

Technology Exchange

LOUISIANA LOCAL
TECHNICAL ASSISTANCE PROGRAM

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Bridging the Gaps: What LTAP Has on the Agenda for 2016



A variety of effective repair techniques for both timber and concrete bridge elements will be discussed in the upcoming Roads Scholar class "Bridge Maintenance and Repair" (Photo by LA LTAP)

Continuing with our Local Bridge focus from 2015, Louisiana LTAP will move forward with **Roads Scholar #14: Bridge Maintenance and Repair** starting in February 2016. This course is designed to assist local agencies in being proactive in bridge maintenance and in selecting bridge repair techniques that are acceptable within the National Bridge Inspection System compliance program. Course topics will include preventive maintenance techniques, bridge inspection reports, and a variety

of repair and rehabilitation methods with an emphasis on concrete and timber bridges. As with the Bridge Inspection class, this updated class was developed collaboratively with the DOTD Bridge Sections to ensure that the information reflects the changes to the state of the practice for bridge repair and addresses issues of concern to the local bridge owners and DOTD. Intended for local road and bridge inspectors, managers and maintenance personnel, the course will be taught by Jim Ferguson, PE, currently Director of Public Works for West Feliciana Parish, who has over 20 years' experience with bridge inspection, maintenance, preservation, and repair, in the public and private sectors. Course dates and locations are listed in the calendar on Page 1 of this newsletter. Registration for these classes is now open; to sign up, go to www.louisianaltap.org.

Additional courses being considered for this year are the highly acclaimed, newly revised National LTAP Road Safety 365 course, and **Roads Scholar #9, The Road to Better Signing**, to be scheduled for Summer and early Fall, respectively. An updated **Roads Scholar #3, Drainage: the Key to Roads that Last**, is being revised and is anticipated to be presented in the Fall of 2016 as well. We will also be presenting a limited number of classes in the **Roads Scholar Basic Supervisory Skills Series** later in the year. Stay tuned for these course announcements!

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Excessive buildup of gravel and debris collects moisture, contributing to deterioration of a timber bridge deck (Source: DOTD Pontis Manual)

The Local Technical Assistance Program of the Louisiana Transportation Research Center in cooperation with LADOTD, FHWA, and LSU.

www.louisianaltap.org

2015 Roads Scholar Classes 2015 Wrap-up



Roads Scholar #1 – Basics of a Good Road

“Basics of a Good Road,” LTAP’s introductory Roads Scholar Program course, provides basic information on construction and maintenance of locally owned roads, aimed at helping agency personnel to better manage and operate their road networks. LTAP Program Manager Steven C. Strength, PE, PTOE, taught this series in eight locations across the state and trained 150 agency personnel. Participants said after taking the class, they would “try to recognize deficiencies in pavements and try to resolve by the methods outlined in the class,” and “perform more thorough inspections of asphalt and concrete roads.” One reviewer said “Great Job! This is a much needed class for everyone, administration and on down the ladder.”

Roads Scholar #15 – Safety for Public Works Responders

“Safety for Public Works Responders” addressed disaster response and recovery operations that face Public Works employees. This course was taught by Justin R. Hill, a Hazardous Materials Officer of the Baton Rouge Fire Department, who brought a unique perspective to the locals on preparing for safety situations. Public Works responders often face dangerous and life threatening situations as a result of natural and man made disasters. This series was offered in eight locations across the state to 140 participants. Participants said after taking this class, they would now “get a plan together,” “reassess training on emergencies at my agency,” and “try to be more cognizant of my surroundings and make safety plans for at work and for my family.” Another person said they would now “consider emergency responses to non-weather related incidents.” The class included how to prepare and plan for the multiple hazards that can arise in emergencies and how to always consider the safety of the responders and the public. Time was also spent considering how to plan for personal, individual and family safety in times of crisis. Emergencies are going to happen so planning and preparing should be a part of everyone’s standard operating procedures.



CALENDAR

Roads Scholar #14: Bridge Maintenance & Repair

West Monroe - February 25, 2016

Alexandria - March 17, 2016

Lake Charles - March 31, 2016

Lafayette - April 7, 2016

Covington - April 21, 2016

New Orleans - May 19, 2016

Baton Rouge - May 26, 2016

LPESA Board Meeting (at the PJAL Annual Convention)

Bossier City - March 3, 2016

ATSSA Traffic Control Technician (TCT)

Baton Rouge - March 2, 2016

ATSSA Traffic Control Supervisor (TCS)

Baton Rouge - March 3-4, 2016

(Registration available through ATSSA website for both TCT and TCS Training Classes)



Roads Scholar #13 – Inspection of Local Bridges

“Inspection of Local Bridges,” a completely updated two-day class, wrapped up in December. This series included basic training for local agency personnel to conduct Special Inspections of bridges owned by parishes and municipalities, from Instructor Kent Hardin, retired DOTD Certified Bridge Inspector. The course content was updated in cooperation with DOTD’s Bridge Inspection & Maintenance personnel to ensure that all applicable requirements were adequately addressed. Each session included a field visit to a local bridge for valuable hands-on experience and instruction from Kent. This series reached 9 locations across Louisiana and we trained over 200 people! Bridge

Inspectors who took the class said that “I have a better knowledge of the

directives, and I will prepare for the upcoming DOTD compliance changes” and “I will do almost everything differently now – I am going to do more thorough special inspections and take my time.” Someone even said “Kent was spot on. LTAP was lucky to find him!” We want to thank the DOTD Bridge Inspection Section at Headquarters for their assistance with the classes. Also, each class had DOTD Bridge Inspectors from the local District Office who shared their experiences and helped with the on-site activities. This collaborative effort made for an even better learning experience for all participants.

