



The SILENT KILLER

By Jim Olson, P.E., Highway Engineer, Jefferson County, Indiana and State Director

Although titled The Silent Killer – this article is *not* about highway fatalities. This article is about highway **access** and **access management**. The title is to emphasize the fact (and to catch your attention) that **unmanaged access** reduces (*kills* figuratively) the ability of highways to perform their most important task. That most important task of highway is to provide routes that enable vehicles to travel. Modern highways (combined with modern vehicles) allow us to travel safely and easily at speeds and over distances beyond the expectation of citizens living just a generation or two ago. Unmanaged access is a silent killer because it works insidiously. There is no sudden, dramatic loss of roadway performance as access is allowed to increase. Rather, the loss is indiscernible from day-to-day observation. However, the roadway performance is being lowered, slowly but surely.

The term **mobility** can be used for describing how well (or at what level) a highway can offer safe, high-speed travel. We can say that some roads offer more mobility, others less mobility. The roads that offer higher levels of mobility allow motorists to reach their destinations quicker, safely.

The two most important factors for rating success at providing mobility are: 1) how quickly can a trip be accomplished, and 2) what is the travel safety of the trip. The type and amount of **access** on a road directly affects the level of **mobility** that is provided.

Access in roadway terms is not widely discussed or considered. A



definition of roadway access is called for at this point in the article. Access is the action of a vehicle getting on or off a road. Each place where vehicles can get on or off a road is an access point. An **access point** can be either a driveway, or an intersection with another road. Access is an extremely important roadway engineering and roadway management subject.

Freeways demonstrate the results and benefits of **managed access**. Freeways offer the highest levels of mobility to motorists. Freeways differ from conventional roads in that they have highly **controlled access**. Freeways can carry extremely high volumes of traffic, at very high speeds, very safely. The crash rates of freeways (converted

to per vehicle-mile rates) are much lower than conventional roadways, even though the average travel speeds and traffic volumes are much higher on freeways than conventional highways.

Freeways do benefit from very good geometric design, but the defining characteristic and the source of the superior performance of freeways is the highly controlled access. Evidence of the affect of access, even on freeways is the lowered traffic speed that occurs first near freeway access points (interchanges). Likewise for conventional roads, access and access management are extremely influential on their performance and safety.

It is hoped that the “Indiana Statewide Access Management Study” is the beginning of a successful process to introduce both 1) education to the general public

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about the importance of access management, and 2) realistic tools for public officials for implementing access management.

Why should Indiana's local-jurisdiction officials be involved in an Indiana Department of Transportation (INDOT) access and access management implementation project? First, access management is important for all jurisdictions, not just state DOT's. In Indiana as in many states, a very high percentage of vehicles-miles are traveled on local-jurisdiction roads. Many of the local-jurisdiction roads are arterial, that is, they serve as higher-speed routes. These routes need and deserve access management to maintain their mobility capacity.

Second, motorists don't care which jurisdiction has responsibility for particular roads; motorists just want roads to travel on that allow them to quickly and safely reach their destinations. Good access management policy is needed by local-jurisdictions as well as state DOT's.

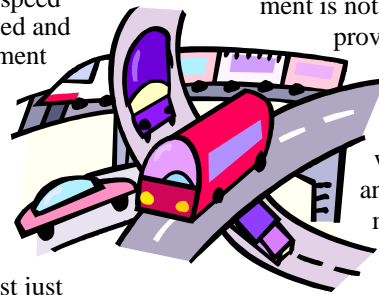
A third reason for including local-jurisdiction officials in INDOT's access management implementation, is the reason most important to INDOT (and to other state DOT's) if they are going to succeed at implementing access management. **Local government assistance and cooperation will be necessary for practical access management implementation on state highways.** This is because in Indiana (and Idaho) most land-use regulation authority is granted to local government.

Jurisdiction over land-use control is a vital point, because practical implementation of access management must be accomplished as day-to-day land-use decisions are made. Only on freeways, and the (nowadays) rare new alignment or complete highway reconstruction project, will access management be implemented through purchase of access rights. Purchase is not affordable, nor is it justifiable – it amounts to payment of an unearned windfall profit to a small portion of landowners.

If well-engineered access management is not implemented prior to approval and construction of land developments adjacent to a roadway, after-the-fact corrective implementation will be expensive at best, and physically impractical in many cases. There must be a cooperative effort between local government and the state DOT for access management to be implemented in a practical, timely manner.

