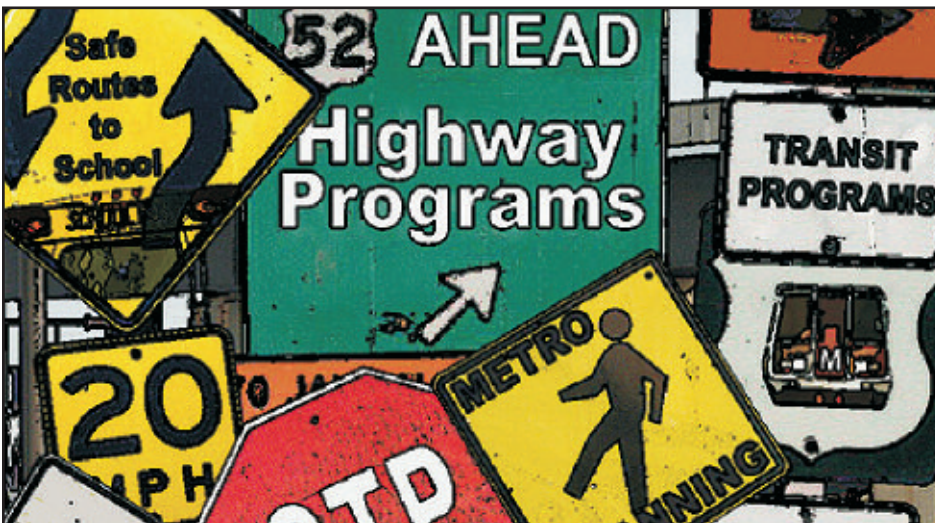# Illinois Interchange

Illinois Technology Transfer Center

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TAKING A CLOSER LOOK AT SAFETEA-LU

By Robert J. Fogel, Senior Legislative Director, FHWA

The following analysis of the Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), the nation's new transportation law, outlines those sections of the act that are important to county officials who have responsibility for the highways, bridges, bus and rail systems that make up the county transportation system.

Counties are eligible to participate in all the highway and transit programs listed. For most highway programs, a county must go through the state DOT or the local Metropolitan Planning Organization (MPO) to get approval for a project. For most of the transit programs, the funds go directly to local governments or are passed through by the state to local governments. Note that references to program funding include FY05-FY09.

For additional information, contact your regional or state FHWA or FTA offices or go to www.fta.dot.gov.

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Please pass this on to other interested parties in your office.

Illinois Department of Transportation
Bureau of Local Roads and Streets

Federal Highway Administration

FROM THE DESK OF...

The Illinois State Fair has ended; children (and teachers) are returning to school; and the NFL has begun pre-season. All of these things signal that the summer is ending. Soon, the leaves will start to change colors and stores will begin putting up Christmas decorations.

This is also the time that the annual Illinois Technology Transfer Center's Training Program is released. To better serve our customers, the training program will be available on the internet site at www.dot.il. gov/blr/training.html. The web page will be updated on a regular basis to show course status and any new courses. You will still receive a hard copy in the mail; however, it is printed in a different format than past years and will not be as current as the web site.

All students are required to follow our enrollment policies to be eligible to attend the course and receive professional development hours. Please read the course descriptions and pay special attention to the prerequisites to ensure that the course meets your qualifications and/or level of training. Many of our courses are designed as introductory; while others require advanced expertise and skills. The instructors teach to the level that the course was designed.

Over the past year, we have noticed declining enrollment in certain areas of the state. This may be a result of high gas prices or restricted travel funds. However, if you do not see training courses that you feel will benefit your local agency, please contact me. Each year we evaluate the need to add new classes and to update current course material. Feedback from our customers is critical to meeting your training needs.

While some things remain the same year to year; others do change. The IL Technology Transfer Center's organizational structure has changed along with the reorganization of the Bureau of Local Roads & Streets. The Local Policy & Procedures Unit and the Technology Transfer Unit were combined into the Local Policy & Technology Unit. This is how the units have been operating for the past couple years; therefore, you shouldn't notice much difference. Amy Neale will still handle training enrollment and newsletter oversight. Roy Williamson will still plan the training program and act as the lead flagger instructor. My time will continued to be split between Policy and Technology groups.

Kevin Burke

Kevin Burke III, P.E.
Local Policy & Technology Engineer

NEW ADDITIONS TO THE VIDEO/PUBLICATION LIBRARY

The following publications and videos have been added to the library since January 1, 2006.

L032 - A Quick Reference to High-Visibility Safety Apparel, 3M Occupational Health and Environment
       Safety Division
V187 - Gravel Road Maintenance: Meeting the Challenge, Minnesota LTAP
V189 - The Interstate Highway System - The First 50 Years, IL DOT
V570 - Tips from the Pro's: Backhoe Loader, VISTA Video
V575 - No More Sunsets: The Last Days of a Meth Addict, Rosetti Productions
V576 - Chain Saw Safety Maintenance & Operation, Stihl

For a complete list of all videos, publications, and CDs, please visit our web site at
http://www.dot.il.gov/blr/t2center.html.

