OTEField

Making sense out of the New Oklahoma Left Lane Traffic Law

by: Angelo Lombardo, P.E.

During the October 17, 2017 Fall meeting, I remembered raising my hand and asking one of the presenters to talk about the new law that restricts the use of the left lane on multi-lane highways. I was shocked to learn that traffic professionals were not involved in the discussion which validated some of the concerns that prompted me to ask the question in the first place.

Proponents of HB 2312 believe it strengthened an existing law covering the restrictions on driving in the left lane and that the new law makes it very clear that a vehicle cannot be driven in the left lane except when overtaking or passing another vehicle if the road is divided into four or more lanes. The law allows for driving in the left lane when traffic conditions or road configuration requires the use of the left lane to maintain safe traffic conditions.

This law has been in the news a lot and became effective on November 1, 2017. There are definitely some pros and cons to it. Overall, I think the law is not necessary. Even though I can't stand people who just sit in the left lane when there is someone behind them who wants to go faster. It's discourteous and leads to frustrated drivers. On the other hand, this gives law enforcement yet another reason to pull people over. I believe they still had this justification under the previous version of the law, but the new wording makes it easier for law enforcement to find reasonable suspicion of a traffic violation.

(Continues on Page No. 11)

ENGINEER DIRECTORY

A Message from the President

By: B. J. Hawkins, P.E., P.T.O.E.

With the new year starting, I would like to thank our previous OTEA board members who made the 2017 Spring Meeting a huge success: Lauren Ludwig (President), Jami Short (ODOT/OTA/FHWA Director), Brian McNabb (City/County Director), Esther Shaw-Smith (Consultant Director), Len Scantling (Contractor/Supplier Director), Jack Stewart (Past President) and Angelo Lombardo (Secretary/Treasurer/OTEField Editor). We had around 140 attendees at the Ardmore Convention Center and received positive feedback from all we spoke to. The association has outgrown many of the state parks, so it was great to find another venue which everyone seemed to enjoy. I would like to send an extra big thank you to Len and "McNaldo" for the constant entertainment bartending each night.

The new OTEA Board is comprised of Esther Shaw-Smith (Vice President), David Glabas (ODOT/OTA/FHWA Director), Michael Ludi (City/County Director), Michael Hofener (Consultant Director), Scott Myers (Contractor/Supplier Director), Lauren Ludwig (Past President) and Angelo Lombardo (Secretary/Treasurer/OTEField Editor). We worked hard to organize the Fall Meeting which was held on October 17th at the City of Edmond Public Works Facility. The agenda was packed full of interesting topics and I hope everyone who attended the meeting got as much out of it as I did. Additionally, attendees had the option of touring the City of Edmond's Traffic Management Center (TMC) following the meeting.

During the 2017 Spring Meeting the idea was brought up to write and present a letter on behalf of OTEA to Governor Fallin stressing the importance of transportation funding after the State had halted the construction of many projects and threatened to stop many more. The letter was drafted and hand delivered to the Governor's office in May. Fortunately for all, the transportation funding was resolved and design and construction resumed.

OTEA has partnered with ODOT in supporting and promoting the Work Zone Awareness Campaign which emphasizes drivers to drive safely and give their full attention while in work zones. The hope is the message will hit home the need to be safe behind the wheel and that it will produce better driver behavior, thus aiding the safety of construction workers and Oklahoma motorists. Highlights of the 2017 campaign included radio and television advertisements, wrapping EMBARK busses with the campaign information, Wear Orange Day on April 10th to honor ODOT's 60 fallen workers, lighting up the Skydance Bridge orange on April 18th, the installation of 85 wooden crosses along I-235 in honor of the 85 motorists and ODOT workers who have died in the past five years and a memorial event on May 1st to close out this year's campaign.

In closing, I look forward to serving you as the OTEA President and will do my best to make sure we have another great year. Happy New Year and I hope to see everyone at the 2018 Spring meeting, which will be held in Shangri-La Resort from May 2-4, 2018.

B. J.

ENGINEER DIRECTORY

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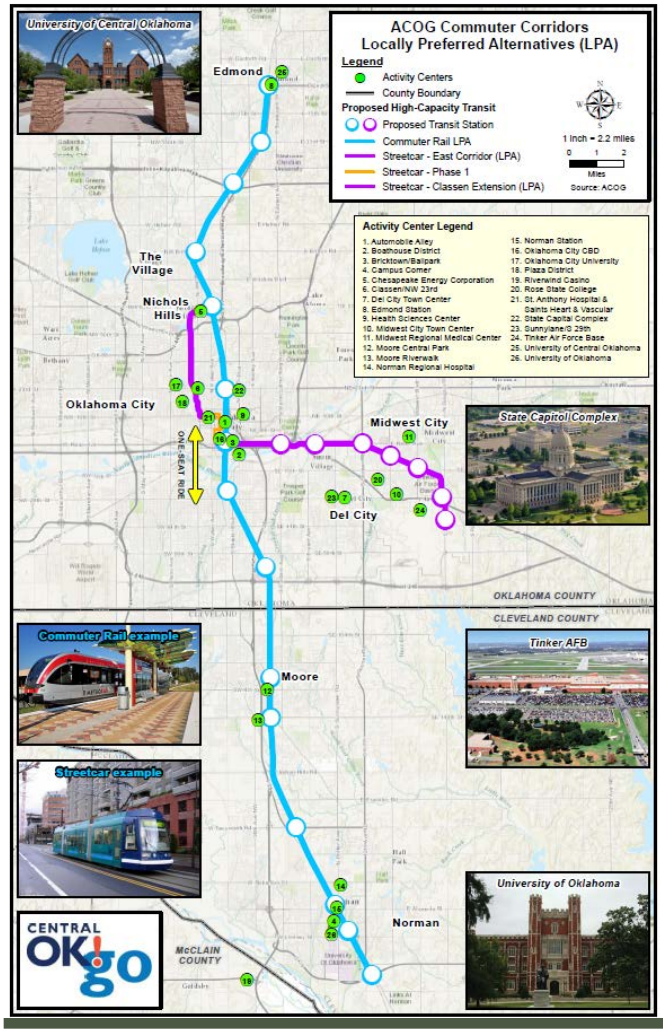
Central Oklahoma One Step Closer To Regional Transit

The Association of Central Oklahoma Governments (ACOG) announces the selection of Holmes and Associates to provide technical assistance and planning support for the development of a Regional Transit Authority (RTA) for Central Oklahoma.

A committee comprised of ACOG staff and elected officials who serve on the organization's board of directors awarded the $420,000 contract to Holmes. According to ACOG Executive Director John G. Johnson, the consulting firm is well-known throughout the transit industry for their work on the Utah Transit Authority and contributions they made to Salt Lake City's transit Cinderella story.

"Kathryn Holmes and her team specialize in strategic counseling on the full array of issues and concerns facing clients in the public transportation sector," Johnson said.



"ACOG is very excited to work with them on this next major step for Regional Transit in Central Oklahoma."

The primary work at hand includes:

- **Establishing the geo-political structure of the RTA**
- **Determining the necessary next steps to fund and staff the organization**

"ACOG first discussed forming a Regional Transit Authority in 2005," Johnson said. "For the last 12 years, we've coordinated the effort in strong collaboration with numerous stakeholders from the public and private sector as well as ACOG member communities.

According to Johnson, those initial discussions in 2005, resulted in the 2010 Regional Transit Dialogue (RTD). Five years later, in 2015, ACOG formed the Regional Transit Authority Task Force, which is comprised of Del City, Edmond, Midwest City, Moore, Norman and Oklahoma City. All six communities voted to invest funds to develop an operating budget for an eventual Regional Transit Authority. Later, mayors from all six cities signed a Memorandum of Understanding underscoring and solidifying their commitment.

"This is one of the most rewarding project I've worked on in the nearly 30 years I've worked for ACOG," said Johnson. "The citizens of Central Oklahoma want better connections between their communities, jobs and schools. They want better ways to get from where they are to where they want to be.

"They want the path forward to be convenient, safe and reliable. I'm grateful that ACOG is a part of it."

Source: Association of Central Oklahoma Governments

SUPPLIER DIRECTORY

GPS isn't the only Technology that Autonomous Vehicles Rely on

By James Scott Baron

The safety of our driverless future depends on well-maintained and easy-to-see lane stripes and edge lines.

In January 2016, President Obama proposed spending $4 billion over the next decade to develop automated vehicle technology, which would include pilot programs in municipalities across the country. Two months later, *The Wall Street Journal* reported that you can buy a self-driving Honda for $20,440.

It's true that much of the drive can be done with hands off the wheel and foot off the accelerator. But as the article points out, everything goes according to plan only when pavement markings are easily visible.

"One of the most important aspects of a safe and efficient roadway is the uniform application of pavement markings to delineate roadway path and traffic lanes," the Federal Highway Administration states. "Markings communicate information to road users like no other traffic control device."

The average driver probably doesn't consider them anything more than paint on the ground. But as technology transforms transportation networks, they're more important than ever to public safety.

Marking evolution

Advanced driver assistance systems (ADAS) rely on pavement markings as well as GPS," says Jim Spielman, president of MRL Equipment Co. in Billings, Mont. "Road stripes enhance vehicle ADAS features such as Lane Departure Warning and Land Keeping Assistance."

When Spielman began working in North Dakota in 1974, a national initiative had recently called for making rural roads safer. Striping business from formerly "naked" county and secondary roads shot up, but concerns about durability and the environment arose.

"In those days, paint was primarily solvent (oil)-based," says Spielman. "This not only left hazardous materials on the road, but the paint itself was harmful to people and the atmosphere."

Over time, the durability of products like epoxies and thermoplastics improved. Preformed tapes can last more than 10 years in some applications.