I'll end with an editorial statement and a challenge. We public officials in positions of roadway stewardship are fulfilling our duties to the public when access management is being implemented. A public awareness campaign is needed to pave the way for broad access management implementation. I challenge you to present informative guidance to your decision/policy-makers, as well as to the general public of your jurisdiction.

Reference: NACE



LHTAC Staff News



Mike Moffett has joined our staff as Assistant Federal-aid Manager. Mike will assist Jerry Flatz in the development of Federal-aid projects. He has a varied background in project development, from designer to project

manager, in both the public and private sectors.

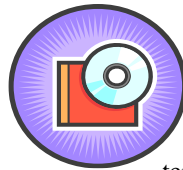
Mike is available to help with Federal-aid project inquires. Please help us welcome Mike to LHTAC and the LHJ families.

Finding a Balance Between Loads and Roads

Striking a balance between the needs of commerce to carry heavy loads on roads and the need to preserve the significant investment in our transportation infrastructure is a delicate process. Both sides of the picture can present compelling arguments.

The Minnesota Local Road Research Board (LRRB) Research Implementation Committee recently completed a 20-minute educational/training DVD, *Loads and Roads: Finding a Balance*. This DVD can be shown in its entirety for a comprehensive look at the subject, or it

can be divided into about five-minute segments for viewing by different audiences.



The DVD is being distributed to Minnesota city and county engineers, along with a brochure and other materials that can be used when making presentations about this subject. The DVD is also on the LRRB Web site—www.lrrb.org.

Reference: *Minnesota Exchange*, Spring 2006

THE HUSHED HIGHWAY

Utah finds a sensitive way to build a road through a bird sanctuary.

By Elizabeth Daigneau



Utah's Legacy Parkway finally has gotten the green light.

The road, which will be built in Davis County near Salt Lake City, was first proposed in 2001 by then-Governor Mike Leavitt to alleviate traffic congestion on Interstate 15—a big headache in Davis County for years.

Until recently, legal challenges from conservation groups (because the 14-mile stretch of concrete was set to run through one of the world's most sensitive bird habitats) had forestalled construction. But now, thanks to a tentative agreement between the state and a coalition of conservation organizations, the commuter road will be built—tempered by some environmentally sensitive trade-offs.

"We are developing a parkway that will be different from anything we've ever

done before," says John Thomas, director of the Legacy Parkway and Preserve.

Under the new agreement, the planned location of the road won't be changed but it will have a narrower "footprint" and be built with "quiet pavement" to dampen the noise. Trucks and billboards will be banned and the maximum speed limit on the roadway will be 55 mph.

The Utah Department of Transportation (UDOT) will give the local transit authority \$2.5 million to develop an environmental impact statement evaluating a light rail or bus rapid transit system in south Davis County. The agreement also includes the purchase of 125 acres of Great Salt Lake wetlands west of the parkway that were slated for big-box commercial development. The land will be set aside as a nature preserve and managed by the Legacy Nature Preserve.

UDOT officials say the road could open to motorists by 2008.

Reference: *GOVERNING*, November 2005

Idaho	State	Total Inter-state & state bridges	1,260	Total *SD/FO	283	%	22%	Total city/county/township	2,253	Total *SD/FO	365	%	16%	Total bridges	3,513	Combined total *SD/FO	648	%	18%
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* Structurally Deficient / Functionally Obsolete

Exclusive 2005 Bridge Inventory

Reference: *Better Roads*, November 2005

Dissertation on Vehicle Speeds and Curves Receives Top Award

The performance and characteristics of today's drivers differ significantly from those of drivers in the past. Many motorists today drive curves at speeds higher than the road's design speed. In addition, the demographics of the driving population and the design of passenger cars have changed significantly over the past 50 years. Researchers, however, have conducted very few recent studies on how these changes have affected the safety and comfort of vehicle occupants, especially when they are riding through curves.

To gain a better understanding of these impacts, Carol Tan, leader of the Federal Highway Administration's Safety Management Team in the Office of Safety Research & Development, recently completed a dissertation titled *An Investigation of Comfortable Lateral Acceleration on Horizontal Curves*. Tan examined whether the combination of current demographics and car and horizontal

curve design still allow passengers to negotiate curves comfortably at posted speed limits. For her work, Tan received the Council of University Transportation Centers' Milton Pikarsky Award for the Outstanding Ph.D. Dissertation in Science and Technology for 2005. The award is given annually to four graduate students in the transportation field for the best Ph.D. dissertations and best master of science theses.