(Taking a Closer Look from p.1)

Highway Programs

Surface Transportation Program (STP) - The STP is the most flexible of the highway programs and provides $32.5 billion that can be used on a broad range of activities, including highways, public bridges, capital transit projects, carpool projects, certain parking facilities, planning and environmental restoration and pollution abatement projects.

In metropolitan areas, the MPO develops a transportation improvement program (TIP) which includes STP spending. If the metro area exceeds 200,000 population, all projects must be approved for funding by the MPO in cooperation with the state; in smaller metropolitan areas, the projects will be selected by the state in cooperation with the MPO. In rural regions, project decisions are made by the state after consultation with local governments.

Transportation Enhancements - The enhancement program is funded by 10 percent set aside from the STP program or a state's 2005 funding level, whichever is greater. It provides resources to fund 12 categories of cultural, aesthetic and environmental projects, such as scenic or historic programs and preservation, landscaping, preservation of abandoned rail corridors and environmental mitigation.

Bridge Program - This program provides $21.6 billion to enable states and local governments to improve their bridges through replacement, rehabilitation and maintenance. Any bridge rated as more than 20 feet on a public road deficient is eligible, and states must spend at least 15 percent of bridge funds on bridges not on federal-aid highways, which often means county bridges. Off-system

bridge investment is no longer constrained by a 35-percent maximum. Spending on bridge preservation is now eligible even if the bridge is not classified as deficient.

Congestion Mitigation and Air Quality Improvement Program (CMAQ) - The CMAQ program provides $8.6 billion to continue, to reduce emissions from highway travel, and aid states and regions in complying with the Clean Air Act requirements.

Eligible projects include transportation control measures, programs for auto emission controls, public purchase of alternative fuel vehicles, and pedestrian and bicycle programs. The new legislation adds the following projects as eligible for CMAQ funding: advanced truck stop electrification systems; projects that will improve transportation systems management and operations; integrated, interoperable emergency communication systems and diesel retrofits.

Highway Safety Improvement Program (HSIP) - The HSIP replaces the safety set-aside that was formerly part of the Surface Transportation Program. Over the next four years, an average of $1.26 billion will be distributed by formula to the states that can be used on a broad array of safety improvement projects, including projects on county roads, such as

intersection safety improvements, pavement and shoulder widening, rumble strips, signage and guardrails.

Every state is required to develop a Strategic Highway Safety Plan (SHSP) that involves a comprehensive, collaborative and data-driven approach of highway safety.

High Risk Rural Roads - As a part of the HSIP, there is a specific set-aside for High Risk Rural Roads. While any of the $1.2 billion annually can be spent on rural roads, $90 million is specifically targeted for safety problems on roadways classified as rural major collectors, rural minor collectors and rural local roads. The funds can be used for construction and operational improvements related to safety but must be used on roads that have a crash rate for fatalities and incapacitating injuries that exceeds the statewide average for those functional classes of roads.

Railway-Highway Grade Crossing – A second set-aside of the HSIP program is for Railway-Highway Grade Crossing. At $220 million annually, this program is increased by approximately $65 million beyond TEA-21 levels, and funds projects on any public road that eliminate hazards at rail

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grade crossings, including the separation or protection, reconstruction and relocation of grade crossings.

Safe Routes to Schools - This totally new program focuses on enabling and encouraging children to safely walk and bicycle to school. An average of $122 million annually will be distributed to the states, and all county roads are eligible. Projects include sidewalk improvements, traffic calming, pedestrian and bicycle crossing improvements and traffic diversion near schools.

Metropolitan Planning - This ongoing process creates a cooperative, continuous and comprehensive framework for making transportation investment decisions in metropolitan areas, and it must include both highway and transit projects.

A major change is that the funding is increased from a 1 percent to a 1.25 percent takedown of the core highway programs, in part because of the substantial additional responsibilities facing many MPOs. Funding is also contributed by the transit program. There are a number of new requirements, many of which relate to consulting or coordinating with additional agencies and parties in the planning process.

State Infrastructure Banks (SIB) - Under the SIB program, a portion of a state's highway and transit program funds can be used to help capitalize state infrastructure revolving funds. While TEA-21 had limited this program to four states, the new legislation allows any state to enter into an agreement with USDOT to establish a SIB.

Tolls - Broader authority is provided through four programs to use tolling

on a pilot or demonstration basis, mainly on the Interstate system. Additionally, a HOV-lane program is created that allows vehicles not eligible for HOV lanes to pay a toll to use such a facility.