"The 1970s were the advent of durable materials; and by the late 1980s, there was an industrywide landslide to water-based paints," says Spielman.

"The demands are still environmental, but we're providing better-performing material for less," says Raymond Somich, global market manager for traffic materials at The Dow Chemical Co. "Understanding the cost position of local authorities, we want to make technology applicable across all surfaces."

The company developed Fastrack to help road managers please constituents who don't like being inconvenienced while meeting federal emissions requirements.

Paint made with the waterborne binder has eight to 10 times less solvent, and, thus, fewer volatile organic compounds (VOCs), than traditional paint. The binder's designed to enable formulators to provide fast-drying paint that can be applied in any weather, including low temperatures and high humidity.

Meeting local agency needs

Franklin Paint Co. Inc. in Franklin, Mass., specializes in water-based paint and chlorinated rubber products for roundabouts, crosswalks, airports, and other high-traffic locations.

Owners Lawrence Boise and Steve Schultz work toward safer roads as members of an autonomous vehicle coalition and developers of soon-to-be-introduced methylmethacrylate (MMA) products called Spray MMA and Structured MMA.

They contain retroreflective glass beads dispersed in a peak-and-valley pattern that funnels water away and exposes the beads in a 360-degree radius. As a result, pavement markings are visible from any angle.

"The vehicle's ability to read markings is critical," Boise says. "Paint must be innovative and exceed specifications to serve the needs of states and localities."

Source: Public Works Magazine. May 2017

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OTEA Appeals to Governor to restore State Transportation Funding

During OTEA's May 4, 2017 Business Meeting , some members suggested that the organization write a letter to the Governor urging the State to maintain current transportation funding levels. The Board developed the following letter which was signed by President B.J. Hawkins and delivered on May 15, 2017 for the Governor's Office.

Oklahoma Traffic Engineering Association - 4405 Trophy Drive - Norman, OK 73072
Phone: 405-360-6664 - E-mail: OTEField@sbcglobal.net

May 15, 2017

Honorable Governor Mary Fallin and Members of the Oklahoma Legislature
State Capitol Building
2300 N Lincoln Boulevard
Oklahoma City, OK 73105

Dear Governor Fallin and Members of the Oklahoma Legislature:

The Oklahoma Traffic Engineering Association (OTEA) was founded and established in 1966. It is a professional association with more than two hundred members whose primary objective is to achieve safer and more efficient transportation on the streets and highways of Oklahoma through the use of traffic engineering principles in the planning, design and operation of all traffic facilities. This can only be possible with an adequate and consistent source of funding for the expansion, reconstruction and maintenance of Oklahoma's transportation system.

Oklahoma is the Crossroads of America. Unfortunately, we rank near the top nationally in deficient bridges and more than 25% of our state highways need critical repairs. The Crossroads are crumbling.

A cornerstone of good state government is providing safe and adequate transportation. In Oklahoma, we have achieved solid progress since 2006 by increasing state funds for transportation by over $700 million, however the state still has over $10 billion in backlogged repairs needed to rehabilitate our transportation infrastructure.

Without better roads and bridges, Oklahoma's commerce and economic development will be stifled. Reductions to the progress of transportation infrastructure in our cities and towns will disable the growth of economic development. Our cities and towns are the economic engines of Oklahoma and vital to our future success. There will be limited access in rural communities to emergency responders, an increased loss of life and a poor state image. Additionally, we will saddle future generations with an ever-growing tax burden to fund repairs that grows more costly the longer we delay.

To better understand the importance of how the funding process works for building better roads and bridges, the key is that regardless of the source of funding, ODOT must upfront the cash and pay the invoices on all projects including city, county and state projects before ODOT can ask for reimbursements. This fiscal year the cash just isn't there because ODOT has used all the available cash over the past few years, being depleted to assist with the state budget holes and in lieu of bonds. So, all projects can be jeopardized because of that and ODOT is reluctant to engage any additional contracts (let projects) until ODOT has some level of certainty that they will be able to pay for the bills upfront.

At the May, 2017 Oklahoma Transportation commission meeting ODOT stopped or suspended the state projects, but if conditions don't improve, they have advised that local projects including city and county projects may be stopped or suspended, again no matter what the source of funding.

Honorable Governor Mary Fallin and Members of the Oklahoma Legislature
May 16, 2107
Page 2 of 2

In addition, another very dangerous ramification is losing matching federal funds if ODOT is not able to move forward with these projects and having state funds to match them. That will also impact all local government projects.

A core OTEA principle is that all transportation-derived revenues should be used strictly for transportation. OTEA supports returning all motor fuel taxes and the remaining allocation of vehicle-related fees to transportation purposes, and encourages the appropriate allocation of motor vehicle fees to state highways, county roads and municipal streets taking into consideration previous vehicle-related fees and general fund allocations. OTEA will continue to support this concept as a matter of sound public policy.

OTEA's goal of achieving safer and more efficient transportation on the streets and highways of Oklahoma requires proper funding. Ensuring that funding remains at a level where no current projects are interrupted, no planned projects cut and no motor fuel taxes and vehicle-related transportation fees diverted from ODOT's investment strategy, which includes the eight-year construction work plan, the Asset Preservation Plan and highway and bridge maintenance, is one of OTEA's top priorities.

To continue the expansion, replacement and rehabilitation of state highways and bridges, local government projects, roads and bridges, OTEA supports the continuation of statutory allocations to a core business function of the state.

Respectfully submitted for your consideration,

B.J. Hawkins, P.E., P.T.O.E.
President

Making sense out of the New Oklahoma Left Lane Traffic Law

by: Angelo Lombardo, P.E.

(Continues from Page No. 1)

Proponents of the law intended to increase safety on Oklahoma highways by allowing law enforcement officers to crack down on slowpokes who clog traffic by driving in the left lanes of multilane roadways.

The action in the Sooner State was welcome news to the Owner-Operator Independent Drivers Association. The Association says it is common sense to have rules in place that requires slower vehicles yield to traffic moving at the speed limit. At least 20 states have similar left-lane restriction rules, according to the National Conference of State Legislatures.

Oklahoma state Sen. Kenneth Corn said the rule adds some teeth to Oklahoma law and allows the Highway Patrol to issue tickets to drivers who spend too much time in the passing lanes. Senator Corn said that before the law was enacted, patrol was not able to issue tickets solely for driving slowly in the passing lane. And the fine can hurt! - $235.25 plus court costs. So, you better have a good reason to drive in the left lane.

To better understand the issue, I found it helpful to look at the history of the laws that have regulated the use of the left lane on our multi-lane highways. Here are a few highlights:

Timeline:

Version of the first law, which dates back to 1961. Has been revised several times over the years and the focus is on B, highlighted below. It pertains to slow moving traffic.

§47-11-301. Drive on right side of roadway - Exceptions.

A. Upon all roadways of sufficient width a vehicle shall be driven upon the right half of the roadway, except as follows:

1. *When overtaking and passing another vehicle proceeding in the same direction under the laws governing such movement;*
2. *When an obstruction exists making it necessary to drive to the left of the center of the highway; provided, any person so doing shall yield the right of way to all vehicles traveling in the proper direction upon the unobstructed portion of the highway within such distance as to constitute an immediate hazard;*
3. *Upon a roadway divided into three marked lanes for traffic under the laws applicable thereon;*
4. *Upon a roadway restricted to one way traffic; or*
5. *Upon a roadway having four or more lanes for moving traffic and providing for two way movement of traffic.*

B. Upon all roadways any vehicle proceeding at less than the normal speed of traffic at the time and place and under the conditions then existing shall be driven in the right hand lane when available for traffic, or as close as practicable to the right hand curb or edge of the roadway and may be temporarily driven upon the right-hand shoulder for the purpose of permitting other vehicles to pass. This subsection shall not apply when overtaking and passing another vehicle proceeding in the same direction or when preparing for a left turn at an intersection or into a private road or driveway.

C. Upon any roadway having four or more lanes for moving traffic and providing for two way movement of traffic, no vehicle shall be driven to the left of the center line of the roadway, except when authorized by official traffic control devices designating certain lanes to the left side of the center of the roadway for use by traffic not otherwise permitted to use such lanes, or except as permitted under paragraph 2 of subsection (a) of this section. However, this subsection shall not be construed as prohibiting the crossing of the center line in making a left turn into or from an alley, private road or driveway.

Added by Laws 1961, p. 376, § 11-301, eff. Sept. 1, 1961. Amended by Laws 1977, c. 21, § 4, emerg. eff. April 15, 1977; Laws 1978, c. 129, § 1; Laws 1996, c. 22, § 1, eff. July 1, 1996; Laws 2002, c. 397, § 20, eff. Nov. 1, 2002.

Version of an additional law, which dates back to 1961. It has been revised several times over the years with the latest version in 2010. It supplements 301. This 309 is a little more clear and focus is on 5 & 6, which is highlighted.

§47-11-309. Driving on roadways laned for traffic.

Whenever any roadway has been divided into two or more clearly marked lanes for traffic, the following requirements in addition to all others consistent herewith shall apply.

1. *A vehicle shall be driven as nearly as practicable entirely within a single lane.*
2. *A vehicle shall not be moved from the lane until the driver has first ascertained that the movement can be made with safety and then given a signal, not less than the last one hundred (100) feet traveled by the vehicle, of his intention to change lanes.*
3. *Upon a roadway which is divided into three lanes, a vehicle shall not be driven in the center lane except when overtaking and passing another vehicle where the roadway is clearly visible and the center lane is clear of traffic within a safe distance, or in preparation for a left turn or where the center lane is at the time allocated exclusively to traffic moving in the direction the vehicle is proceeding and is signposted to give notice of the allocation.*

(Continues on Page No. 18)

Minneapolis riders invited to hop autonomous shuttle for wintry tryout

The week before the city hosts Super Bowl LII, the public will be allowed to hop an autonomous shuttle in downtown Minneapolis as part of the Minnesota Department of Transportation's efforts to introduce self-driving vehicles.

