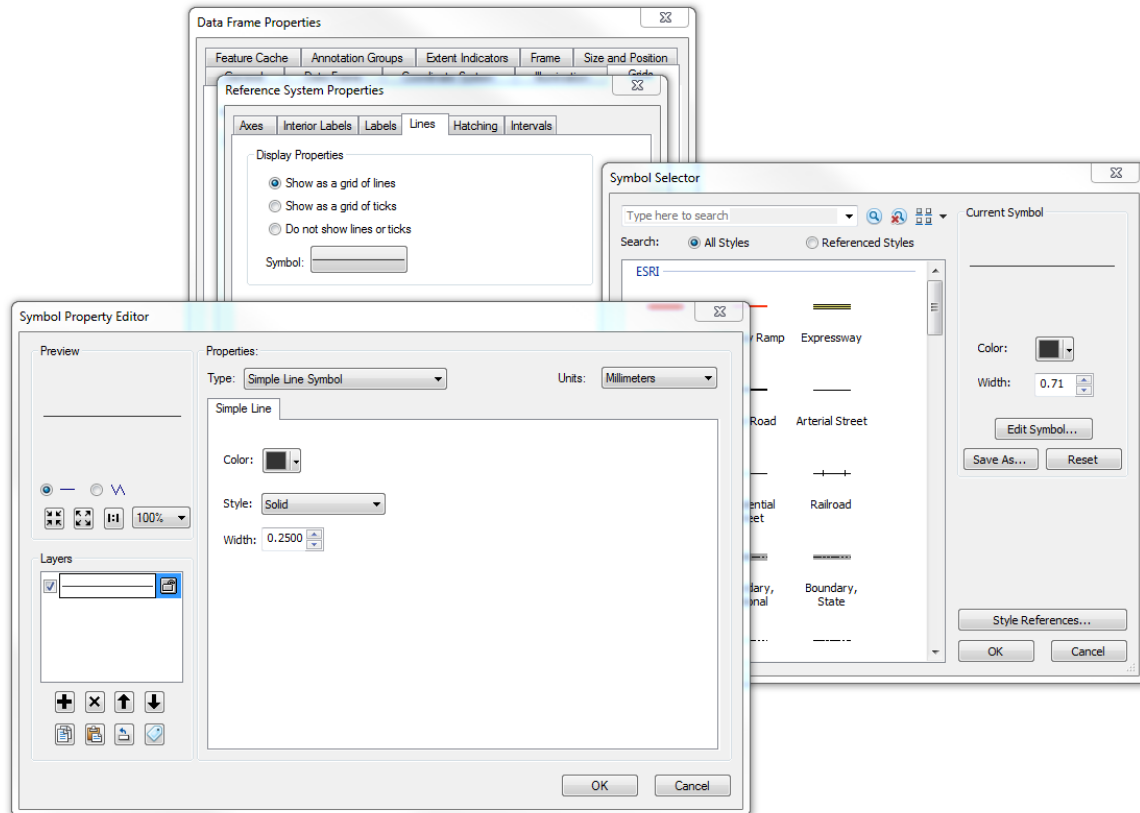
Axes and label properties.

6) The final step is to set the border style and decide whether to save the graticule output format as a static graphic or as a dynamic map element (graphics are only recommended if the graticule has been finalized).



Border style and graticule properties – the output format for the graticule is the only thing that cannot be changed later.

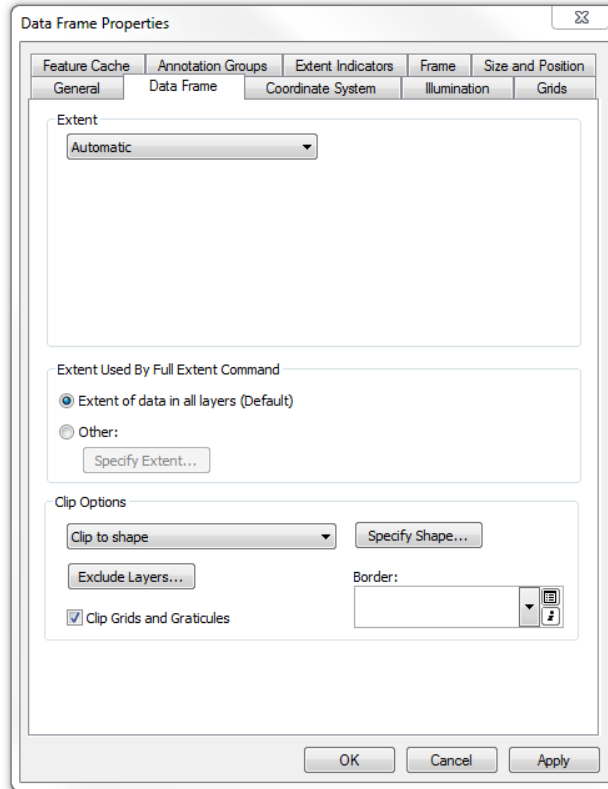
7) Once the graticule is created it can be modified through the data frame Properties window. Map symbols used in the Axes, Labels, and Hatching tabs can be changed by clicking the “Symbol:” button > “Edit Symbol...” to open the Symbol Property Editor dialog box.



The Symbol Property Editor dialog box allows advanced customization of map elements.

NOTE: ArcMap uses points to define symbol size based on reference scale, but units can be changed to millimeters in the Symbol Property Editor dialog box and Arc will automatically convert it to points. For example, at 1:24,000-scale a 0.25 millimeter wide line is equivalent to 0.71 points.

8) To clip the graticule (and other layers) to a map boundary polygon navigate to the Data Frame tab in the Data Frame Properties dialog box. Under “Clip Options” select “Clip to shape” > “Specify Shape...” > “Outline of Features” radio button > your map boundary under “Layer:” > OK. Then ensure the “Clip Grids and Graticules” box is checked.



Grids, graticules, and other layers can be clipped to a map boundary polygon or to a specified extent.

NOTE: This should only be enabled when ready to export or print the map since clipping to shape significantly reduces drawing time in Data view, especially when streaming.

Please direct any questions, comments or improvements to:

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