Summer is upon us! The 2012 ITE Annual Meeting and Exhibit in Atlanta is scheduled for August 12 thru 15. The Traffic Engineering Council (TENC) will be having an Executive Committee meeting. Make sure you check Upcoming Events on the TENC page on the ITE Community for the date, time and location. If you plan on being in Atlanta, GA, I encourage you to come to our meeting and take the opportunity to provide insight and feedback and discover how you can contribute directly to the Council and give back to the profession. Also be sure to check out the workshop being sponsored by the TENC SimCap Committee: The Traffic Study of the Future: New and Emerging Trends in Traffic Analysis Tools and Methods scheduled for Monday, August 13 from 11:00 am until 12:00 pm. There are a lot of other extremely informative presentations on the agenda at the Annual Meeting so I hope you will plan to attend.

This summer the TENC is participating in activities at the TRB Signal Systems Committee meeting being held at the Beckman Center in Irvine, CA on July 23-24. More specifically TENC members are involved with the sessions on Alternative Geometrics to Improve Signal Operations and a Diverging Diamond Signal Timing Competition. If you have interest in attending, contact Susan Langdon, the TENC District/Section Representative
If you have not visited the ITE Community recently, I want to encourage you to check it out and see what a great resource it can be. Go to www.ite.org and click the ITE Community tab at the top of the webpage. From there, you will need to log in to your ITE Account by clicking "log in to see member only content" near the top right side of the page. There are several places to find out the current "hot topics" and find out more about what is going on around the Country. An active discussion on the **All Member Forum** is related to **Flashing Yellow Arrows**. Based on the feedback from all around the US, many Cities have now adopted Flashing Yellow Arrows as the standard after a successful pilot program. Local studies are referenced for operations and crash analysis where these signals are installed. The discussion also addresses clearance intervals and if additional signing is needed at these locations. If you are interested in this or a wide variety of other topics, check out the **Traffic Engineering Council Forum** and **All Member Forum** on the ITE Community. To access the All Member Forum or go to www.ite.org and log in; click the ITE Community tab at the top of the webpage then lick "Communities" under Quick Links; select the All Member Forum and do a search for Flashing Yellow Arrows.

ITE has also established five new panels to address ways of identifying and responding to evolving hot issues (i.e., ensuring that content needs reflect the state of the science, the feasibility of accommodating e-book publications, membership training), and other related member needs. Those panels include a Traffic Engineering Handbook Panel, Transportation Planning Handbook Panel, Trip Generation Handbook Panel and two Professional Development Panels. The TENC has recommended council members for consideration as possible participants in this process.

As you can see, there’s a lot going on in the TENC! You need not be a veteran member of the council to volunteer, nor do you need to commit to extensive travel to become involved. You just need to be energetic, full of great and innovative ideas about involving members in our activities and willing to devote a small amount of your time. If you are interested in volunteering for council activities, simply contact Christa Greene (**christa.greene@stantec.com**) at 919-210-5116 or me. You won’t regret it!

As always, do not hesitate to contact me if you have any questions about any of these items or anything else related to the council. I would love to hear from you and I hope you take advantage of all of the wonderful opportunities from ITE and the council.
Businesses with drive-through lanes are commonplace in the United States. Yet, up-to-date queue-generation data isn't available. The most recent ITE article published on the topic was in 1995 (ITE Technical Council Committee 5D-10) using data collected between the late 1960s and early 1990s.

Things have changed in the past 17 years, and we felt it was necessary to create an up-to-date report that provided accurate queuing data for businesses with drive-through lanes to aid engineers and site designers. We modeled our data collection similar to that of the Institute of Transportation Engineers' Trip Generation and Parking Generation reports and a presentation by Mark Stuecheli at the 2009 ITE Annual Meeting that concentrated on bank and coffee shop drive-through lanes.