The EZ10 vehicle is manufactured by EasyMile and operated by First Transit. With no steering wheel, it operates on pre-mapped routes. The driverless, electric shuttle transports up to 12 people, with half seated and the other half standing.

On January 26, 27 and 28, the short, free rides will be offered on Nicollet Mall from Third Street to Fourth Street.

This will be the first use of this vehicle in Minnesota and EasyMile's first official test in a harsh winter weather environment, including snow and ice, MnDOT says.

The bus is undergoing a series of winter weather conditions at MnDOT's MnROAD facility near Monticello, Minnesota, from December 2017 through March 2018. This closed loop, which is not open to other traffic, allows for safely testing the vehicle in snow, ice, frigid cold weather this week, and salt-covered road conditions.

This shuttle has already transported more than 160,000 people and logged more than 60,000 miles around the world, the agency says.
Vehicle automation is defined into five levels, and the higher the level, the more automated the vehicle is, according to MnDOT.

Earlier this month, at a press briefing, MNDOT showed the media the test bus on a 2.5-mile test track in Monticello. That kicked off the four-month, $200,000 test of autonomous vehicles that will also feature the block-long test in downtown Minneapolis the week before the Super Bowl, which is February 4.

The introduction of autonomous vehicles provides commuters with many benefits including increased safety, less traffic congestion and more transportation options, according to the EasyMile (ASCE).

A model of the EasyMile autonomous shuttle will carry passengers in downtown Minneapolis in a cold-weather tryout the week before Super Bowl 2018.

The group, which represents 150,000 civil engineers in private practice, government, industry, and academia, points to efforts like this and others around the country as necessary to ensure that America's infrastructure is prepared for the future and that engineers consider emerging technology.

ASCE says shuttles will be able to take transit users from home to a transit stop and back, enabling more commuters to use public transportation, which will ease traffic congestion.

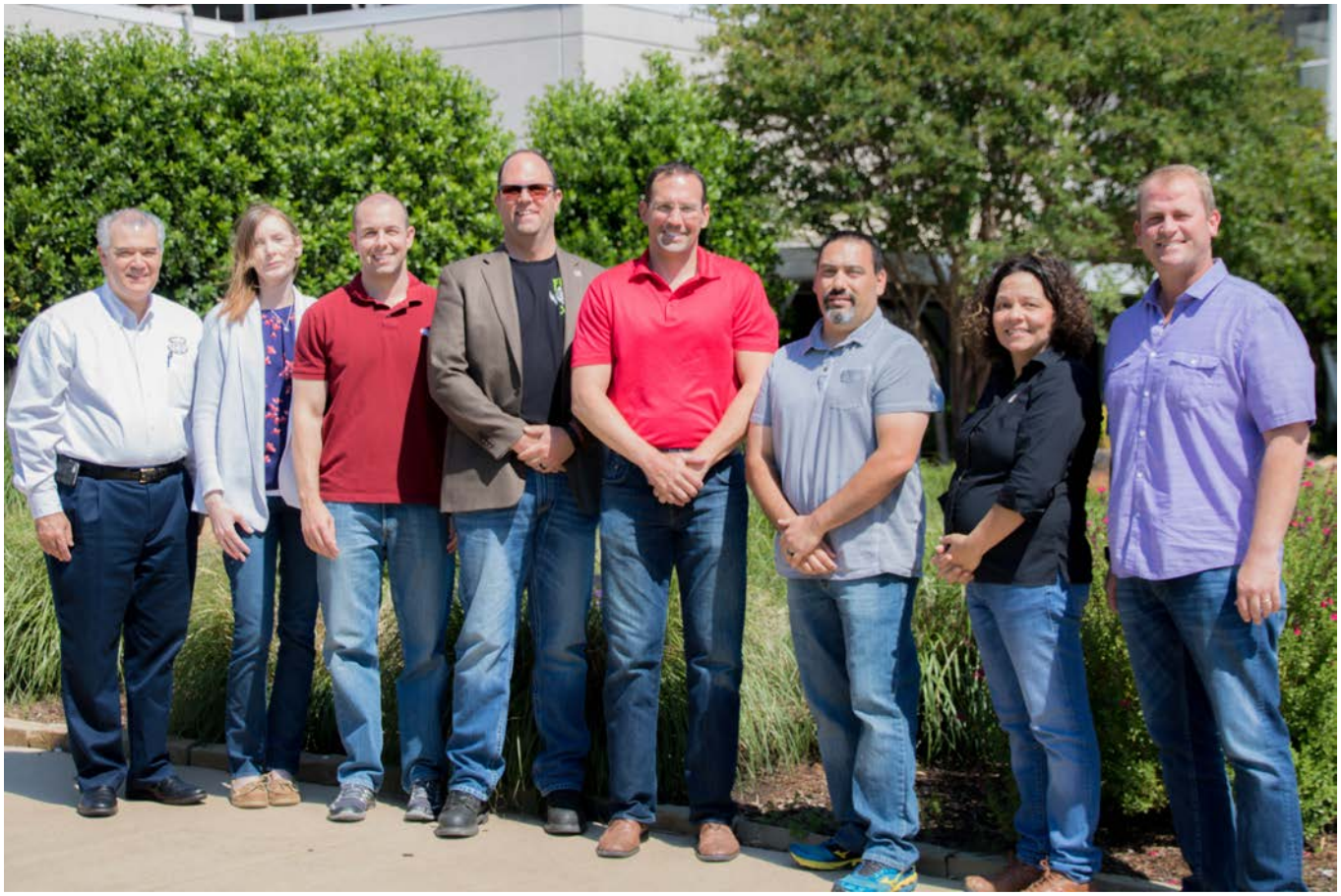
"Creators of these innovative vehicles are also hoping for small autonomous shuttles to fill in the transportation gaps where necessary, serving commuters with short 'first-mile, last-mile' trips," ASCE says in a December 15 news release.

MnDOT notes that connected and Automated Vehicle (AV) technology is rapidly advancing around the country and the world. These vehicles have the potential to reduce crashes by minimizing human factors during driving, the agency says. As the technology advances, Minnesota is monitoring and testing how this technology works in winter-weather conditions.
Among benefits of autonomous vehicle technology:

- Safer roads
- Improved mobility services
- Reduced congestion
- Fuel efficiency
- Reduced energy consumption
- Cleaner environment
- Better land use

Source: MnDOT 2017

Meet the 2017-2018 OTEA Board of Directors



2017-2018 OTEA Board of Directors

From Left to Right: Angelo Lombardo (Secretary-Treasurer), Lauren Ludwig (Past President), B.J. Hawkins (President), David Glabas (ODOT Director), Michael Hofener (Consultant Director), Michael Ludi (City / County / FHWA Director), Esther Shaw-Smith (Vice President) and Scott Myers (Contractor / Supplier Director)

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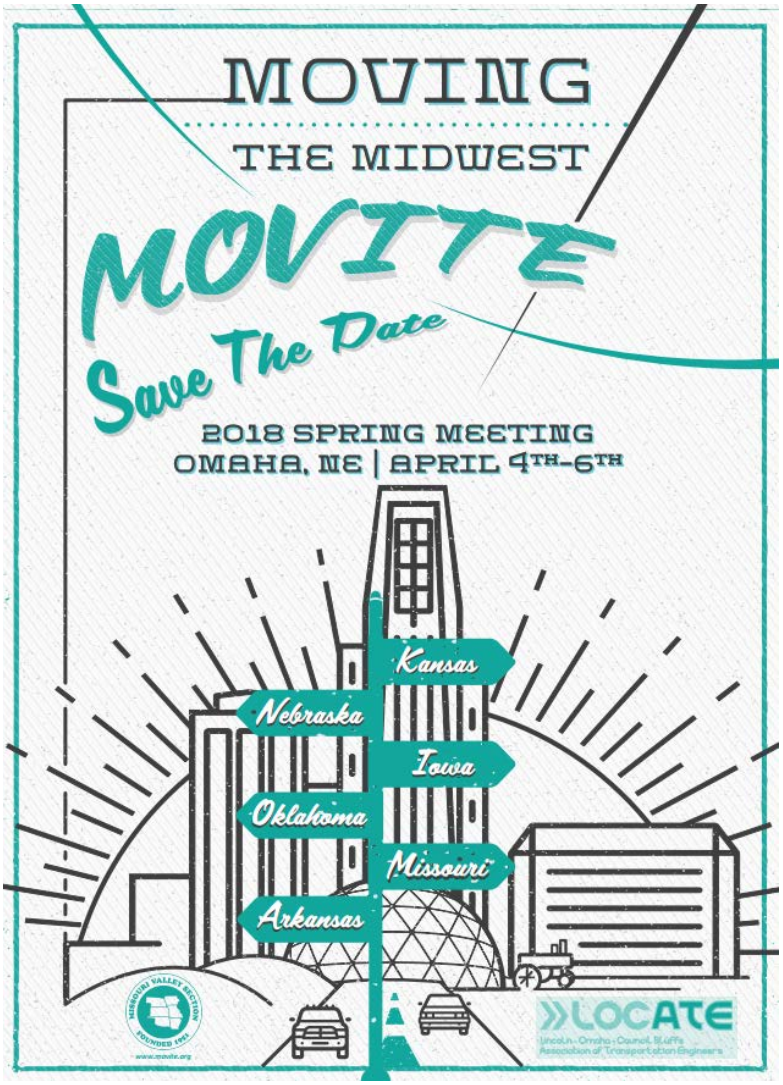
Section, District and International Meetings

Institute of Transportation Engineers



ITE 2018 Annual Meeting and Exhibit

August 20–23, 2018
Hilton Minneapolis
Minneapolis, MN, USA

Arizona moves forward on "First of its Kind" Wrong-Way Detection System

by: Chris Hill

The Arizona State Transportation Board has approved the contract for installing a wrong-way vehicle detection and alert system for Interstate 17 in Phoenix that will be the first of its kind in the U.S.