Prior to 2004, design values for the side-friction factor, a parameter used in horizontal curve design and assumed to be a measure of the friction between a vehicle's tires and the roadway, were based on studies conducted in the 1930s and 1940s. The two objectives of Tan's study were to determine the friction factors that correspond to uncomfortable speeds on horizontal curves in a contemporary passenger car and to determine the difference between these friction factors at uncomfortable speeds and the friction factors during an impending skid when a vehicle loses con-

trol and can leave the roadway when driving through a curve.

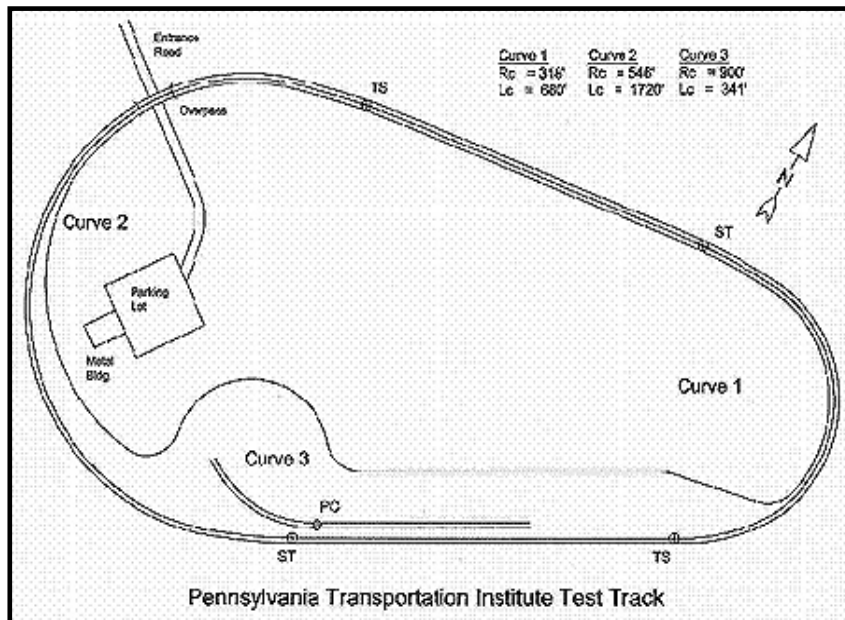
To meet these objectives, Tan duplicated a methodology used in an earlier experiment, where blindfolded and unrestrained passengers served as test subjects. During Tan's study, men and women of various ages were driven around three horizontal curves at a test track. They were asked to indicate any discomfort they felt by pressing a button connected to a data collection system. "Uncomfortable" was defined as feeling a sideward pitch or desire to slow down. The curve radii were 97 meters (318 feet), 166 meters (546 feet), and 274 meters (900 feet), and speeds ranged from 56 to 88 kilometers (35 to 55 miles) per hour.

Tan compared the resulting data with the values found in the original studies of 60 years ago. Tan's data showed that approximately 90 percent of the subjects in her study were comfortable on curves built according to current standards. This means that 90 percent of the drivers might drive faster than the curves' design speeds because they experienced no discomfort at these speeds.

Tan also concluded that posted speed limits coupled with current design standards for horizontal curves, which are based on older vehicles and different passengers, still appear to provide a margin of safety and help prevent modern vehicles from skidding off the road. However, Tan questioned whether it is desirable that current road designs enable 90 percent of drivers to comfortably exceed the speed limit. In her dissertation, Tan suggests that researchers examine the implications of changing design standards so that only 50 percent of car drivers can comfortably exceed the design speed of curves.

Carol Tan, 202-493-3315
carol.tan@fhwa.dot.gov

Reference: TRANSPORTER • APRIL 2006



A drawing of the test track used in Carol Tan's research is shown. The track is a closed loop that includes three curves. There is a parking lot for vehicles inside the track.

To Pave or Not to Pave? New Tools to Inform Decisions

The question of whether to pave a gravel road was again raised at this year's conference. This time around, the answer is becoming clearer. Ann Johnson of the University's Department of Civil Engineering introduced a PowerPoint presentation designed to aid local engineers in making the decision of how and why to upgrade a

gravel road training materials.

The presentation is based on the findings of two reports, SD 2002-10: *Local Road Surfacing Criteria* and MN 2005-09: *Cost Comparison of Treatments Used to Maintain and Upgrade Aggregate Roads*. Together these reports create the

foundation of the presentation by answering two key questions: "When is it best to maintain a gravel road?" and "When should it be upgraded to a paved surface?"