Private Activity Bonds - Allows states or local governments to issue tax-exempt, private activity bonds to finance highway projects and rail-truck transfer facilities. A $15-billion limit is placed on the aggregate face amount of the bonds that can be issued.

Local Technical Assistance Program (LTAP) - Provides $11.1 million to the LTAP program that makes available training and education to local officials and Indian tribes.

Conformity - Under the Clean Air Act, funding of federal transportation projects is prohibited unless there is conformity to the State Implementation Plan or SIP. In particular, this restriction can affect transportation projects in metropolitan areas that do not meet, or previously have not met, federal air-quality standards.

The new legislation requires less frequent conformity demonstrations – four years instead of every two years – and will shorten the planning horizon over which conformity must be demonstrated to 10 years instead of 20 years. There is also a 12-month grace period created before a lapse is declared.

Transportation Infrastructure Finance and Innovation Act (TIFIA) - The TIFIA program provides federal credit assistance to any major highway, transit or rail project (generally it must meet a $50 million threshold) through secured loans, loan guarantees and lines of credit.

New eligibility is extended to international bridges and tunnels, inter-city bus and rail facilities and vehicles, including Amtrak and high-speed systems.

Transportation and Community and System Preservation Program (TCSP) - This ongoing program provides $270 million in grants to assist in planning, developing and implementing strategies to integrate transportation, community, and system preservation plans and strategies, and identify private initiatives to improve such relationships. State, regional and local governments are eligible to receive TCSP grants.

Environmental Streamlining - The act incorporates changes aimed at improving and streamlining the environmental process for transportation projects, particularly the permitting process that often requires substantial time. Some of these changes include designating USDOT as the lead agency for surface transportation project coordination; establishment of a 180-day statute of limitation on judicial claims on final agency actions related to environmental requirements; establishment of an interagency dispute resolution process; allowing for each state to assume responsibility for categorical exclusions, and allowing the use of publicly owned parks and recreation areas, wildlife and waterfowl refuges for transportation projects if such use would result in "de minimus impacts" to that resource.

Transit Programs

Urbanized Area Formula Grants - This program provides $20.1 billion in grants for public transit capital

(Taking a Closer Look from p.4)

investments to local governments and transit agencies in areas above 200,000 population, and capital and operating assistance grants to areas between 50,000-200,000. The basic program and formula remain unchanged with the exception of two formula features – a Small Transit-Intensive Cities formula tier and a Growing States and High-Density States formula tier.

Rural Area Formula Grants - This program provides $2.2 billion in capital and operating assistance for rural and small urban transportation systems, a substantial increase. Funds are distributed to the states, which in turn fund the local government, regional and non-profit transit agencies that deliver the transit services. A new formula tier is added based on land area.

New Starts - This program provides $8.1 billion in funding for new fixed-guideway systems, extensions of these systems and bus corridor improvements. Within the program, a separate Small Starts section has been created for projects of $75 million or less. Small Start projects can be used for any of the listed projects and also for bus rapid transit.

Fixed Guideways - This program provides $7.3 billion to modernize or improve existing rail or fixed-guideway systems, including rehabilitation of rolling stock, track, structures and signals. Generally, eligible areas must have a population of at least 200,000 and systems that are at least seven years old.

Bus and Bus Facilities - This program provides $4.2 billion for the acquisition of buses and facilities such as maintenance facilities, terminals, garage equipment and bus shelters. All the funds in this program are allocated to specific projects.

Elderly/Disabled - This program provides $584 million in formula funding to states for the capital costs of providing services to the elderly and persons with disabilities. Funds are generally sub-allocated to local governments and non-profits for operation of the program. To improve coordination, a new locally developed human service transportation plan is required. A seven-state pilot program is created to determine if expanding eligibility to operating assistance would improve service.

Job Access/Reverse Commute - This program provides $727 million for local programs that offer job access and reverse commute services for low-income individuals who may live in the city and work in the suburbs. The major change in this program is that it will be administered as a formula program.

New Freedom - This is a new formula program that will provide $339 million over the life of the act to increase the availability of transportation services beyond that which is required in ADA to persons with disabilities.

Transit in Parks - This new discretionary program will provide $97 million to fund transportation alternatives to the private car in national parks and on public lands.

Rail - The new legislation authorized $90 million for Maglev deployment, $70 million annually for high-speed corridor development, $30 million for high-speed rail technology, and $430 million for the elimination of rail-highway crossing hazards in high-speed rail corridors.

The legislation expands a federal loan and loan-guarantee program for improving and rehabilitating rail track from $3.5 billion to $35 billion on loans, $7 billion of which is reserved for small, regional and short line railroads. Additionally, $350 million annually in grants is made available for relocating rail track where it negatively impacts on a community.

GOT RAP?