"The system will use thermal cameras to detect a wrong-way vehicle along an off-ramp, triggering an illuminated wrong-way sign with flashing lights aimed at getting the attention of the driver," ADOT says.

The Arizona Department of Public Safety, in addition to ADOT will be immediately alerted of a wrong-way driver, with ADOT alerting drivers through overhead message boards. Thermal cameras positioned one mile apart will signal Arizona State Troopers.

The board approved a $1.89 million bid from Contractors West Inc. of Mesa to install the system.
Construction will begin early this month on the $3.7 million pilot project that will be placed on a 15-mile stretch of the interstate. Gov. Doug Ducey directed the Arizona Department of Transportation (ADOT) to "accelerate" the start of construction to include pre-ordering materials, such as thermal cameras, poles and fiber-optic cable, instead of waiting for the contractor to get them.

Officials report construction is beginning a month earlier than previously expected and installation and testing should be finished by early 2018.

The Wisconsin DOT has also implemented a wrong way driver alert system using overhead message boards. That program went live Dec. 29, 2016.

Source: Better Roads. August 1, 2017

Safe Transportation for Every Pedestrian (STEP)

Cost-effective countermeasures with known safety benefits can help reduce pedestrian fatalities at uncontrolled crossing locations and un-signalized intersections.

Pedestrians account for over 17.5 percent of all fatalities in motor vehicle traffic crashes, and the majority of these deaths occur at uncontrolled crossing locations such as mid-block or un-signalized intersections. These are among the most common locations for pedestrian fatalities generally because of inadequate pedestrian *crossing facilities* and insufficient or inconvenient *crossing opportunities*, all of which create barriers to safe, convenient, and complete pedestrian networks.

Expecting pedestrians to travel significantly out of their way to cross a roadway to reach their destination is unrealistic and counterproductive to encouraging healthier transportation options. By focusing on uncontrolled locations, agencies can address a significant national safety problem and improve quality of life for pedestrians of all ages and abilities.

Pedestrian Safety Countermeasures

FHWA is promoting the following pedestrian safety countermeasures through the fourth round of Every Day Counts (EDC-4):

- **Road Diets** can reduce vehicle speeds and the number of lanes pedestrians cross, and they can create space to add new pedestrian facilities.
- **Pedestrian hybrid beacons** (PHBs) are a beneficial intermediate option between RRFBs and a full pedestrian signal. They provide positive stop control in areas without the high pedestrian traffic volumes that typically warrant signal installation.

- **Pedestrian refuge islands** allow pedestrians a safe place to stop at the midpoint of the roadway before crossing the remaining distance. This is particularly helpful for older pedestrians or others with limited mobility.
- **Raised crosswalks** can reduce vehicle speeds.
- **Crosswalk visibility enhancements**, such as crosswalk lighting and enhanced signing and marking, help drivers detect pedestrians—particularly at night.

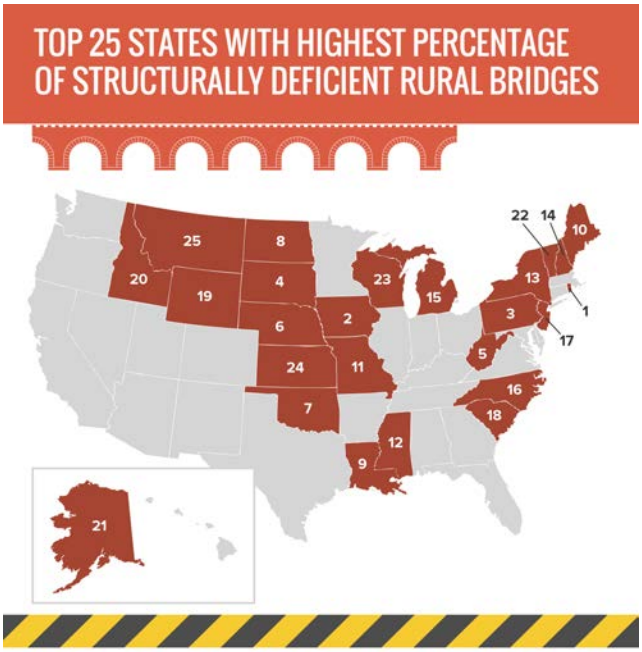
Benefits

- **Improved Safety.** Countermeasures are available that offer proven solutions for reducing pedestrian fatalities at uncontrolled crossing locations.

(Continues on Page 23)

The 10 States with the Deadliest Country Roads
(and Oklahoma is on the list)

A national non-profit transportation research group releases "Rural Connections: Challenges and Opportunities in America's Heartland." The report rates states by pavement condition, structurally deficient bridges, and fatality rate.



Rural roads need major updating to continue supporting activities that provide the rest of us with energy, food, and fiber. Crashes and fatalities are two-and-a-half times higher in rural areas, where populations are aging and increasingly diverse, than elsewhere in the nation; 10% of bridges are structurally deficient; and more than one-third of roads are in poor or mediocre condition.

That's the bottom line of Rural Connections: Challenges and Opportunities in America's Heartland, a report from The Road Improvement Program (TRIP) in Washington, D.C., a national non-profit transportation research group.

Slightly less than half -- 48% -- of rural roads are in good condition, 16% are in fair condition, 21% are in mediocre condition, and 15% are in poor condition. Deaths increased in 2015 after decreasing every year between 2012 and 2014.

(Continue on Page No. 22)

Rank	STATE	Rural Roads in Poor Condition	STATE	Structurally Deficient Rural Bridges	STATE	Fatality Rate per 100M VMT on Rural Roads	Fatality Rate per 100M VMT on All Other Roads
1	Rhode Island	41%	Rhode Island	22%	South Carolina	3.82	1.03
2	Connecticut	39%	Iowa	22%	California	3.19	0.66
3	California	38%	Pennsylvania	22%	Kentucky	2.98	0.72
4	Hawaii	28%	South Dakota	20%	Mississippi	2.93	0.70
5	Mississippi	25%	West Virginia	17%	Montana	2.81	0.86
6	New Mexico	25%	Nebraska	16%	Nevada	2.77	1.06
7	Vermont	24%	Oklahoma	16%	Arizona	2.70	1.15
8	Pennsylvania	22%	North Dakota	16%	North Carolina	2.69	0.65
9	Arkansas	22%	Louisiana	15%	Oregon	2.68	0.64
10	Oklahoma	22%	Maine	15%	Arkansas	2.56	0.90
11	Missouri	21%	Missouri	14%	Virginia	2.46	0.51
12	Washington	21%	Mississippi	13%	Louisiana	2.46	1.16
13	Alaska	20%	New York	13%	Texas	2.43	1.09
14	Virginia	20%	New Hampshir	13%	Tennessee	2.35	0.91
15	Maine	19%	Michigan	13%	Georgia	2.35	0.96
16	Wisconsin	19%	North Carolina	11%	Pennsylvania	2.33	0.83
17	Louisiana	18%	New Jersey	11%	Wyoming	2.30	0.92
18	Michigan	17%	South Carolina	11%	Illinois	2.28	0.70
19	West Virginia	17%	Wyoming	11%	West Virginia	2.24	0.81
20	Iowa	15%	Idaho	10%	Kansas	2.24	0.50
21	Idaho	14%	Alaska	10%	Indiana	2.24	0.61
22	South Dakota	14%	Massachusetts	10%	Oklahoma	2.21	0.91
23	Texas	14%	Wisconsin	10%	Washington	2.20	0.64
24	Massachusetts	13%	Kansas	9%	Michigan	2.19	0.59
25	Minnesota	12%	Montana	9%	Colorado	2.09	0.83

Feds Terminate Interim Approval for Use of Rectangular Rapid Flashing Beacons

On December 21, 2017, the FHWA **terminated Interim Approval 11**, which permitted the optional use of rectangular rapid flashing beacons. All highway agencies, including those agencies that previously received the FHWA's approval to use rectangular rapid flashing beacons under Interim Approval 11, are prohibited from installing any new rectangular rapid flashing beacons. However, any existing rectangular rapid flashing beacons that are already installed may remain in place until they reach the end of their useful service life.

Making sense out of the New Oklahoma Left Lane Traffic Law

by: Angelo Lombardo, P.E.

(Continues from Page No. 11)

4. *A two-way left-turn lane is a lane near the center of the highway set aside for use by vehicles making left turns in both directions from or into the roadway. Two-way left-turn lanes shall be designated by distinctive roadway markings consisting of parallel double yellow lines, interior line dashed and exterior line solid, on each side of the lane. A vehicle shall not be driven in a designated two-way left-turn lane except when preparing for or making a left turn from or into a roadway. Vehicles turning left from the roadway shall not be driven in the two-way left-turn lane for more than two hundred (200) feet while preparing for and making the turn. A vehicle turning left onto the roadway may utilize the two-way left-turn lane as a staging area by stopping and waiting for traffic proceeding in the same direction to clear before merging into the adjacent lanes of travel. A left turn shall not be made from any other lane where a two-way left-turn lane has been designated. Provided, however, this section shall not prohibit driving across a two-way left-turn lane when moving from a service drive onto such marked roadway.*
5. *Upon a roadway which is divided into four or more lanes, a vehicle shall not impede the normal flow of traffic by driving in the left lane; provided, however, this paragraph shall not prohibit driving in a lane other than the right-hand lane when traffic conditions or flow, or both, or road configuration, such as the potential of merging traffic, require the use of lanes other than the right-hand lane to maintain safe traffic conditions.*
6. *Official signs may be erected directing slow-moving traffic to use a designated lane or designating those lanes to be used by traffic moving in a particular direction regardless of the center of the roadway and drivers of vehicles shall obey the directions of every such sign.*

Any person convicted of violating any provision of this section shall be punished as provided for in Section 17-101 of this title.