Of course, this type data collection effort is daunting if we're putting people in the field to count cars. Our traffic innovation firm (CountingCars.com) solved this issue by developing new hardware and software systems. For this project, we used portable COUNTcams to collect 1,220 hours of drive-through video footage for up to five straight days at a minimum of six locations for each land use. Videos were collected throughout Minneapolis and several suburbs between 2010 and 2012 at banks, car washes, coffee shops, fast food restaurants and pharmacies.

The 1,220 hours of videos were watched in 120 labor hours at high speeds using PC-TAS counting software and maximum queues throughout the day were recorded. The COUNTCam video system made it possible to observe the drive-through lanes 24 hours a day and the PC-TAS software made the data reduction practical.
Once the maximum queue length for each day at each location was determined, the data was compiled and statistics for each land use were calculated. The average maximum queue, standard deviation, coefficient of variation, range, 85th percentile and 33rd percentile were calculated (see Table 1).

Designers can choose whether the average maximum queue or the 85th percentile maximum should be designed to. As conservative engineers, we lean towards the 85th percentile maximum. We recommend using the following design queues (assuming each vehicle occupies 20 feet in the queue, which matches our observations):

- **Banks**: 160 feet (*eight vehicles*)
- **Car washes**: 140 feet (*seven vehicles*)
- **Coffee shops**: 260 feet (*13 vehicles*)
- **Fast food restaurants**: 240 feet (*12 vehicles*)
- **Pharmacies**: 100 feet (*five vehicles*)

<table>
<thead>
<tr>
<th></th>
<th>Fast Food</th>
<th>Coffee Shops</th>
<th>Banks</th>
<th>Pharmacies</th>
<th>Car Washes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Data Points</td>
<td>14</td>
<td>26</td>
<td>21</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Average Maximum Queue (vehicles)</td>
<td>8.50</td>
<td>10.23</td>
<td>5.76</td>
<td>2.92</td>
<td>4.42</td>
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<td>Standard Deviation (vehicles)</td>
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<td>2.76</td>
<td>2.21</td>
<td>1.16</td>
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<tr>
<td>Coefficient of Variation</td>
<td>32%</td>
<td>27%</td>
<td>38%</td>
<td>40%</td>
<td>52%</td>
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<tr>
<td>Range (vehicles)</td>
<td>5 to 13</td>
<td>3 to 16</td>
<td>1 to 10</td>
<td>1 to 5</td>
<td>1 to 10</td>
</tr>
<tr>
<td>85th Percentile (vehicles)</td>
<td>12.00</td>
<td>13.00</td>
<td>8.00</td>
<td>4.05</td>
<td>6.20</td>
</tr>
</tbody>
</table>
Table 1 - Queue Statistics

| 33rd Percentile (vehicles) | 7.90 | 9.91 | 5.00 | 2.00 | 3.00 |

Fast food restaurants and coffee shops have the longest maximum queues of the five land uses observed. Coffee shops have a maximum 85th percentile queue of 13 vehicles and fast food restaurants have a maximum 85th percentile queue of 12 vehicles. Coffee shops have a tendency for the morning queues to build up so long that they spill out onto the street, though, as is expected, their afternoon and evening queues are minimal. Fast food restaurants typically have sizeable queues, but they tended to have enough dedicated space that stacking did not go beyond the designated queuing area. Bank and pharmacy drive-through lanes seem to be significantly over-designed for today's use. Car washes also seem to be significantly overdesigned, but they can have significant peaks in Minnesota based on weather conditions. We may not have observed extreme peak conditions.

To read the full study, including data from each site observed, please visit MikeonTraffic.com.

Flexible Roundabout Design: Redesign of Park City’s 10 Year Old Deer Valley Roundabout

By Bill Baranowski, P.E.

