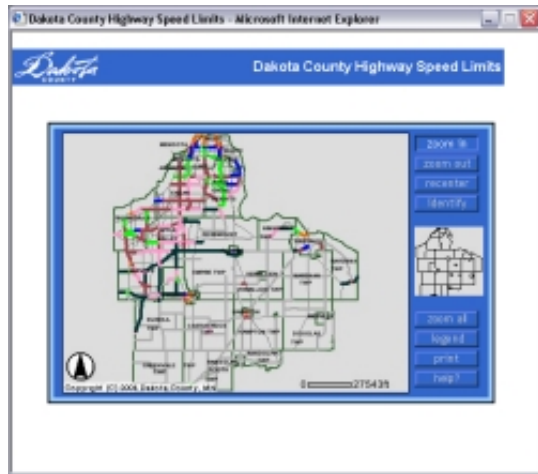


Spring 2004 Department Spotlight Dakota County Highway Speed Limits

by Kristi Sebastian - Transportation Department, Traffic Engineer

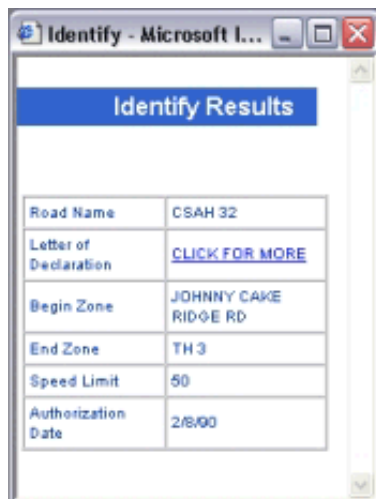
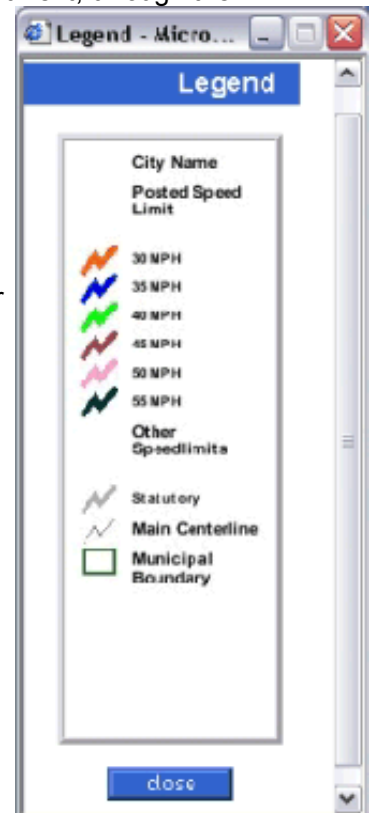
Have you ever driven down a highway and wondered why a highway was posted at a particular speed? The County, motorists, and cities all have an interest in knowing what determines the travel speed of a highway. While the County must maintain all regulatory speed limit signs, the traveling public is concerned about enforcement efforts on highways and residents inquire when they believe traffic is driving too fast on a highway segment.



Posted speeds along a highway provide important regulatory information to motorists about the roadway they are using. Speed limits for roads throughout the State of Minnesota are established by the Minnesota Department of Transportation (Mn/DOT). Per statutes, the speed on rural roadways is 55 mph and 30 mph for urban streets. Before a highway can be posted at a different speed, Mn/DOT conducts an engineering study that typically includes determining travel speed of motorists and evaluation of the area conditions. The Mn/DOT issues a letter of declaration authorizing the speed of the highway segment. The specific speed for the highway and segment limits are defined in the letter.

The Dakota County Transportation Department, through the assistance of the Office of GIS, has a Speed Zone GIS application that provides information on the County map regarding each speed zone area. The highway speed limit GIS application utilized the authorizations from Mn/DOT to list the speed limit for each County highway segment. A legend explains the color-coding for each speed. The authorization date, speed limit, and beginning and ending zones are all identifying information in the application. In addition, the application user can click on the table for the identifying information and bring up an actual copy of the speed zone declaration letter. The user can zoom into an area of the application to view specific segment information or view a larger area to get an over all idea of the speeds for a section of highway.

The Dakota County Transportation Department, through the assistance of the Office of GIS, has a



This tool is beneficial in allowing the department to quickly access speed information to answer inquiries or to check a speed limit for maintaining the signing. Cities within the County have also accessed the database to address inquiries or determine when an area was last studied. The GIS application allows the Transportation Department to easily maintain and readily access this data.

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Spring 2004 Desktop GIS Making a Map "Graphic Friendly"

by Todd Lusk

You've toiled for hours and hours to create your map. It's a masterpiece. It's beautiful and it does a great job of getting the point across, but now someone wants to put it out on a website or into a Word document. How do you make a graphic out of your map? What are the best settings to use? What are the best methods? This article will attempt to answer some of these questions and give you some pointers for converting your maps into graphics.