Added by Laws 1961, p. 377, § 11-309, eff. Sept. 1, 1961. Amended by Laws 1984, c. 47, § 1, eff. Nov. 1, 1984; Laws 2002, c. 397, § 22, eff. Nov. 1, 2002; Laws 2005, c. 394, § 11, emerg. eff. June 6, 2005; Laws 2006, c. 104, § 4, eff. Nov. 1, 2006; Laws 2009, c. 125, § 1, eff. Nov. 1, 2009; Laws 2010, c. 76, § 1, eff. Nov. 1, 2010.

1998 Project:

In 1998, the Transportation Commission approved a project to blanket the state's four lane divided highways at an estimated cost of $400,000 at time of Commission. The signs read "Slower Traffic Keep Right", which is the R4-3 in the 2009 MUTCD. Over the years they disappeared under vehicle strikes and construction projects. An excerpt read "This project is a continuation of our efforts to improve safety by increasing highway capacity, comply with Title-47 and to increase traveling public awareness of proper lane usage".

Reoccurring interest in signage and legislation:

A few times over the years, the public's reoccurring interest in more signs (replacement of signs) became apparent. 2013 legislation and 2016 legislation had more stringent proposed laws dealing with left lane drivers. Signage was discussed at both of these points and ODOT decided to do a project to once again blanket the state's interstates where appropriate. On September 6, 2016, another project was commissioned to do such that. The general scope was to erect signs on the interstate, every 5 miles, only interstates, none in urban areas, and none on turnpikes (not ODOT's system). The turnpike was contacted and have since

(Continues on Page No. 26)

Clarifications of Existing Standards and Guidance on New and Innovative Traffic Control Devices

In a Memorandum dated January 5, 2017, the U.S. Department of Transportation / Federal Highway Administration offers clarification on the status of several types of traffic control devices currently allowed for use by the 2009 Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) under various types of approval, and provides an update on the evaluation of several other types of traffic control devices under consideration for Interim Approval.

All numerical or alpha-numeric references to Paragraphs, Figures, Sections, or Parts herein refer to the 2009 edition of the MUTCD.

Traffic Control Devices Permitted Without Additional Approval:

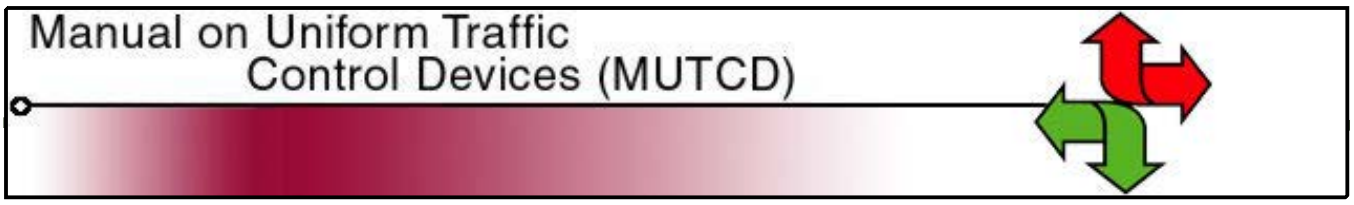
Bicycle Lane Markings Through Intersections: Extensions of bicycle lanes are compliant with the MUTCD and can be marked as would be an extension of any other lane. The provisions of Section 3B.08 - Extensions Through Intersections or Interchanges - apply to bicycle lanes. Among other guidance, Section 3B.08 states that "Where highway design or reduced visibility conditions make it desirable to provide control or to guide vehicles through an intersection or interchange … dotted line extension markings consisting of 2-foot line segments and 2- to 6-foot gaps should be used to extend longitudinal line markings through an intersection or interchange area." It should be noted that chevron markings are not permitted to be used in bicycle lanes or bicycle lane extensions, nor are shared-lane markings. Bicycle lane extensions through intersections can include standard bicycle lane arrows, bicycle symbols, or pavement word markings. Additionally, green-colored pavement can be used to enhance conspicuity if the installing jurisdiction has received approval under Interim Approval 14.

High Visibility Crosswalk Markings: Since the publication of the 2009 MUTCD, a study on crosswalk markings was completed on behalf of the FHWA. This study, Crosswalk Marking Field Visibility Study (FHWA Publication FHWA-HRT-10-068), produced several recommendations for revisions to the MUTCD. These recommendations were to add bar pairs as a "usable crosswalk pattern", to provide typical dimensions for marking patterns, and to consider making bar pairs or continental markings the default marking for all crosswalks across uncontrolled approaches with some exceptions. It is important to note that bar pairs are compliant with the 2009 MUTCD and can be used by any jurisdiction choosing to do so. Many jurisdictions already use the bar pair crosswalk marking. It is likewise also compliant with the MUTCD if a roadway agency should choose to accept the recommendation that bar pairs or continental markings be the default crosswalk marking across uncontrolled approaches. While providing typical dimensions for crosswalk markings is under consideration for the next edition of Standard Highway Signs, many State and local roadway agencies include these specifications in their roadway design guides.

Edge Line Markings at Highway-Rail and Light Rail Transit Grade Crossings: Edge Line Markings extending through the track area at rail grade crossings are permitted under the 2009 MUTCD. In March 2016, the FHWA issued Official Ruling 8(09)-21 (I), which clarified that the extension of tubular markers was permitted across the track area, but the requester at that time did not inquire about edge lines in similar situations. Edge lines are permitted to be extended through the track area under the 2009 MUTCD without any additional approvals.
Traffic Control Devices Permitted Under Experimental Approval

Green-Backed Shared-Lane Markings: Agencies wishing to install green-colored pavement behind shared-lane markings must submit a Request to Experiment under the terms outlined in Section 1A.10. The FHWA has concerns that the use of green-colored pavement behind shared-lane markings will dilute the meaning of green-colored pavement as used only in exclusive bicycle facilities under the terms of Interim Approval 14.

Continues on Page No. 29



OTEA Awards Three $1,000 Scholarships during the 2017 Spring Meeting

2017 Scholarship Recipients

From Left to Right: Mickayla J. Eisenbrandt (OU Senior), Srinivas Prudhvi Minnekanti (OSU Graduate Student), Heba Ibrahim (OSU Graduate Student) and Jack Stewart (OTEA Past President)

Heba Ibrahim

Srinivas Prudhvi Minnekanti

Mickayla J. Eisenbrandt

Center Line Rumble Strips

by: Lisa Harris and Aliza Chudnow

A low-cost way to alert drivers they have crossed the line.

Head-on crashes are particular deadly, and especially on two-lane roads. In Kansas almost one quarter of all fatalities in the last five years have been opposite- direction crashes and 79 percent of those have been on two-lane roads. ***A center line rumble strip*** is a low-cost safety treatment that can help keep an inattentive driver safely in the driving lane to avoid such a crash. Installed at or near the center line of a paved roadway, it is made of a series of milled or raised elements that alerts a driver through vibration and sound that the vehicle has traveled left of the travel lane. These strips have been in use for the past 20 years or so on two-lane roads and are considered an FHWA-designated proven countermeasure to reduce cross-center line crashes on any road with marked center lines. Currently there are 36 states using center line rumble strips and 17 states have written policies or guidelines for their installation, including Kansas.

This article will describe research on center line rumble strips, including research conducted in Kansas, and potential advantages and disadvantages of using the strips.

Effectiveness

Center line rumble strips have been found to be among the most cost-effective safety measures for these situations:

Head-on and opposite-direction sideswipe collisions: According to the NCHRP's Report 641, sites with center line rumble strips had significant reductions for these two types of crashes; 38 to 50 percent fewer crashes on rural two-lane roads and 37 to 91 percent fewer crashes on urban two-lane roads.

Navigational aid in bad weather: Poor weather conditions, such as snow, rain and fog, can make it difficult to see painted center lines. Center line rumble strips can help drivers locate the travel lane during inclement weather. The vibration provided by rumble strips can assist drivers from unintentionally crossing the center line. Along with the vibration, there is also improved visibility of the painted stripe when the pavement marking is painted on top of the rumble strip. The vertical ridges of the center line will often still be visible under poor weather conditions.

Placement considerations

Research cited by FHWA on effective placement of center line rumble strips identified the following best practices and policies for installation.

The information for the bulk of this article comes from a November 2011 technical advisory from FHWA that summarizes research findings to date on center line rumble strips. FHWA technical advisories are good sources of information on the current state of research on a particular topic. They are updated as new research is published; sometimes more than once per year. You can find them at http://safety.fhwa.dot.gov. Click on one of the major emphasis areas in the left column, like "Roadway Departure Safety," and then look on that page under "What's New." The link for the center line technical advisory is http://safety.fhwa.dot.gov/roadway_dept/pavement/rumble_strips/t504040/. FHWA also has a 2011 technical advisory on shoulder and edge line rumble strips.

Corridor vs. spot treatment. It is recommended that center line rumble strips be installed along corridors rather than in spot locations because of the difficulty in determining where a driver could become distracted or drowsy. Corridors can be prioritized by the frequency of opposite-direction crashes and certain crash predictors (e.g., shift workers, younger drivers).