Abstract:

The Park City Deer Valley Roundabout was constructed in 2000 for the 2002 Winter Olympics in Salt Lake City, UT. Note that recent presidential contender Mitt Romney, coming from Boston where they have large old rotary intersections, to take charge of the Winter Olympics required extensive testing of the new roundabout in 2001. The roundabout was state of the art when it was constructed at a difficult location connecting two ski resorts and a main street shopping area and the Olympic Transit Station near Park City. It included innovative construction staging, hazardous materials, steep slopes, pedestrian trail, bicycle tunnel and a very active transit center. The area also receives up to 500 inches of snow during the winter. After the Olympics left town parts of the roundabout needed changes and requests from Deer Valley ski resort required other changes to the basic design of the roundabout. The design and construction of these changes cost only $40,000 but resulted in a more effective and safer roundabout operation for all users. It is unique in that it now includes a turbo island that separates traffic streams on one of the legs.


Stuck In Traffic? Looking For Greener Options? Want To Save Lives? Consider This …

By Phil Rust, Roundabout Communications Chair
At the 2010 Vancouver meeting, Rock Miller issued a challenge to the roundabout committee: create a roundabout policy for ITE that reflects the current stature of roundabouts in the profession and one that properly credits good design for this achievement. This March, ITE formally adopted the following policy:

ITE "recognizes the safety, operational, and sustainability benefits of well-designed roundabouts and recommends the use of roundabouts be considered when intersections are being planned, designed or modified."

The roundabout committee appreciates everyone who helped direct ITE's attention toward using well-designed roundabouts to meet the difficult transportation challenges facing us today. For more ITE policies, please visit the following link: www.ite.org/aboutite/policies.pdf

To learn more about roundabouts or the roundabout committee, please visit the following link: www.ite.org/councils/traffic/roundabout.asp

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**Hot Topics in the Traffic Engineering Council Discussion Group**

*By Jim Harris, TSOS, MITE*

We are in our fourth quarter since the switch from the popular Traffic Engineering Council Listserv group discussion to the ITE Community Group Discussion. It continues to go well and to grow in popularity although there is some competition from the All Member Forum. If you haven't made the move and wish to, use the following steps:

1. Log onto ITE Community at [http://community.ite.org](http://community.ite.org) with your ITE username and password.
2. Select **My Profile** -&gt; **My Subscriptions**.
3. Select **Real Time**, **Daily Digest** or **Legacy** next to Traffic Engineering Council.
4. If you wish, select other groups in the list as well.
5. Save.
Benefits of the updated discussion group are:

- The discussion e-mails you receive in your inbox will now include links to posters' professional profiles.
- All e-mail attachments will automatically be added to the searchable Library on ITE Community.
- You can easily update your subscription setting at any time (including no e-mails while on vacation).
- No more "Out-of-Office" emails.
- Searching the archive on ITE Community will bring up relevant discussions and documents to any group you belong to, not just the Traffic Engineering Council.
- Access to the ITE Traffic Listserv archives.
- Only current ITE/Traffic Engineering Council members can participate.

For you LinkedIn members, ITE's Zach Pleasant added a feature to ITE Community that allows you to create a profile by importing directly from your LinkedIn profile. Now there's no need to cut, paste or keep two profiles up-to-date. Log into ITE Community at http://community.ite.org, select My Profile and Import from LinkedIn.

If you have any questions about ITE Community, please ask. He's happy to help: Zach Pleasant, Information Services Manager, Phone: 202-785-0060 ext. 120, E-mail: zpleasant@ite.org.

Several topics generated a lot of discussion this quarter. Here are several of the more popular:

1. "The 2009 MUTCD was recently adopted in California with revisions. The California MUTCD contemplates an optional pedestrian walking speed study to guide the development of pedestrian clearance interval timing. The relevant portion reads: "A walking speed between 3.5 and 4 feet per second may be used for the pedestrian clearance time if an engineering study at a representative location documents that it is sufficient to accommodate the walking speed of the 15th percentile pedestrian." (Elsewhere, 15th percentile is defined as the speed at which 85% of pedestrians walk at or faster.) I am interested in undertaking such a study and am looking for guidelines for such a study which would form a reasonable starting point. Ruminations are also welcome. I've come up with the following thoughts thus far:
   - Any particular intersection needs but one "representative location." I am thinking about collecting data at locations that are representative of school zones, residential areas not near schools, commercial areas, and office areas. We also have a senior center and I would include the nearby intersection there. Then the data would be reported and guidance developed for our use at intersections that have similar characteristics. I recognize that residential areas can be further stratified and also that I am omitting, e.g. industrial areas, but these can be considered separately at a later date.
   - With respect to how to conduct the study, the guidelines for engineering and traffic surveys (e.g. speed surveys) come to mind. (I recognize this is a California term but I presume at least some other states perform similar analyses.) Thus, off-peak (i.e. non-commuting pedestrians) may be desirable for the same reasons as they are
recommended for speed surveys; dry conditions would be a prerequisite; aim for at least 50 crossers, with 100 desired.