Marvin Traylor, Illinois Asphalt Paving Association, Director of Engineering & Research
Photos courtesy of Dan Gallagher, Gallagher Asphalt

Construction Material Prices Soar

In April of 2006, the American Association of State Highway Transportation Officials (AASHTO) released the results of its "Survey on Construction Cost Increases and Competition". 91% of responding states said their construction bids had experienced significant increases. The construction bid items experiencing the most increases during the past year were: Earthwork (28 % increase), Steel (26% increase), Concrete (23%), and Asphalt (18% increase).

While this survey was taken among the State Departments of Transportation (DOTs) similar increases have hit local agencies here in Illinois. Soaring costs and flat revenues have created significant challenges for professionals responsible for maintaining our road and bridge network. For those agencies looking to stretch their construction and maintenance dollars without sacrificing quality, the use of Reclaimed Asphalt Pavement (RAP) offers hope.

RAP as a Component Material in HMA

Hot Mix Asphalt (HMA) is 95% aggregate and 5% asphalt cement (AC). The aggregate and AC (a solid at ambient temperature) are heated to 300° F to allow the AC to coat the aggregate. The mix is transported to the job site hot, placed and compacted before it cools. Once cooled, the asphalt cement returns to a solid state holding the aggregate structure in place.

Before 1970, HMA projects used 100% virgin materials. Specific sands and coarse aggregates were blended to provide the load carrying structure, and the percentage of asphalt cement was chosen to assure durability. The oil embargo of the early 70's spurred interest in the use of RAP as an optional component in HMA. The subsequent development of the milling machine and drum mix plant made it practical and economical.

When public streets owned by the state, county, municipality, or road district are milled, the contactor hauls the RAP back to the plant for processing and reintroduction into future mixes. The processed RAP becomes another ingredient material – one that has a specific gradation, and specific asphalt content. These properties are an integral part of the HMA design process that the contractor uses to develop a mix. Private millings are kept separate and are not allowed as RAP in future government highway projects.

Research shows that that at RAP percentages of 15% and below, the effect on the virgin AC is negligible. At higher percentages, softer virgin asphalt should be used to return the blend to its desired characteristics.

Significant Savings

Assuming rock sells for $10.00 per ton and asphalt cement sells for $400 per ton, the material cost for HMA alone is: (.95 x 10.00) + (.05 x 400.00) = $29.50. This is the material cost only and does not include overhead, transportation, traffic control, laydown, or profit. On average, the cost for the contractor to transport and process the RAP material is $6.00/ton. Therefore, each 10% increment of RAP reduces the contractor's material costs by $2.35 per ton.

Using these figures, the cost of an HMA mixture with 50% RAP is reduced from $29.50 to $17.75. With 20,000,000 tons of HMA produced annually in Illinois, the potential savings from RAP shouldn't be ignored.

No Decrease in Quality

The Illinois Department of Transportation (IDOT) has allowed (and encouraged) the use of RAP in its mixes since the mid 1970's. Just as IDOT has demanded more consistency

from virgin materials through its QC/QA program, it has developed a similar program governing the processing of RAP. Currently gradation tolerances on RAP are tighter than those demanded of virgin material.

IDOT imposes the same mix design process and criteria on all mixes, whether the contractor chooses to use RAP or not. RAP and virgin mixes must also meet identical density and smoothness requirements during construction. There is absolutely no difference in the quality of a mix with RAP and a mix without RAP.

IDOT is Increasing the Use of Processed RAP

IDOT and most other State DOT's have historically placed limits on the maximum amount of RAP allowed in mixes. While the industry believes these limits are set too low, many DOT's, including IDOT are raising the allowable percentages as the processing and plant technology improve. Furthermore, recent research has provided DOTs with more information about how RAP behaves in HMA.

IDOT's new limits on the maximum amount of RAP vary with the level of traffic and location within the pavement structure. Shoulders and base courses are allowed to contain up to 50% RAP while surface and binder lifts vary from 10% to 30% depending on the traffic level.

Encouraging the Locals

The City of Chicago Department of Transportation (CDOT) has done its share to be a leader in the use of RAP. Currently, 100% of the HMA placed by the CDOT crews contains RAP. However, many local agencies do not allow RAP on their projects. Part of the problem is that IDOT's allowable percentages of RAP are in the Bureau of Design and Environment's Manual rather than in its Standard Specifications. Another part of the problem is the belief that allowing RAP will decrease pavement performance. However, research has shown that properly controlled and processed RAP does not impact quality.

The Bureau of Local Roads and Streets (BLRS) encourages the use of RAP by all local agencies and will be

organizing a series of 16 seminars around the state to explain the latest RAP policies. Asphalt industry consultant, Tim Murphy (a former IDOT and Asphalt Institute engineer), will conduct the training. The seminars will begin in District One this fall and will continue through 2007 until all regions of the state have been reached.