The two reports and subsequent PowerPoint presentation will aid local engineers in the face of current trends in road use and maintenance. Rural areas are experiencing dramatic shifts in their populations including an increase in large commercial farms. These factors change the needs of agribusiness and road maintenance. Minnesota has also seen increased development in the urban fringe.

In addition, the maintenance costs of gravel roads are increasing while funding and resources are decreasing. These factors have created the need to optimize maintenance costs and plan for the future and long-term duration of gravel roads.

The results of the two research reports and PowerPoint presentation introduced by Johnson pave the way toward making informed decisions on



gravel road. Minnesota LTAP is set to release the presentation later this spring.

The one-hour presentation, titled "To Pave or Not to Pave? Making Informed Decisions on When to Upgrade a Gravel Road," equips the engineer with necessary economic, political, and social information when considering an upgrade on local roads. The format of the presentation allows the engineer to easily share the information with employees, local boards, citizens, and others who weigh in on the decision. While the data trends represent those of Minnesota, the presentation includes slides in which the presenter can turn off the voiceover and insert data relevant to his or her area. The presentation is designed to supplement current Minnesota LTAP

The reports detail the multitude of reasons to pave as well as reasons to hold off, and provide a tool to simplify the decision-making process. These reports also provide information including cost analysis based on historical spending for low-volume roads, a method for estimating cost of maintenance and construction specific to an engineer's area, and an economic analysis using data such as present worth evaluation.



the maintenance and upgrade of gravel roads. Look for more information about the presentation's release in future LTAP publications.

Reference: Minnesota Exchange, Spring 2006

Why? Why? Why?

Why does the sun lighten our hair, but darken our skin?

Why can't women put on mascara with their mouth closed?

Why doesn't glue stick to the inside of the bottle?

Why don't you ever see the headline "Psychic Wins Lottery?"

Why is "abbreviated" such a long word?

Why is a boxing ring square?

Why is it called lipstick if you can still move your lips?

Why is it considered necessary to nail down the lid of a coffin?

Why is it that doctors call what they do "practice"?

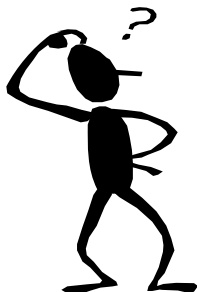
Why is it that rain drops but snow falls?

Why is it that to stop Windows 95 or 98, you have to click on "Start"?

Why is it that when you're driving and looking for an address, you turn down the volume on the radio?

If flying is so safe, why do they call the airport the terminal?

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Pavement Management for Local Roads

Why use a pavement management system? Don Theisen of Washington County, Minnesota said there are many reasons: to select projects, track pavement histories, monitor repair costs, and compare the performance of mixes, designs, and methods. "Pavement management can be a powerful tool," he said.

In his county's experience, Theisen said, the primary purpose of pavement management is to inform the county board of the overall condition of the road network. Board members use the data as a starting point to discuss and prioritize all preservation projects, rather than debate specific roadway repairs.

The county uses a 1-100 pavement rating system, Theisen explained, and illustrates the different pavement conditions with photos from county roads. The use of the visuals is key to helping policymakers understand the measurement system and the implications of their budget decisions, he said.

Theisen also gave some advice for choosing a pavement management system. Decide how you will use the data (for project selection or cost tracking, for exam-



ple), since this drives your choice, and avoid the tendency to try to do too much. "It's easy to make this much more complicated than it needs to be," he said. Also, consider the technical support available and whether other locals have experience with the software.

Data collection used to make up 80 to 85 percent of pavement management work, Theisen said, but thanks to Minnesota's Department of Transportation (Mn/DOT) pavement condition measurement program, it's a resource problem that "has gone away." Some staff expertise is still needed to understand the data, however.

Pavement management doesn't replace field investigations or common sense, Theisen added. "It's much easier to get good data now, but it doesn't replace the need for good engineering."

Reference: Minnesota Exchange, Spring 2006

The Long Haul



Average commute time in minutes for residents of select counties, 2004.