- But, there would be distinctions drawn with the engineering and traffic survey. For instance, since every pedestrian can independently select his/her own speed, one need not just get the fastest or slowest pedestrian in a group (i.e. the analogy to the lead car in a platoon would not apply). I would also not consider anomalous crossings, e.g. the person who turns around part of the way across (perhaps forgot something), or the person who runs.
- Please critique and/or supplement. I appreciate any input provided.

2. "What is the ADA requirement for clear path of travel (e.g., for sidewalks)? Is it 36 inches or 48 inches? A colleague mentioned the standard had changed to 48 inches."

3. "I am looking for thoughts on a cost/benefit methodology that could be specifically associated with only upgrading to current standards/maintaining an existing traffic signal. Nothing would be improved as part of this work, such as the addition of turn lanes or phasing. It is strictly providing maintenance and necessary upgrades for an older signal to be considered current. Energy consumption was an initial thought, but we were thinking there might be others."

4. "In an effort to share alternative perspectives on sustainable design, ITE's Sustainability Task Force in partnership with Greenroads Foundation will soon be offering a web briefing titled "Greenroads: A Sustainability Rating System for Roadways". The web briefing will be held on Wednesday, July 18, 2012 from 3:00 p.m. to 4:30 p.m. EST. Please visit the following link for additional information: www.ite.org/education/webinars_green.asp"

5. "Section 4D.14 Longitudinal Positioning of Signal Faces of the MUTCD discusses the longitudinal placement of signals within an intersection. Assume the situation of two closely spaced signalized intersections (tight urban diamonds, downtown grids, etc.) for these questions:

Is anyone familiar with any studies, evaluations, or guidelines for optical distance limiting of signals such that a driver waiting at a red at the first signal does not get drawn through the intersection because the far intersection turned green?
Is there a distance threshold where you can assume this is not a problem?"

Search the old listserv archives for more questions and replies as indicated above. Also, the Search field in the upper right hand corner of ITE Community will search ALL discussions, blogs, events, and libraries you belong to; therefore, the more you contribute, the bigger this resource will become.

With the ITE Community format you no longer have to worry about inserting an appropriate signature. Your signature is inserted automatically for you based on how you are registered with ITE.

**Tips and Trends in Transportation**
Driver Distraction Poses Safety Issue

The risk of driver distraction is growing with the growth in information and communication technologies (ICT). Car manufacturers are under pressure to offer the latest technologies to maintain product strength. But at the same time firms also have to keep process of human interaction with the car simple, to reduce driver distraction. Research by The US National Highway Traffic Safety Administration (NHTSA) has shown that 17% (an estimated 899,000) of all police-reported accidents in 2010 reportedly involved some type of driver distraction. Of those 899,000 crashes, distraction by a device/control integral in the vehicle was reported in 26,000 cases (3% of the distraction-related police-reported accidents). Reacting on these results, the NHTSA has formulated voluntary guidelines for driver distraction, which will be rolled out in three phases based on device origin and interaction type. NHTSA's approach toward driver distraction will help manufacturers with the coming information systems, according to Frost & Sullivan Research Analyst, Krishna Jayaraman. He added that NHTSA plans to implement the feedback from the public and hold public hearings before finalising the first phase of recommendations. This will open up opportunities for OEMs and suppliers to convey their message and help set guidelines that will benefit them as well as the consumers.