BLRS has also developed a Local Roads (LR) Special Provision (containing the same guidelines used by IDOT for its State Routes) that may be inserted into contracts to make it easier for locals to take advantage of RAP. LR 1031 Reclaimed Asphalt Pavement will be available on IDOT's website at **http://www.dot. il.gov/blrlrslist.html** in October.

It's the Right Thing to Do

The use of RAP significantly reduces material costs. RAP mixes are as good as virgin mixes. The use of RAP will preserve our limited natural resources while reducing our energy demands. RAP is the most recycled product in the world. To make the most of your project dollars and do the right thing for the environment, make sure you've "GOT RAP" in your mixes.

TRY GIS FOR FREE

By Craig Cassem, P.E., County Engineer, Grundy County

Geographic Information Systems (GIS) is quickly becoming a valuable tool which can be used by County Engineers as well as planners, law enforcement, emergency personnel, and a host of other disciplines. Many counties have been using GIS for years, while others are just getting started. This article is geared to the County Engineer and highway department personnel who have not had the opportunity to use GIS. It will describe how you can develop a basic GIS for virtually no cost.

What is GIS?

The FHWA defines GIS as follows: a collection of computer software, hardware, data, and personnel used to store, manipulate, analyze, and present geographically referenced information. Spatial features are stored in a coordinate system that references the Earth. Attribute (or descriptive) data can then be associated with these spatial features. Spatial data and its associated attribute information can then be layered on top of one another for viewing and analysis. Using GIS, planners, engineers, and other professionals can holistically and efficiently view multiple items of interest about a particular geographic area.

Although this definition is very descriptive, sometimes a picture is worth a thousand words, so to see a picture and create your own GIS, do the following:

1. Download and install the free "ArcExplorer 2" program from the ESRI website. The ESRI web address for the free download is **http://www.esri. com/software/arcexplorer/**. IDOT's GIS web page also has a link to this ESRI website. Download the "Windows" version. This GIS software has limited capabilities, but it will allow you to use several types of GIS files, measure distances, create maps, and a few other things. The "ArcView" program would be the next step up and has many more capabilities, but it will cost you about $1,500.

2. Now that you have your GIS program, you need to get some data for the program. The most applicable data for County Highway Departments is the IDOT GIS data which is available on their website. To download your county's GIS data from IDOT's website create a folder on your computer's c drive and name it "IDOT GIS Data." Then go to IDOT's website **http://www.dot.state.il.us/**, click on "Public Partners", find "GIS Data" and click on it. Select your county and you will go to a page which will allow you to download three GIS county files which are Highways, Railroad Crossings, and Structures. Either click on "Download All Files" and "save" them to the folder you created above, or download each of the three files individually. Go to the folder you downloaded the files to and double click on the zipped file(s) and several files will be extracted. (When I tested the download for this article, the files would not run in "Arc Explorer" when I used the "Download All Files" but worked fine when I downloaded the files individually.)

3. OK, now you have the GIS program and data ready to be used.

4. Start the "ArcExplorer" programand click on the icon at the top of the screen which says "add themes" when you put the curser over it. (The icon has a + sign). Each theme will be a layer in your GIS.

5. In the pop up box find the folder and files you downloaded from IDOT. Double click on the road data ("HWY"), structure data ("STR"), and railroad crossing data (RRX"). You will notice that the file names appear on the left side of the screen in "ArcExplorer". Each of the files is a layer. The layers can be displayed individually or placed over the top of each other. Click on the check box to turn a layer on or off. Go ahead and turn on all three layers.

You now have a GIS ready to be used.

First, let's label the road names and structure numbers. Right click on the "HWY" layer name on the left side of the screen to make the "HWY" the "active" theme. (The active theme is displayed in the lower right corner of your screen.) At the bottom of the pop up box click on "Theme Properties." Click on "Standard Labels" and then go over to the drop down box labeled "Text Field" to "Road_Name." Click on this, then apply and then OK. Now, all of the roads should be labeled. Your map may look a little cluttered, but if you zoom into an area, the roads will be labeled. Repeat the same procedure only with the bridge layer ("STR"). Click on "SN" to label the bridges with structure numbers. Your map should now have the roads and bridges labeled.

Each of the themes (or layers) in

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a GIS application has a database associated with it. In our case, the database associated with the road data includes several items or fields from the "IRIS" roadway database. The data associated with the bridge data is from the "ISIS" database. A unique characteristic of GIS is the ability to access and display portions of a database graphically. For a quick example of this click on the "HWY" layer on the left side of the screen. This will underline the layer name and again, in the bottom left of the screen you will see "HWY" as the active theme. Then click on the "Identify" icon. (This icon has an "i" in a dark circle.) Now point to a road on the map and click on it. (You may have to zoom in to clearly pick a road.) You will notice a box with road inventory data pops up. This data includes information such as road name, road segment length, and ADT. This is some of the same data shown on the DB-610 forms which we have used in the past to check township road mileage.