Pavement width. Some studies have shown that the presence of center line rumble strips can result in vehicles traveling slightly further away from the center line than they would otherwise. As a result of this, the FHWA states that the strips may not be appropriate to install on very narrow pavements. However, a 2012 study at Kansas State University found otherwise—see sidebar.

Continues on Page No. 25

The 10 States with the Deadliest Country Roads (and Oklahoma is on the list)

(Continue from Page No. 17)

In 2015, non-interstate rural roads had a fatality rate of 2.18 deaths for every 100 million vehicle miles of travel (VMT) compared to 0.83 deaths per 100 million VMT for all other roads.

"Rural roads are far too often overlooked. With fatality rates rising, repairing and maintaining the nation's roads must be a top priority for legislators," said Kathleen Bower, AAA senior vice president of public affairs and international relations. "By investing in improvements for today and tomorrow, we can deliver safer experiences for motorists and save tens of thousands of lives."

The quality of life in America's small communities and rural areas, and the health of the nation's rural economy, is highly reliant on the quality of the nation's transportation system, particularly its roads, highways and bridges. America's rural transportation system provides the first and last link in the supply chain from farm to market, connects manufacturers to their customers, and supports tourism industry.

To address these challenges, Congress must provide a long-term, dedicated, user-based revenue stream capable of fully funding the federal surface transportation program.

"Farmers and ranchers depend on rural roads, highways and bridges to move their products to market," said Zippy Duvall, president of the American Farm Bureau Federation. "Transportation delays and costs take a bite out of our profitability and competitiveness and impact the quality of rural life. Securing the appropriate resources at the local, state and federal levels will allow for the improvements needed to provide a rural transportation system that will keep goods moving and foster economic growth."

"The safety and quality of life in America's small communities and rural areas and the health of the nation's economy ride on our rural transportation system. The nation's rural roads and bridges provide crucial links from farm to market, move manufactured and energy products, and provide access to countless tourism, social and recreational destinations," said Will Wilkins, executive director of TRIP. "Fixing the federal Highway Trust Fund with a long-term, sustainable source of revenue that supports the transportation investment needed will be crucial to the modernization of our rural transportation system."

Source: Public Works, June 27, 2017

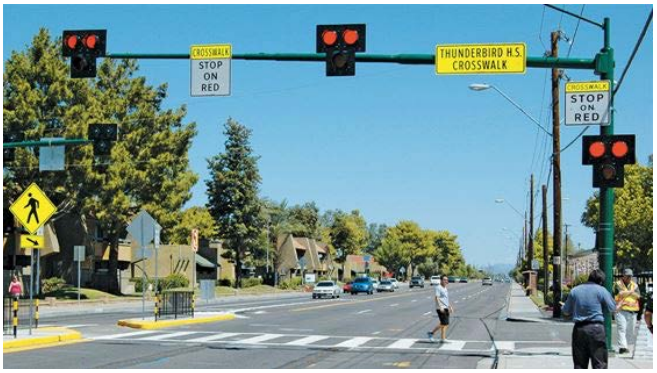
(Continues from Page No. 16)

- **Targeted Investment.** By focusing on uncontrolled locations, agencies can address a significant national pedestrian safety problem.
- **Enhanced Quality of Life.** Improving crossing opportunities boosts quality of life for pedestrians of all ages and abilities.

State of the Practice

Road Diets, pedestrian refuge islands, and PHBs are all considered Proven Safety Countermeasures by the Federal Highway Administration (FHWA). The FHWA is also promoting Road Diets through EDC-3.

Communities benefitting from their use include Austin, Texas, where at least 39 PHBs are already installed and residents can request additional sites for them. In Michigan, the Department of Transportation (DOT) developed a Road Diets checklist to ensure smooth administrative procedures.



Countermeasures such as crosswalk lighting, and raised crosswalks are being promoted through FHWA's PEDSAFE, a tool that helps transportation agencies diagnose and treat pedestrian safety issues. PEDSAFE includes numerous case studies that describe how communities across the country have implemented these safety improvements.

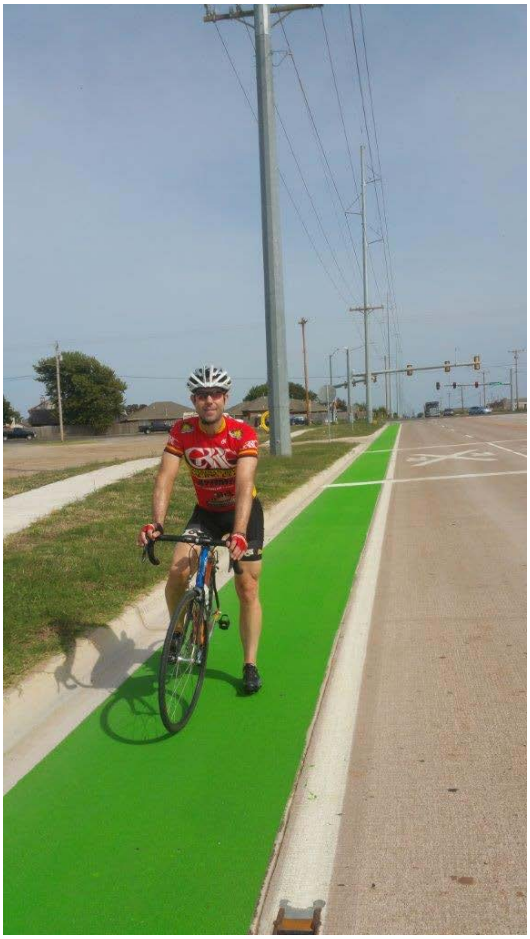
This EDC-4 effort will help more communities deploy these pedestrian safety improvements based on their specific roadway contexts and needs. It also aligns with U.S. DOT's Safer People, Safer Streets initiative and with other U.S. DOT efforts such as Ladders of Opportunity, which aims to provide people with safe, reliable and affordable connections to employment, education, healthcare and other essential services.

STEP is also an important action in FHWA's *Strategic Agenda for Pedestrian and Bicycle Transportation*, which is a collaborative framework for pedestrian and bicycle planning, design, and research efforts being developed over the next five years.

Source: Federal Highway Administration

Colorized Pavement for Bike Lanes in Norman, Oklahoma

by L. S. Koetsier, M.S.



The Oklahoma Department of Safety reports that every year, nearly ten bicyclists in Oklahoma lose their lives in crashes with motor vehicles. To increase rates of bicycling for transportation purposes, the most critical and challenging barrier is overcoming a bicyclist's perception of personal safety when sharing a roadway with motorized traffic.

The Oklahoma Department of Transportation (ODOT) currently requires safe accommodation for pedestrians and bicyclists for all new or proposed Federal-Aid Transportation Projects. This requirement includes improvements for existing transportation facilities.

Furthermore, ODOT currently offers funding to cities for encouraging innovative design, constructing additional bicycle facilities, as well as increasing public awareness and safety for pedestrians and bicyclists.3 Within the past decade, a recent development for bicyclist safety has been the use of colored pavement.

As of 2011, the Federal Highway Administration (FHWA) has defined colored pavement as "colored asphalt or concrete, or paint or other marking materials applied to the surface of a road or island to simulate a colored pavement."

The FHWA considers colored pavement to be a traffic control device. A traffic control device is a sign, signal, marking or other device placed on or adjacent to a street or highway to regulate, warn, or guide traffic.5 Colored treatments for bike lanes serve to:

- emphasize conflict areas
- increase visibility for users of the preferential lane
- indicate purpose of the dedicated lane for all users sharing the roadway.

Beginning in 2011, the FHWA granted interim approval to numerous state and local governmental agencies for experimenting with green (chromatic or saturated) colored pavement for bicycle lanes as a traffic control device.

In their Urban Bikeway Design Guide (published March 2014), the National Association of City Transportation Officials (NACTO) chart the advantages and disadvantages of using pavement coatings. These pavement coatings include paint, epoxy mixes, and thermoplastic for constructing bicycle lanes on city streets.

As the least expensive of pavement coatings, paint is most widely used. Paint may contain additives such as sand for skid resistance and reflective glass beads. Since paint wears quickly, it is not suitable for high traffic areas.

In 2008, the Municipal Transportation Agency located in San Francisco, California evaluated green pavement for bike lanes. City officials tested multiple materials to compare durability, ease of application, ease of maintenance, and visibility under varying light and weather conditions. Then they chose a micro surface binder consisting of a colored synthetic bitumen emulsion, with glass beads added to provide retro reflectivity. Unfortunately, when bike paths get wet, glass beads can be slippery and dangerous.

Colorized Lane Demarcation

Since then, a manufacturer located in Hazleton, Pennsylvania has developed a process called Colorized Lane Demarcation. Instead of using glass beads, the High Friction Surface Treatment (HFST) consists of 100% recycled glass aggregate (with added green pigment) placed over a polymer epoxy binder. HFST uses a high-

(Continues on Page No. 30)

Center Line Rumble Strips

by: Lisa Harris and Aliza Chudnow

(Continues from Page No. 21)

Co-installation with shoulder rumble strips. Some agencies are installing both center line and shoulder rumble strips along the same segments of road. Total pavement width will affect a decision to install both. It's important to be able to accommodate and serve all road users, particularly in no-passing zones. A comparative study of the installation of different combinations of rumble strips with wider pavement markings during resurfacing showed the greatest reduction in serious injury crashes when both center line and edge line rumble strips were installed on the same segment of roadway.

Complications caused by normal crown. When milling into crowned pavements, agencies should be aware of several challenges. First, the milling machine should be equipped with a vertical alignment guide to orient the rumbles on the horizontal rather than tilted level with the crown on one side of the joint or the other. Second, because the rumble strip depth will vary transverse to the roadway, an agency should specify the desired maximum and minimum depth. Project documents should clearly indicate where the rumble strip depth will be measured, and acceptable tolerances.