As smartphones are one of the major sources of driver distraction, the US National Transportation Safety Board (NTSB) in December 2011 proposed a nation-wide ban on the use of personal electronics devices while driving, as the risk of an accident is four times higher when using a phone while driving a car, various studies, revealed. The regulation applies in 50 states and bans the use of hands-free systems, including wireless headsets. This could act against those firms offering phone integration and hands-free systems as a part of their portfolio.

But due to pressure from the automotive and the Smartphone industries, it remains to be seen how this regulation will be implemented according to Jayaraman. This will be a testing phase though for all Smartphone interfacing solutions available in the market, where judgment will be made on how intelligently a phone is handled with the in-vehicle HMI. All advancements to reduce driver distraction point toward the development of and the need for natural voice control interfaces. Before the goal of achieving a voice-controlled environment is realized however, a number of demands have to be met, particularly regarding the migration from command-based to natural speech systems.

"The categorization of driving-related critical and non-critical functions will be pivotal when designing a safe and simple HMI solution," Jayaraman said. "The key focus will be to achieve a proper balance when splitting critical functions among the different interfaces available. A major part of this process will be based on the aforementioned guidelines for reducing driver distraction and keeping in mind consumer preference for different controls." A balance between the implementation of new technologies and the reduction of driver distraction needs to be achieved. This revokes the need for a multi-modal HMI solution wherein all the control interfaces will play a major role. Combining Driver assistance systems (DAS) and information systems will be the modular approach to ensure driver safety.

Noise Systems for Electric Vehicles

New rules in the US mean that electric vehicles will require noise generation
equipment. This covers electric vehicles and hybrids as well as motorcycles, medium and heavy trucks and buses. It specifies that the alert sound must be sufficient to allow a pedestrian to detect a nearby EV or PHEV operating at constant speed, accelerating, decelerating and operating in any other critical scenarios. It must reflect the minimum sound level emitted by a motor vehicle that is necessary to allow visually-impaired and other pedestrians to detect a nearby EV or PHEV operating below the cross-over speed. In addition, it must reflect the performance requirements necessary to ensure that each vehicle's alert sound is as recognizable to pedestrians as that of a motor vehicle in operation. The implementation of the rulemaking is due in 2014 and should come into effect by 2017.

In 2011 the European Commission drafted a guideline for Acoustic Vehicle Alerting Systems. This guideline, intended to make recommendations to manufacturers for the installation of systems that provide vehicle operation information to vulnerable road users, is planned as an interim guidance until completion of on-going research activities and the development of a global harmonisation for device performance specifications. Two main types of warning device have been developed and are in use by car manufacturers so far.

Devices mimicking conventional internal combustion engine cars use all-weather audio speakers placed on the vehicle's wheel wells and send audible signals only in the direction of travel (to minimise noise pollution and to maximise acoustic information for pedestrians). Depending on the system, most of them automatically switch off when reaching a speed higher than 32 km/h - at which point the tyres and wind make sufficient noise - or when the hybrid combustion engine kicks in. ECTunes and Enhanced Vehicle Acoustics (EVA) are companies that have developed such devices. Huyndai and Lotus have also developed such warning noises, called respectively the "Virtual Engine Sound System" (VESS) and the "HALOsonic".

These were integrated to the Hyundai Sonata Hybrid (2011) and the Lotus Evora 414E Hybrid. Other warning sounds different to those of combustion engine cars are used on the Chevrolet Volt and the Nissan Leaf. GM's system is called "Pedestrian-Friendly Alert System" and is manually activated by the driver, but future generations will probably include an active system. The Nissan Leaf's includes one sound for forward motion and another for reverse.

Depending on the speed and whether the Leaf is accelerating or decelerating, the sound system will make sweeping, high-low sounds. Fisker has installed two one-watt sound generators to its 2012 Karma ES to alert pedestrians of its presence in EV mode. Ford should integrate such sounds to its 2012 Focus Electric. Toyota's "Vehicle Proximity Notification System" (VSPN) will be introduced in the United States in all 2012 Prius family vehicles.

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