You can use the previous steps to also look at bridge data. Just make sure you click on the "STR" layer to make it active and then click on the "Identify" icon. Now when the curser is placed over a bridge on the map and you click the left mouse button, data related to that bridge is displayed. The data includes structure number, location, facility carried, creek or river crossed, and bridge length.

Let's do something even more cool. We will make a map of all county roads which have an ADT of 1000 or higher. Left click on the "HWY" layer to activate the layer. Then click on the "Tools" icon. Click on "Query Builder." Under "Select a Field" scroll down to the "AADT"
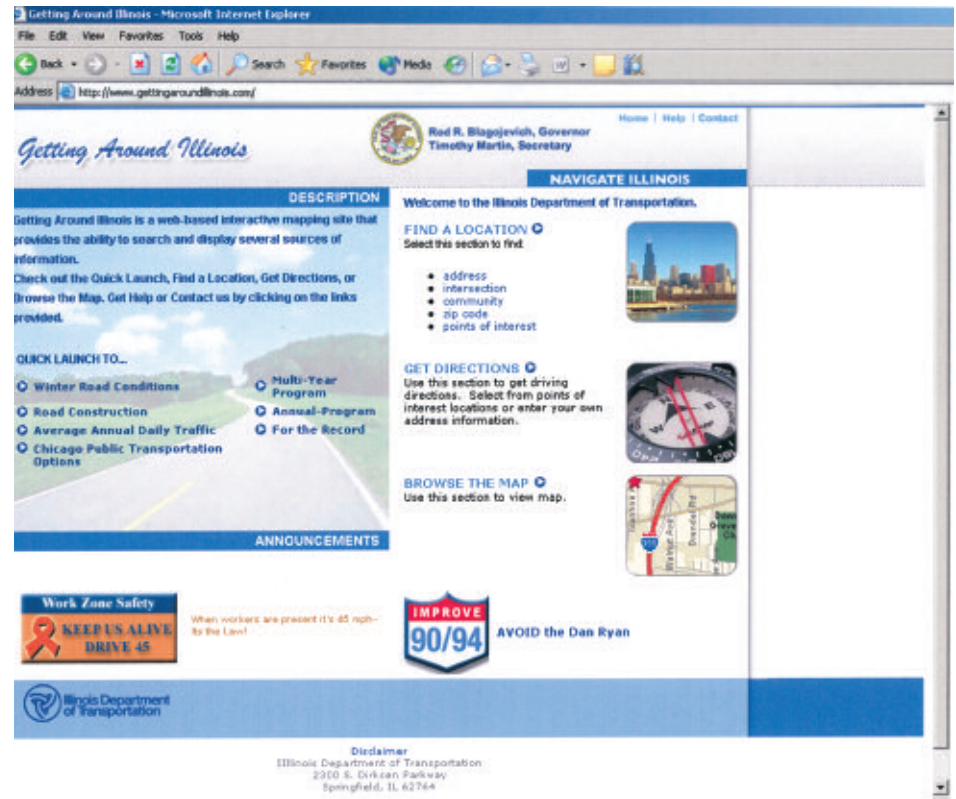
field and click on it and you will see it displayed in a box, then click on the ">=" sign, then type in "1000" in the box after the ">=" sign, click on "Execute." Check the box "Show All Attributes", click on the box "Highlight Results", the roads with an ADT of 1000 or more will be highlighted on the map and all data fields for roads with an ADT of 1000 or more will be shown. Again, you will have to zoom into an area to get a clear map.

You can do a number of amazing things with the "Query Builder" and are only limited by the data available and your imagination. The road data you downloaded from the IDOT website included just a few fields so your queries are limited. Last year we asked IDOT to add several more fields to the road GIS data and they did this. This updated data is available and can be sent to you by contacting Mary Pat at IACE Headquarters. Fields such as jurisdictional and maintenance responsibility,

lane widths, surface types, and shoulder widths are now included. With this additional data you can for instance query surface types and display all County roads with an oil and chip surface; query road widths and show all roads over a certain width, and with a little more extensive query, you could graphically display all roads maintained by a certain township. This comes in handy when checking township mileage.

By doing the above steps, you will have created a powerful and useful GIS for your county's roads and bridges. This is just a taste of what a GIS can do. What other layers and data would be useful to a county highway department? A few would be aerial photo layer, contour line layer, zoning map layer, comprehensive plan layer, tax map layer with parcel information, and voting district layer. Some of these layers will cost your county several thousand dollars to develop while others are free and available as downloads.

LOCAL FEDERAL RAIL SAFETY PROGRAM OVERVIEW

By Jeff Harpring, P.E., Rail Safety and Project Engineer, IDOT

There are approximately 8,000 at-grade rail/highway crossings throughout the State of Illinois, of which approximately 7,000 are on the local road system. Out of the 7,000 at-grade crossings on the local system, nearly 3,000 have only crossbucks, with no active warning devices.