Types of road users. When considering using center line rumble strips, it is important to keep in mind other types of vehicles such as bicycles, motorcycles and larger trucks.

Although bicyclists will rarely cross a center line rumble strip, the presence of these strips can cause vehicles passing bicyclists in the same lane to stay to the right of center to avoid driving on the rumble strip and thereby travel closer to the bicyclist. If a bicycle and vehicle are to share a lane, it is recommended that 14 feet of pavement beyond the edge of the center line strips be maintained so both the car and bicycle can travel safely. Awareness of the rumble strip by the motorcyclist is important for maintaining control of the motorcycle. To alert a truck driver crossing the center line, the length, width and depth of the rumble strip is critical and should not be reduced. Consideration of noise also should be taken into account at curves or at segments with both center line and edge rumble strips due to the potential for off-tracking.

Potential limitations

Characteristics that can limit the desirability or effectiveness of rumble strips include low average speeds, noise for adjacent residences, and significant amounts of turning movements across the center line (creating noise and driver discomfort). The noise that comes from crossing over a center line rumble strip can be very loud. See the sidebar on previous page for research conducted by Kansas State on noise and recommended distance of the strips from residences. Maintenance is also a concern. Center line rumble strips are typically milled over a longitudinal joint. If the joint is poorly constructed, milled strips can sometimes allow water to pool and penetrate the pavement which can lead to early pavement deterioration. The potential for this can be mitigated by placing an asphalt fog seal over the milled strips.

Conclusion

Center line rumble strips are a proven measure to reduce the risks of cross center line crashes, keep vehicles on the roadway, and reduce the severity of the crashes that do occur. Compared to shoulder rumble strips, they are a newer technology, and research continues to prove their effectiveness and refine best practices for installation.

To learn more information about center line rumble strips, visit the links listed below. The FHWA Technical Advisory also lists several other research reports on the topic.

Source: Kansas LTAP Newsletter, a publication of the Kansas Local Technical Assistance Program (LTAP) at the Kansas University Transportation Center.

The Oklahoma Department of Transportation is making an estimated 2.3 million initial investment of federal highway safety funds along rural highway statewide to install center line rumble strips.

There were 229 fatalities on undivided rural Oklahoma highways due to center line crossover crashes from 2013 to 2015, which are the most recent years statistics available. Assistant Chief Traffic Engineer David Glabas said "center line rumble strips potentially will help lessen the number of crossover fatalities in Oklahoma. "Other states have seen 47-51 percent reduction in fatal crashes (with these devices installed)."

Oklahoma Department of Transportation

More than 250 miles of center line rumble strips are now fully installed in Divisions 2, 3, 4 and 6 with another 220 miles either pending award or about to start construction of these life-savings devices.

Making sense out of the New Oklahoma Left Lane Traffic Law

by: Angelo Lombardo, P.E.

(Continues from Page No. 18)

done their own program. The signs were predicated on pre November 2017 laws of 301 & 309 and read "Do Not Impeded Left Lane" and "Slower Traffic Keep Right". They usually went side by side. The cost was estimated to be $400,000 at time of commission.

Revision to 309, post November 2017:

During spring/summer construction of the 2016 project, a revision of the 309 law was taking place. It was passed into law and became effective November 2017, a few months after the sign project. The laws are different enough that the general public has believe they are a new set, when in actuality, it is a small revision. However, has an impact on our system and proper traffic engineering. The revision to 309 reads:

5. Upon a roadway which is divided into four or more lanes, a vehicle shall not impede the normal flow of traffic by driving in the left lane shall not be driven in the left lane except when overtaking and passing another vehicle; provided, however, this paragraph shall not prohibit driving in a the left lane other than the right-hand lane when traffic conditions or, flow, or both, or road configuration, such as the potential of merging traffic, require the use of lanes other than the right-hand the left lane to maintain safe traffic conditions.

6. Official signs may be erected directing slow-moving traffic to use a designated lane or designating those lanes to be used by traffic moving in a particular direction regardless of the center of the roadway, and drivers of vehicles shall obey the directions of every such sign.

Opinion:

ODOT did a good job supporting the pre November 2017 Revision. The law was good in the fact drivers could still use the lane and not impede traffic. If more education and enforcement had been applied over the years, the legislature and public would not have been so persistent in changing 309.

What is wrong with 309 post November 2017? Most of the public isn't aware of the ramification at first glance neither are most enforcement officers. This revision now prohibits the driver from using the full potential of the facility as intended by traffic engineers. This not only reduces the capacity of the facility, but creates unneeded lanes changes. Do traffic engineers still use proper lane distribution percentages, which is typically 55%? Can they use the proper lane distribution for trucks? Are the LOS calculations all for nothing when trying to enhance existing roadways?

The largest problem for drivers is to know when they are in those caveats *(…this paragraph shall not prohibit driving in a the left*

(Continues on Page No. 34)

2017 Spring Meeting Finances

By: Angelo A. Lombardo, P.E.

Spring 2017 Meeting

Income & Expenses

	AMOUNT
INCOME	
Registration (138)	$ 16,880.00
Sponsorship (22)	$ 11,100.00
Golf Tournament (Hole Sponsorship)	$ 2,340.00
Total Income	$ 30,320.00
EXPENSES	
Ardmore Convention Center	$ 1,709.43
Ad Specialities (Registration Gifts)	$ 2,525.75
Angelo Lombardo (Reimbursement) - Board Dinner / Breakfast	$ 321.65
Sooner Trophies	$ 81.56
Holiday Inn Express (Ardmore) (Food)	$ 10,773.01
Entertainer	$ 500.00
Marty Pinkley (Reimbursement) (Golf Prizes, trophies and fees)	$ 1,810.55
Angelo Lombardo (Reimbursement) (Door Prizes)	$ 3,041.88
Annual Dues (138 @ $25)	$ 3,450.00
Total Expenses	$ 24,213.83
Net Income	**$ 6,106.17**

Oklahoma Traffic Engineering Association

2018 Spring Meeting Registration Packet

SHANGRI-LA

Important Dates

April 15, 2018 - Room Reservations
All reservations must be in by midnight on this date. Rooms will be dropped after this day, which may result in loss of rooms or room type.

April 20, 2018 - Meeting Registration Due

April 25, 2018 - Golf Registration Due.

April 30, 2018 - Last day to cancel and receive full registration refund

Date: May 2 - 4, 2018

Shangri-La Resort
Grand Lake, Oklahoma

Oklahoma Prepares for its Largest ever Bridge Move, Installation

By: Don McLoud

Calling it a "spectacular feat of engineering," the Oklahoma Department of Transportation is nearing the day for moving and installing a 4-million-pound steel railroad bridge over Interstate 235 in Oklahoma City.

"Due to their size and weight, it will be a slow and steady operation to move the two bridge spans into place, taking up to a full day per span," ODOT says. "The bridge structures will be hoisted up on self-propelled mobile transporters and inched along the highway into their new position over the interstate."

American Bridge Company is in charge of the project to move the 45-foot-tall BNSF railroad bridge structures from their construction site a quarter mile away and install them. The interstate will be closed between I-44 and North 36th Street for three days starting January 26 for the project. The installation had been delayed because of high winds and could face delay again depending on the forecast.

An ODOT time-lapse video of the construction of the new railroad bridges to be moved and installed can be seen at the end of this post.

ODOT says this is the first time the bridge-moving technique is being used in the state. By building the bridge on an off-site area, the agency was able to reduce the number of closures to I-235 during the interstate's two-year, $88 million reconstruction and widening to six lanes.

"In recent years, Oklahoma is using additional innovative techniques to keep interstates and highways open to traffic with shorter closures whenever circumstances allow," said ODOT spokeswoman Terri Angier. "So far, this is the largest project in ODOT history, and this part its most defining milestone."

Source: Better Roads Magazine, January 25, 2018

Clarifications of Existing Standards and Guidance on New and Innovative Traffic Control Devices

Continues from Page No. 19

Agencies requesting to experiment are required to evaluate the operational impact of the use of green-colored pavement versus the standard shared-lane marking without any pavement coloring. These experiments will help the FHWA to assess how drivers and bicyclists are reacting to the use of green-colored pavement and to decide whether the impact of its use in this context justifies amending IA-14 to include the use of green-colored pavement in non-exclusive facilities.

Use of Bicycle Symbol on Signs: The FHWA has been requested to allow the substitution of the bicycle symbol on signs in place of the word "Bicycle", both with word message signs already in the Manual and word message signs not provided in the Manual. The substitution of symbols for words in word message sign provided in the Manual is not permitted under Section 2A.06 of the MUTCD which states, "Where a standard word message is applicable, the wording shall be as provided in this Manual." This precludes the addition or substitution of a symbol. Similarly, where a word message is required other than those provided in the MUTCD, jurisdictions are permitted by the Manual to create a word message-only sign; therefore symbols are not allowed. The FHWA would consider requests for experimentation with new symbol-only signs that may be more easily and quickly understood than an MUTCD-standard sign (for example, a modified R10-15 sign stating that turning vehicles must yield to bicycles and pedestrians). These and similar signs shall not be installed without an approved request to experiment including an evaluation plan to assess whether the sign is performing as intended.

Requests for Interim Approvals

Revisions to Interim Approval 16 to Allow Conflicting Movements: Interim Approval 16, allowing for the use of bicycle signal faces, was written to only allow the use of green bicycle indications for phases where there were no conflicting movements. The FHWA has received multiple requests to modify the language of IA-16 to allow conflicting movements across bicycle travel paths while bicyclists are shown a green bicycle indication. These requests are not supported by data or observations showing that this is a safe operation. The FHWA cannot modify an Interim Approval to allow a significant degree of additional conflict without any supporting evidence. While this type of operation has been used in other countries, it cannot be assumed that American road users will react similarly to foreign populations when presented with similar situations as the culture and practices vary considerably. The FHWA has already approved one request to experiment with this operation and would consider approving future requests, assuming that the interactions between bicyclists, drivers, and pedestrians around these conflicts are closely observed.