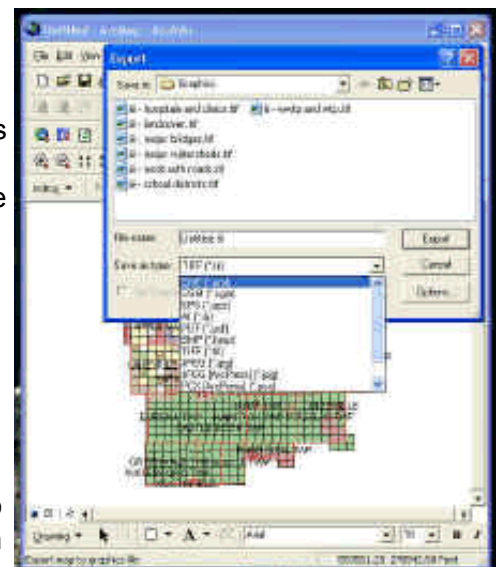
The first question you should ask yourself is, "What file format should I be using?" We create a lot of images using either the Graphics Interchange Format (GIF) or Joint Photographic Experts Group (JPEG) image formats. There are strengths and weaknesses to both. We have found that the GIF file format works best for graphic text, line drawings and maps and images containing small numbers of colors. For maps containing imagery, we think the JPEG format works best due to the ability of the conversion algorithm to compress large amounts of color information. However, these are not the only file formats

available that produce good results. We have also found the Enhanced Metafile (EMF) format to work well in Microsoft products.

There are other factors that should be considered when creating a graphic from a map. How big do you want your map to appear? Is it important to read text on the map? Does the file size of the graphic matter? While large file sizes may not matter when creating graphics for printing, a lot of large images will slow the loading speed of a web page and thus may frustrate visitors. Generally we export our maps at 200 dots per inch (dpi), then use a graphics package to resample the image to the size we want. There are several graphics packages available that will resample images and graphics. If the graphic will be used in something that will be printed at a later date, we keep the image at 200 dpi (or higher) to maintain the quality for printing. On the other hand, if we are displaying an image on the web, we resample the image all the way down to 96 dpi. Why? Because most monitors today are not capable of displaying images at a resolution of greater than 96 dpi. In addition, the extra dots only make the file size larger.

Generally, we only use ArcGIS 8.x to create our graphics, but occasionally we still use ArcView 3.2. We create layouts approximately the size of what we want the final graphic to be and use ArcMap's built-in graphics exporting capabilities to create graphics files. However, using this technique usually requires us to adjust our line widths and text sizes, depending on the final size of the layout. As a general rule, the smaller the layout the more adjustment is required. If we wish to convert our maps to GIFs, we usually export them as TIFs at 200 dpi, then convert them into GIFs in our graphics software package.

So converting a map to graphic doesn't have to be a trying event. First, ask yourself some simple questions like, "Where will the graphic be displayed?" and "What do I need to use the graphic for?" Once you answer questions like these you will be able to determine the best file types and resolutions to use when you export your map. Keep in mind too that this isn't an exact science. Experiment with things and see if you can find options and combinations that work best for you.



Spring 2004 GIS 101 Dakota County Street Maps

by Joe Sapletal

In a growing region of the metro like Dakota County, streets maps go out of date shortly after they are published. How can an organization provide a street map product that keeps up with the frequent addition of new streets while remaining inexpensive to produce? And is it possible to do all of these things in a map book format? With these questions in mind, the Dakota County Office of GIS set out to come up with a product that was easily reproduced quarterly, was provided in a format useable by many, was easy to use, and had a format that could be the basis for other products.

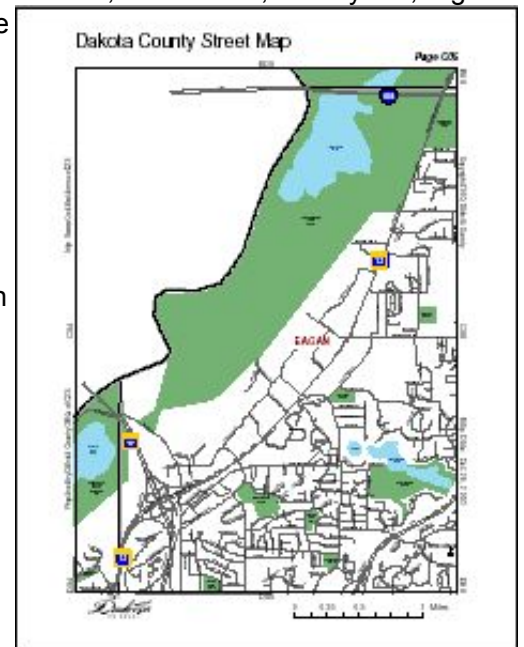
The Office of GIS decided to use a developers sample from the ESRI website called Map Book. Map Book allows the user to either manually define an area or else use a shapefile to define an area to use to create a series of maps of, while utilizing just a single layout in ArcMap. Map Book has made it easy for staff to produce a number of products that have every component in common with one another other than the area being mapped and the title on the map.