Approximately 10 million dollars in federal funds is now available each year for at-grade crossing safety improvements for both the state system and local system crossings throughout the state. Starting with the Fiscal Year 2007 Program, the amount of federal funding for local system crossings increased from 3.5 million to 5.8 million dollars per year. This shifted the 40% local/60% state split to 60% local /40% state with recognition of the large need for safety improvements on the local system.

The Bureau of Local Roads and Streets annually solicits Railroad companies, local agencies, and the District offices for applications to identify potential at-grade crossing safety improvement projects to be funded with federal 130 Rail Safety Funds. These improvements typically consist of upgrading passive (crossbuck only) crossings to active warning devices such as flashing light signals or flashing light signals with gates, or upgrading existing flashing light signals with gates. Other projects include upgrades to signal circuitry, approach grade improvements, and incentive payments for the closure of at-grade crossings. These improvements are typically funded 100% with federal funds; however some projects are done jointly with the Illinois Commerce Commission (ICC), and may be funded 70% with federal funds and 30% with Grade Crossing Protection Funds. For many of these projects, the ICC provides additional funding for approach grade improvements with Grade Crossing Protection Funds.

After solicitations are done and applications are received, on-site reviews are conducted, and the candidate projects are ranked by Expected Crash Frequency numbers (ECF's), which are strongly weighted by number of trains and vehicles. Then, factors such as number of tracks, train speed, stopping visibility, clearing visibility, crash/fatality history, approach grades, roadway geometrics, and school bus/hazardous material transports are taken into account. Locations with recent crash or fatality histories are given higher priority. Once selections are made, projects are programmed, federal authorizations obtained, and agreements are prepared. Following receipt of a final bill and notice of completion, projects are inspected and closed out.

For additional information on the Local Rail Safety Program, please contact Jeff Harpring, P.E., Rail Safety and Project Engineer at (217) 785-8542

WHAT OTHER GIS DATA IS AVAILABLE FOR FREE?

The following are a few resources.

- **NAVTEQ data.** This is available through IDOT at **http://www.dot. il.gov/giscoalition.html**. This data includes all Illinois road centerlines as well as a great deal of other data. IDOT is working at conflating or merging their roadway and structure GIS data into the NAVTEQ data which will make it a very powerful and comprehensive data source. All Illinois county highway departments should consider using this NAVTEQ data. This data is free, but you need to register through the referenced website.
- **USGS topo quad maps.** Download from **http://www.isgs.uiuc.edu/ nsdihome/webdocs/drgs/drgorder24bymap.html**. If you download all of the topo quad maps in your county, "ArcExplorer" will automatically "paste" these together creating a mosaic of topo maps. (If you try to use the topo maps as a layer with the IDOT GIS map, the topo maps may not line up over the IDOT GIS map due to "projection" issues.)
- **Digital Orthophotography.** Download from **http://www.isgs.uiuc. edu/nsdihome/webdocs/doqs/download.html.** Again, if you download all of the ortho quad maps in your county, "ArcExplorer" will automatically "paste" these together creating a mosaic of ortho- photography covering your county.

Go ahead and take a few minutes to get your free GIS software and data. The more you get some hands on experience with this simple GIS, the more ways you will find to use it. It won't be long and GIS will be like the fax machine and computer were fifteen or so years ago. You bought one because you needed it once in a while, but now these are important tools in our everyday work. Very soon GIS will be used by all counties in their daily work.

ILLINOIS CENTER FOR TRANSPORTATION

Adapted from http://www.ict.uiuc.edu/default.asp

The U.S. is served by some of the best transportation infrastructure in the world, including nearly 6.3 million kilometers (3.9 million miles) of streets, roads, and highways, and more than 570,000 bridges. The U.S. public roadway network is traveled by more than 3.8 trillion vehicle-kilometers per year (2.4 trillion vehicle miles per year). A major concern is that the continued deterioration and increased demand of our transportation infrastructure system has the potential to adversely affect the economic growth and competitiveness of our nation. The monetary cost and the disruption to daily life from a transportation system that cannot meet these increased demands would be astronomical. An active research program on "intelligent" renewal of our transportation infrastructure, improving the safety, and reducing the impact on the environment maximizes the return from taxpayers' dollars and makes effective use of infrastructure investment.

To fulfill the State of Illinois vision of a safe and reliable state and national transportation program and to efficiently maintain its viability, new ways of leveraging the resources have been implemented through an innovative partnership between the Illinois Department of Transportation (IDOT) and the University of Illinois at Urbana-Champaign. This partnership promotes working with other universities and industry partners in a manner that will enable each entity to better serve the state and to achieve greater distinction and national prominence in transportation technology and implementation. This partnership is embodied in the Illinois Center for Transportation (ICT, pronounced "Ice-Tea").

