Georeferencing CAD Datasets

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What is CAD Georeferencing?

• The process of assigning a coordinate system and applying a transformation to a CAD dataset

• Not required to use CAD datasets in ArcGIS, but highly recommended as a best practice

• Not all CAD datasets require these steps
Agenda

- Demo: Assigning coordinate systems to CAD Datasets
- Demo: Repositioning CAD Datasets
- Overview of Georeferencing CAD Datasets
- Summary
Assigning Coordinate Systems to CAD Datasets
Coordinate Systems - Overview

- CAD Datasets with defined Coordinate Systems reproject on-the-fly to align with other map layers

- Enables CAD Dataset to be used for spatial overlays and mapping
Assigning Coordinate Systems

- Defined at the CAD Dataset level
- Catalog window’s Spatial Reference Properties dialog
Universal Projection and World Files

- **Universal Projection File**
  - ESRI_CAD.PRJ
  - Applies same coordinate system to all CAD files in a workspace

- **Universal World File**
  - ESRI_CAD.WLD
  - Applies identical transformation to all CAD files in a workspace
  - Useful for set of tiled CAD drawings
Georeferencing

- Reposition CAD datasets to align with GIS layers
  - Move, Rotate, & Scale
- Assign coordinate system for map reprojection

- NOT required for CAD drawings that are drawn in real-world coordinate location
Georeferencing Method

• Two-point Similarity transformation method
  - Move, Rotate, and Scale
  - Aspect ratio always maintained
  - Cannot skew or ‘rubber sheet’ CAD drawing

• Transformation managed by World Files
  - ArcGIS is not modifying the CAD drawing
  - World file use CAD file name prefix
  - Must also reside in same folder
Georeferencing: World Files

- File based, two point transformation for CAD data
- Uses the .wld file extension
- Simple text file containing two lines with two pairs of coordinate values:
  - <From X1, From Y1> <To X1, To Y1>
  - <From X2, From Y2> <To X2, To Y2>
Georeferencing Toolbar

- Georeferencing toolbar – use mouse pointer to move layer and create control points in map
  - Rotate, Scale, and Shift tools
Demo: Georeferencing CAD Datasets
Georeferencing Process

Define Coord System → Add to Map → Fit to Display → Add Control Points → Commit Georef
Resources

• CAD Integration Resource Center & Help System
  - Help, Videos, Samples, Downloads, Blogs

• Working with CAD Data - Instructor Led Course

• Working with CAD in ArcGIS – Live Training Seminar
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