

How to import PDF or Adobe Illustrator vector maps or map layers into ArcGIS 10.x

What follows below are relatively simple instructions for importing vector line work (polygons, points and lines) from PDF or AI maps. I have not explored this task in detail and the results of the steps below are relatively crude – colors, line weights, symbology, and text are not preserved. There may be better ways to do this...

- 1) Bezier curves need to be replaced by line segments. There is a tool for this in the AI “Object” menu: Path>Simplify>. Set the curve precision to 80% or more (experiment to see how this changes the result; a value of 100% will produce the highest fidelity result but at the expense of a high number of vertices and line segments), angle threshold to 0 and CHECK ON the “Straight Lines” Option. If the PDF or AI file was made in Arc and then converted to PDF then this step is unnecessary – there won’t be any Bezier curves.
- 2) Clean up the map by removing or turning off layers that contain text, symbols, and other ancillary stuff that does not import well. You can expect lines, points and polygons to import, but not much else.
- 3) File>Export to AutoCAD Interchange format (.dxf) with the following parameter:
 - a. AutoCad Version: 2004/2005/2006
 - b. Scale: (This is the most important parameter of the export routine) setting this to the R.F. scale of the map usually works, e.g. 1 centimeter = 24,000 units for a 1:24,000 scale map. You may have to experiment. If lines or points are not showing up in Arc, then enter a larger number here or increase the line weights and point sizes in Illustrator before exporting.
 - c. Number of Colors&File Format: only relevant if import raster layers, which I don’t attempt, so accept defaults. Raster layers can be directly imported into Arc later instead.
 - d. Options: Max. Editability is the only one I check on. Export Selected Art Only can be used if only a subset of the map is to be exported.

In Arc:

Arc will import DXF files directly but they won’t be georeferenced and will contain some extra empty layers, which can be deleted. Use the georeferencing toolbar like you would for a raster layer. This is a vector layer, however, so you only get two tie points. It is thus important to have your Data Frame and referencing data set to the same Spatial Reference as the imported AI or PDF map (discover this from the metadata or map itself before beginning this step!). Once the tie points are established, “Update” to save the result. Finally, export the DXF layers of interest to a geodatabase feature class or shapefile by right-clicking on the layer name in the ArcMap Table of Contents, Data>Export Data.

Since writing this tip, I've discovered a better way to import and georeference DXF files:

- 1) Use the “CAD to Geodatabase” tool to import the DXF file created by the process above
- 2) Add the Geodatabase to an ArcMap
- 3) Start Editing the Geodatabase feature classes
- 4) Open the Spatial Adjustment toolbar, choose all of the feature classes when choosing the “Adjustment layers”, then create displacement links, as one would do with the Georeferencing Toolbar. An Affine transformation works well, requiring just 4 displacement links.
- 5) Save your edits

The feature classes should now be properly located and can be further edited.