The Dakota County Street Map product is available for free in two formats on the Dakota County website by visiting the Property Info Online portion of the website under E-Government and clicking on Street Maps, or, by clicking on the following link: [Street Maps](#). Depending on the map area and format you choose you can use a web map application to download individual map tiles, download from a list of maps or download a whole set of maps.

The maps are available in two formats: a city-based 11" by 17" in black and white, and a color, 8.5" by 11", regular grid that covers all of Dakota County. The full downloadable version of the 8.5" by 11" street map comes complete with a cover page that doubles as a tile index grid for finding a map tile page, as well as a street index in the back that lists all of the streets in Dakota County and the page or pages that they can be found on in the map book. The color version also shows the parks, golf courses, schools and lakes in Dakota County.

The street data is updated by the Dakota County Office of GIS monthly, and the street maps are produced quarterly. The rest of the data used on the maps is updated as needed. By monitoring hits on the Dakota County website we have been able to see that the maps are becoming more and more popular with every update published. Because they are being published to the Dakota County website instead of through the traditional printing process, these maps can be published more frequently than the very large fold out map that was produced years ago.

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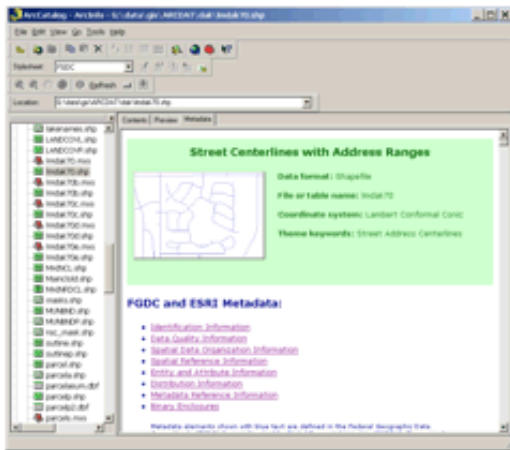


Spring 2004 Tech Talk All About Metadata

by Scott Laursen

Are you puzzled by the cryptic codes that you find in the attribute table columns of the County shapefiles? Have you ever needed to know what coordinate system your shapefile is in, but didn't know where to get the information? The answers you are looking for can be found in metadata.

According to the Federal Geographic Data Committee (FGDC), the federal government agency set up to regulate geographic data, metadata is "data about data" that describes the "content, quality, condition and other characteristics" of data. Metadata usually appears as a text or hypertext file in the form of a report. The idea behind creating metadata is to document the processes followed when creating and maintaining a shapefile and to detail the contents of a shapefile's attribute table. Future users can then use this documentation to learn critical information about a shapefile that will make it easier for them to use.



In the past, metadata has been difficult to create and access. Users frequently recorded their metadata as a few notes written in a Word document or an HTML page. There was no standardized or uniform methodology followed. It became much easier to create and access metadata when ESRI released ArcGIS 8.x, which included a metadata editor in ArcCatalog. The metadata editor automatically creates and maintains metadata files, in XML, for a given shapefile whenever the Metadata tab is selected. The metadata editor gathers some information, such as the coordinate system and creator, about a shapefile automatically. It also allows the user to manually enter other information about the shapefile, such as text descriptions of the codes used in the attribute table columns. The metadata editor offers a variety of stylesheets for the user to choose from which follow the standards set by the FGDC to govern the appearance and content of metadata

files. It is also possible for users to import and use other stylesheets as well. For example, the State of Minnesota has created its own set of standards, known as the Minnesota Geographic Metadata Guidelines (or MGMG). The MGMG are a streamlined version of the FGDC guidelines, and are used by many state agencies. Users can create metadata following these guidelines by downloading and importing the stylesheet found at the state's [Land Management Information Center](#) website. For more information on the FGDC metadata standards visit <http://www.fgdc.gov/metadata/>.

The Dakota County Office of GIS is in the process of creating detailed metadata for the County's shapefiles. When the project is complete, users will be able to view the metadata directly through ArcCatalog. Everything from attributes field names to Office of GIS contact phone numbers will be included. We recommend that users throughout the County familiarize themselves with the metadata for the shapefiles that they use, and encourage users to create their own metadata for the shapefiles they create. The metadata editor in ArcCatalog is easy to use and creating metadata at the start will save you and others time and effort in the future!