

Uncovering CAD Data Issues in ArcMap— A Quick Look

Although datasets, such as geodatabases and coverages, provide complex data suitable for geographic analysis and sophisticated map display, simpler feature data—such as data from CAD drawings—can satisfy many uses, draws rapidly, and is often readily available.

However, CAD data is typically created in an environment that does not enforce spatial constraints, and this can cause problems for GIS users. When using CAD data in a GIS, it is advisable to check for data quality issues such as gaps or overshoots. Examining the two CAD drawings used in the tutorial “Modeling CAD Data in ArcGIS” will illustrate common data quality issues encountered when using CAD data in GIS.

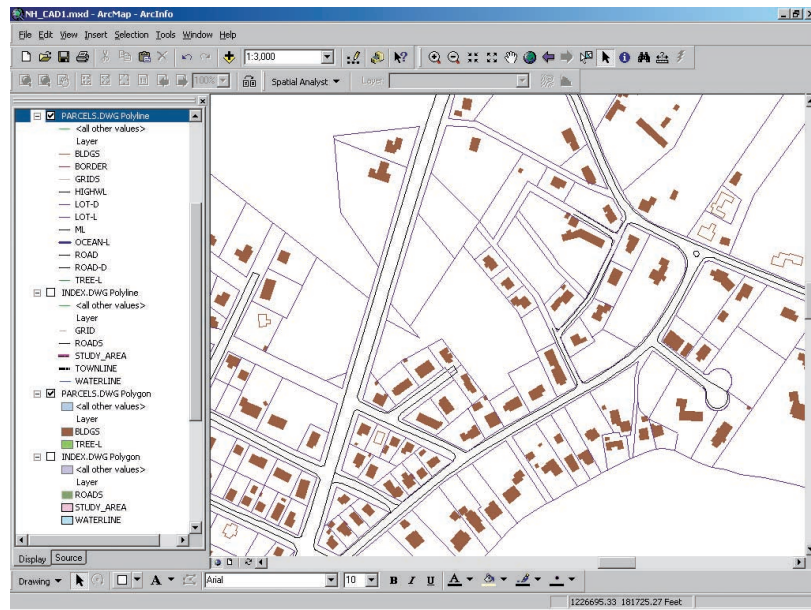
1. Right-click on PARCELS.DWG Polyline, choose Properties > Drawing Layers and turn off all the layers by holding down the CONTROL button and left-clicking on any checked layer.
2. Turn on the Blds, Road, Road-D, and Lot-L layers, and click OK.
3. Right-click on PARCELS.DWG Polygon, and choose Properties. Click on the Drawing Layers tab and turn on the same layers.
4. Zoom in to a scale of 1:4,000, and pan around to inspect the data.

Look for buildings that are shown by outline only. Empty building features were not generated as polygons in the original CAD drawing. Approximately 750 of the more than 800 buildings were properly created as CAD polygons. Inspect the Lot-D polygons. (Actually this is a trick question—there are no Lot-D polygons!) These elements, very useful as polygons in a GIS, were not considered by the creator of this CAD layer. Notice that lot polylines do not always close and that some lines cross into regions mapped as roads.

CAD parcel maps often use Edge of Pavement (EOP) layers to define edges of transportation features. While these files are great for showing the footprint of a road, they are not helpful for classic GIS tasks such as routing and geocoding. Traditional centerline vector files are best suited for these tasks.

Examine the roads. These roads represent EOP features, not centerlines. Using an EOP layer, it is very difficult to calculate the lengths of roads so that emergency evacuation routes can be created or street addresses geocoded. Notice how road lines form continuous outlines around subdivision blocks. Look for the road lines that do not. Several cul-de-sac roads actually intersect arterials without opening into them.

These are all spatial data issues that could be resolved on the CAD side, using an iterative process, prior to opening PARCELS.DWG in ArcMap. It is also possible to export a CAD



Check CAD files for items that might be a problem when the data is brought into GIS. These items can include improperly created polygons, overshoots, or gaps.

drawing as a shapefile and edit it in GIS. For a sophisticated application, CAD data could be converted into and edited in a geodatabase. Using ArcSDE, CAD drawings can be edited using

both CAD and GIS software. CAD drawings are a very important and helpful source of GIS information, but remember to carefully inspect all drawings to identify and quantify data issues. **AU**