Two-Stage Turn Boxes: The FHWA is currently evaluating the available operational data on two-stage turn boxes to see if these data are sufficient to consider an Interim Approval for this treatment. In order to issue an Interim Approval, the FHWA must be confident that, as commonly implemented, drivers and bicyclists understand the meaning of two-stage turn boxes and use them to perform the expected operation where they are installed. If the data demonstrate that two-stage turn boxes are clearly understood, used in the manner in which they are intended to be, and do not produce any unintended side effects or compromise safety, the FHWA will consider issuing an Interim Approval for the use of two-stage turn boxes. A decision on whether to issue an Interim Approval or whether more data is needed is expected by Spring 2017.

Use of Red-Colored Pavement in Transit Lanes: The FHWA is currently evaluating the available operational data on red-colored pavement as used to designate transit lanes and facilities. If the data demonstrate that red-colored pavement has a positive effect on the safety or operations of transit-only lanes and facilities then the FHWA will consider issuing an Interim Approval for its use in such applications. A decision on whether to issue an Interim Approval or whether more data is needed is expected by Spring 2017.

The data collection and experimentation processes are critical to the progress of the MUTCD as it keeps pace with the state of the transportation engineering practice. It is critical that transportation agencies collaborate and share data and research on new and innovative traffic control devices and operations. FHWA welcomes the opportunity to work with transportation agencies and is ready to provide assistance, direction, and guidance to any agency wishing to experiment or to utilize any of the traffic control devices discussed herein.

Source: U.S. Department of Transportation - Federal Highway Administration, Memorandum by Robert E. Arnold, Acting Associate Administrator for Operations, January 5, 2017

Colorized Pavement for Bike Lanes in Norman, Oklahoma

by L. S. Koetsier, M.S.

(Continues from Page No. 24)

strength polymer resin for bonding an abrasion resistant high friction aggregate to the pavement surface. The company describes Colorized Lane Demarcation as a durable, fade-free, long-term traffic safety solution for high traffic areas that reduces fatalities and saves lives.

Four years ago, Sammamish in Washington State was the first community to use Colorized Lane Demarcation. The vibrant cycling community in Sammamish has emphasized sustainability and safety for bike lanes, especially those located on streets with high traffic congestion. Since HFST has rapid cure times, the service provider completed the project in just one day, without disrupting access to commercial properties.

Green Bike Lanes for Norman, Oklahoma

As of September 2015, the City of Norman in Oklahoma installed green bike lanes using Colorized Lane Demarcation. As part of the Cedar Lane Road Widening Project, the bike lanes begin at 12th Avenue Southeast, running alongside the curbs on both sides, extending half a mile east of 24th Avenue Southeast. In the near future, the project will include a railroad at-grade crossing and five-foot sidewalks on both sides of Cedar Lane.

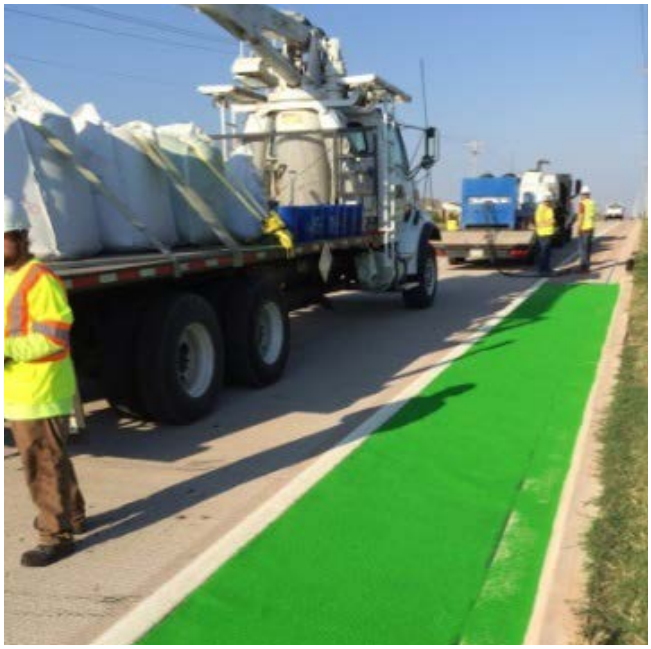
On 7 October 2015, The Norman Transcript interviewed a member of Norman's Bicycle Advisory Board. Michelle Carr referred to the number of bicycle collision fatalities in the City of Norman.14 Norman cyclists are hoping the bright green five-foot-wide bike lanes will increase awareness. The treatment specification requires placing a trial HFST on asphalt concrete pavement, then testing for a 0.65 coefficient of friction.15 Manual application of HFST is possible, but mechanical application of HFST with dispensing vehicles results in a more uniform and durable surface less prone to material failure.

The service provider customized an automated application vehicle that evenly spreads the polymer resin binder over the road surface nearly 1.4 millimeters (or 55 mils) thick. Within seconds, the vehicle uniformly spreads the high friction aggregate over the binder.

As the application vehicle spread the binder over the asphalt, then laid the 100% recycled glass aggregate over the binder, the service provider ensured the Portland Concrete near the curb retained its original surface.

Once the polymer resin binder has cured, a vacuum sweeper removes the excess aggregate. Then, the recovered aggregate is recycled and reused.

In Norman, City Transportation Engineer Angelo Lombardo explains that the city did not want to paint the lanes every year. Lombardo hopes this cost effective and durable option will become the standard. Once planned projects are complete, Norman will have nearly seven miles of green bike lanes.



Federal Funding

The FHWA classifies HFST as a low-cost safety solution. Under the Highway Safety Improvement Program (HSIP), the federal government grants funds to State Departments of Transportation. Then, the DOT in each state administers the funds to local governments. Each local government using HFST in their jurisdiction qualifies for 90% federal funding for their bike lanes.

Since current estimate for material is $3.00 per square foot, Colorized Lane Demarcation offers promising long-term durability at a low price. Overall, Colorized Lane Demarcation seems to be an economical and effective safety solution for many cities within Oklahoma.

2017 Annual Meeting Highlights

Thanks to our OTEA

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The following companies donated funds and purchased booth space during our annual meeting. Their contributions and continued support help offset the cost of our meetings. It is through this support that we are able to maintain a relatively low annual membership fee and meeting registration cost. Please thank them and consider patronizing their businesses.

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WE JUST WANT TO SAY...

THANK YOU!

Making sense out of the New Oklahoma Left Lane Traffic Law

by: Angelo Lombardo, P.E.

(Continues from Page No. 26)

lane other than the right-hand lane when traffic conditions or, flow, or both, or road configuration, such as the potential of merging traffic, require the use of lanes other than the right-hand the left lane to maintain safe traffic conditions)? This is compounded by a Law Enforcement Officer (LEO) also trying to understand when a potential driver is in one of those caveats. ODOT tried to avoid urban areas on purpose because most of the time, this is happening.

The only time this revision to 309 really works (and the only time it should be enforced) is in rural areas. In fact, the older law, with more education, signage, and enforcement would yield the same result, which is reducing frustration to the driving public, road rage, and possibly reducing associated collisions. But with this revision, it has restricted the arteries potentially causing a transportation heart attack.

The existing signs on ODOT facilities are specifically now outdated. Currently and technically, no driving in the left lane except to pass is the intent. So the correct sign now is the R4-16 "Keep Right Except to Pass". But at a cost of almost a half million dollars to the tax payer, the current signs will stay up through their useful life. One of these days, perhaps the signs will change or hopefully the law.

Member News

The Ludwig's Welcome their Second Child

Lauren Ludwig gave birth to Aubrey Grace on October 5, 2017. She weighed 7 lbs. and 5 oz. and measure 20 inches in length.

Congratulations to Lauren, her husband and son on the new addition to the family.

Phyllis McElroy Retires

Congratulations to Phyllis McElroy, long time Administrative Assistant in ODOT's Traffic Engineering Division, on her retirement. She began this new face of her life in May of last year.

Thank you Phyllis for your support and dedication to OTEA. We are going to miss you - specially the Secretary-Treasurer!

Best wishes during your retirement.

Member News

Richard Morgan Retires

Long time OTEA member Richard Morgan retires. In a recent email announcing his retirement he wrote:

"I have enjoyed the relationship over the years and know OTEA will continue to make Oklahoma roads safer. Thanks you and please extend by best wishes to the organization."

Congratulations to Richard and Happy retirement!

The Hawkins Family welcomes second child

On August 11th, 2017, OTEA President B.J. Hawkins and his wife welcomed their second child, Makenzie Belle.

Congratulations to B.J. and his family.

Angelo Lombardo Baptizes Granddaughter

Angelo Lombardo, who is an Ordained Deacon in the Catholic Church, baptized his granddaughter Caroline Grace on May 13, 2017.

Congratulations to the parents, Joseph and Anna Radunzel, and to the proud grandfather!

It's a girl!

It's a girl! Erica Myers of Lee Engineering gave birth to her 3rd child on July 1st. Hazel was 7 lbs, 5 oz and 20 inches long. She was welcomed by her big siblings, Russell and Ryleigh.

Condolences to Tim Bedinger

Lori Bedinger,, wife of long time OTEA member Tim Bedinger, passed away on Tuesday, July 4, 2017 at her residence in Taylorville, Illinois. Those who knew Lori described her as an artistic person with an infectious smile, selfless attitude, playful demeanor, and a strong sense of faith, family and friends. May she rest in peace.

Our condolences to Tim and his family.

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