The Illinois Center for Transportation builds on the renowned experts in transportation and related fields at the University of Illinois, IDOT, and other Illinois universities by providing the appropriate tools and support required for research today. The center is housed within the Department of Civil and Environ-mental Engineering, a department consistently ranked as our nation's best. ICT provides a unified framework for the transportation research program at the University of Illinois and IDOT through the use of an integrated organizational structure, coordinated programs, unique facilities, and common outreach activities.

Innovations and new technologies should impact IDOT and our national transportation system in a timely manner. ICT promotes the timely implementation of cost-effective technologies that improve safety and reliability, reduce congestion, increase utilization of the state transportation infrastructure, and optimize the limited resources of IDOT. It is the vision of ICT to serve the needs of IDOT, the State of Illinois, and the nation through research, education, and outreach.

The ICT mission promotes innovation and progress in transportation through interdisciplinary research in an objective setting. Utilizing the flexible organization of the ICT, the state and the nation can benefit from a more rapid response to future scientific challenges in transportation and can adapt more readily to changing needs.

ICT RESEARCH PROJECTS IMPACTING LOCAL AGENCY HIGHWAYS

Currently, there are three major projects that will have a direct impact of local highways.

Design and Concrete Material Requirements for Ultra-Thin Whitetopping (UTW) Procedures

This project will verify the procedures developed by industry for use on the Illinois' highway system, including an incorporation of newer structural fibers that are currently considered to be essential by the Department. It will also evaluate the effect of those fibers on forecast required joint spacing, both for cost-effectiveness and efficacy. Pavement systems in Illinois expect to be beneficiaries of a design system for Whitetopping and UTW for which they have a degree of confidence. The expected results would be reduced maintenance intervals and resultant user delay on Illinois' highway system.

Cold In-Place (CIR) and Full Depth (FDR) Recycling with Asphalt Products

This project will review CIR and FDR projects for design criteria and performance. The goal is to develop design procedures that will allow these processes to use federal and state funds without going through the experimental feature process.

Local Safety Services

This project will research the impact of safety services on local highway department. Specifically, it will determine the need for local highway safety circuit riders, universal crash reporting system, and develop systematic crash analysis for local highways.

The Technology Transfer (T2) Program is a nationwide effort financed jointly by the Federal Highway Administration and individual state departments of transportation. Its purpose is to transfer the latest state-of-the-art technology in the areas of roads and bridges by translating the technology into terms understood by local and state highway or transportation personnel.

The Illinois Interchange is published quarterly by the Illinois Technology Transfer Center at the Illinois Department of Transportation. Any opinions, findings, conclusions, or recommendations presented in this newsletter are those of the authors and do not necessarily reflect views of the Illinois Department of Transportation, or the Federal Highway Administration. Any product mentioned in the Illinois Interchange is for informational purposes only and should not be considered a product endorsement.

Illinois Technology Transfer Center
Illinois Department of Transportation
2300 South Dirksen Parkway - Room 205, Springfield, IL 62764
Fax (217) 785-7296
E-mail us at T2LRSDOT@dot.il.gov

Local Policy & Technology Engineer
KEVIN BURKE
Kevin.BurkeIII@illinois.gov • (217) 785-5048

Training and Graphics Specialist
AMY NEALE
Amy.Neale@illinois.gov • (217) 782-1682

Training Development Technician
ROY WILLIAMSON
Roy.Williamson@illinois.gov • (217) 785-2350

Visit our website at **www.dot.il.gov/blr/t2center.html**

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T2 ADVISORY COMMITTEE

Duane Ratermann *(Chairman)*
County Engineer, Knox County
1214 U.S. Highway 150 East, Knoxville, IL 61448
(309) 289-2514

Douglas Bishop
County Engineer, Perry County
3698 State Route 13/127, Pinckneyville, IL 62274
(618) 357-6556

Eldon Stahl
Highway Commissioner
Medina Township (Peoria County)
R.R.#1, Dunlap, IL 61525
(309) 579-3101

Olen Kibler
Highway Commissioner
Newman Township (Douglas County)
608 North Howard, Newman, IL 61942
(217) 837-2723

Ed Reeder
Director of Public Works
City of Carbondale
P.O. Box 2047, Carbondale, IL 62901
(618) 549-5302

Lynn Krauss
Director of Public Works
Village of Oak Lawn
9446 S. Raymond Ave., Oak Lawn, IL 60453
(708) 499-7816

Doug Blades
Assistant Bridge Engineer
Federal Highway Administration
3250 Executive Park Drive, Springfield, IL 62703
(217) 492-4629

Illinois Department of Transportation
2300 South Dirksen Parkway
Springfield, Illinois 62764
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