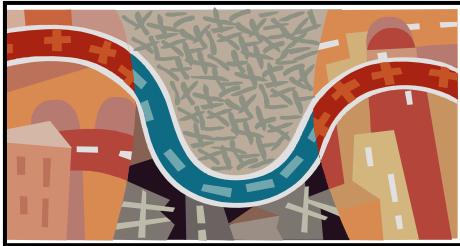
Los Angeles County, CA.....	29.2
San Francisco County, CA.....	28.7
Fulton County, GA.....	27.3
Orange County, CA.....	27.0
Broward County, FL.....	26.8
King County, WA.....	25.8
Maricopa County, AZ.....	24.5
Cuyahoga County, OH.....	21.9
Ada County, ID.....	18.2
Lubbock County, TX.....	15.9
Queens County, NY.....	41.2
Bronx County, NY.....	40.6
Philadelphia County, PA.....	33.7
Montgomery County, MD.....	33.3
Cook County, IL.....	32.4
Miami-Dade County, FL.....	30.5

Source: U.S. Census Bureau

Reference: GOVERNING, November 2005

The Legality of County Roads

Information and ideas to help managers and contractors build, maintain, and manage roads better.



Wyoming's Technology Transfer publication recently asked the question, "Are your county roads legally established?" County road and bridge supervisors can only answer the question about 30% of the time, they say.

A new program at the Local Technical Assistance Program (LTAP) Center will research the issue in Wyoming and will be headed up by Dr. Alan Romero, a faculty member at the University of Wyoming Law School, and Stacey Obrecht, a university law student with an interest in rural transportation issues.

To answer the question, consider two elements. When and how was the road established? What were the legal require-

ments for establishing a county road at the time, and were those procedures followed?

Once the project is completed next year, the LTAP T2 Center plans to create a report for use by Wyoming agencies at all levels, but the results should interest agencies in any state. Why? It lays the groundwork for looking at whether roads are legal and thus need to be maintained by the county. Those that aren't legal may be brought into the system or turned over to their private owner, along with the required maintenance.

Such an examination could help trim maintenance and snow-removal costs if a road truly doesn't belong to the county. Examples might include a road that is really a long driveway to a single property. If the road doesn't belong to the county, it could turn over maintenance to the owner or negotiate a fee for maintaining and plowing it.

Reference: Better Roads, November 2005

Agreement on Mexican Cement

The U.S. and Mexico signed an agreement in early March to lower duties on Mexican cement. Shortages of cement cropped up in the U.S. last year, and the construction industry has argued that duties on imported Mexican cement are not needed.

Stephen Sandherr, chief executive officer of the Associated General Contractors of America (AGC), called the agreement "a good first step for contractors and consumers alike."

"We thank U.S. Commerce Secretary Gutierrez for having responded to AGC's concerns and worked out an agreement that sharply reduces the duty now, eliminates it in three years and includes a 'safety valve' in case more imports are

urgently needed," said Sandherr.

U.S. Builders will be able to import 3 million metric tons of Mexican cement per year, under the agreement, for three years with a duty of only \$3 per metric ton, compared with the current duty of \$26 per metric ton. The U.S. imported 2.2 million metric tons of cement from Mexico in 2005. All limits will be removed in three years if the two sides abide by the agreement.

Reference: Road & Bridges, April 2006



Carlos M. Gutierrez
35th U.S.
Secretary
of Commerce

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Why is lemon juice made with artificial flavor, and dishwasher liquid made with real lemons?

Why is the man who invests all your money called a broker?

Why is the time of day with the slowest traffic called rush hour?

Why is the word dictionary in the dictionary?

Why isn't there mouse-flavored cat food?

You know that little indestructible black box that is used on planes, why can't they make the whole plane out of the same substance?

Can fat people go skinny-dipping?

Why do you need a driver's license to buy liquor when you can't drink and drive?

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Boise, Idaho 83703

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LHTAC NEWSLETTER

JUNE 2006

CALENDAR OF EVENTS

July 18	FOCUS: Achieving Your Highest Priorities One-Day Workshop	Boise, ID
July 18, 19, 20	Criticism & Discipline Skills for Managers and Supervisors	Boise, Twin Falls, Pocatello, ID
July 25	Finance and Accounting for Non-Financial People	Boise, ID
August 27-31	Technical Education on Microsoft Software	Phoenix, AZ
August 28, 29, 30, 31	How to Supervise People	Lewiston, Boise, Pocatello, Twin Falls, ID
July 14, September 8	Local Highway Technical Assistance Council Meeting	Boise, ID
September 17-22	Idaho Association of Counties Annual Conference	Burley, ID
November 7-8	Idaho Association of County Engineers & Road Supervisors Annual Meeting	Coeur d'Alene, ID
November 8-11	78th Annual Idaho Association of Highway Districts Convention	Coeur d'Alene, ID

If you are interested in additional information regarding any of the above referenced meetings and/or training sessions, please contact LHTAC at 1-800-259-6841 or 208-344-0565.