Roads Scholar #4 – Temporary Traffic Control for Local Agencies

We had to add two courses to “Temporary Traffic Control for Local Agencies” series because of popular demand, bringing the total to nine classes across the state! We have already trained 212 people, including a “Lagniappe” session in January 2016 in conjunction with the APWA Baton Rouge Branch. Taught by LTAP Program Manager Steve Strength, this course used Part 6 of the Manual of Uniform Traffic Control Devices as a guide to cover a broad range of topics dealing with Temporary Traffic Control in Construction, Maintenance, Utility, Incident Management, and Special Event operations. A participant said of this course, “I will now use charts and illustrations in the MUTCD to help set up job sites more effectively.” Another said that they would “spend more time inspecting traffic plan implementation by placing cones, warning signs, and drums in the correct way, and also do my taper according to the speed and lane size.”



CALENDAR

LPA Qualification Program, LPA Project Development & Delivery, 3-Day Workshop
Baton Rouge – April 19-21, 2016

LPESA Spring Conference
Baton Rouge – May 4-5, 2016

2016 National Public Works Week
May 16-21, 2016

<http://www.apwa.net/discover/National-Public-Works-Week>

Be on the lookout for these LTAP Courses in 2016:

- **National LTAP Road Safety 365**
- **Roads Scholar #3: Drainage: The Key to Roads that Last**
- **Roads Scholar #9: The Road to Better Signing**
- **Roads Scholar Basic Supervisory Skills Series**

New Off Systems Bridge Rating Engineer Announcement



In an effort to help bring Louisiana into compliance with Federal NBIS requirements, Mr. William “Bill” King, Jr., P.E. was recently retained as a consultant by the Bridge Design section of LADOTD as their Off - System Bridge Files and Load Rating Engineer Contractor. The primary goal for this new hire is to assist the DOTD Bridge Design Section Load Rating Gang in meeting full compliance with the requirements of Metric No. 13 – Load Rating, and Metric No. 15 – Bridge Files, for the National Bridge Inspection Standards (NBIS) 23 FHWA Metrics and Title 23 CFR Part 650.313 for all Louisiana statewide Off-System (non-state owned) Bridges. The current status for Louisiana is a Conditional Compliance, with an agreed upon Plan of Corrective Action (PCA).

Mr. King has already begun collecting and compiling Off-System bridge files and owner information. He will assist DOTD in reviewing the data with the goal of affirming the load rating of each bridge. He plans to work and meet with each of the 64 parishes in the state and assist them in their efforts to comply with the NBIS requirements. When needed, he will assist DOTD in developing and managing consultant contracts for agency bridges that require specialized methods to rate certain structures. In addition, he will provide quality control review over the collected bridge files, bridge load ratings, and /or design calculations and implement an electronic storage database.

Mr. King re-joins the DOTD after spending 33½ years of state service to DOTD and LSU. He began his career in Bridge Design for eight years before moving and completing his career with the Louisiana Transportation Research Center. While at LTRC, he served as the Special Studies and Pavements Supervising Engineer, managed the Pavement Research Facility and the Asphalt Research program, and finally retired after serving as the Materials Research Administrator for approximately 4 years. We at LTAP are very excited to have this new resource to help our local agencies with their bridge rating and record keeping issues and we encourage all parishes with questions to contact Bill. He can be reached at Bill.King@la.gov, Ph – (225) 379-1012 or Fax (225) 379-1786.

Meeting the NBI Compliance Deadlines: Progress Being Made!



The first deadline, from the Priority “A” list, facing Mr. King is to have all off-system bridges have a reported load rating by March 31, 2016. All of the parishes that have bridges on the Priority “A” list have been contacted by Bill with follow-up emails or letters to the original compliance letters sent to each parish in early August, 2015. These follow-up emails/

letters emphasized the March 31, 2016 deadline, which is fast approaching. A positive response has been provided by each of those contacted and efforts are underway to meet the deadline. . Initially, 48 bridges were reported as not having a load rating. As of the beginning of February, 2016, this list has reportedly been reduced to 25, with three of those in the process of being load rated, or a plan of action to have load rated has been developed.

As part of his outreach activities, Mr. King has visited 8 of the nine DOTD districts for compliance meetings, where 40 parishes were represented, along with a number of consultants and municipalities. In addition, Mr. King has visited five parishes to discuss the both the Priority A and B requirements and answer any questions they have concerning bridges in their parish.

Moving forward, Mr. King is beginning to focus on the Priority B list for compliance with the next deadline of June

Bridge Load Rating Training in Louisiana



Adding onto the already busy fall season, LTAP, along with DOTD, were able to work in another vital class. The Bridge Load Rating class was launched with the intention of educating novice and experienced bridge engineers alike with the fundamental knowledge necessary to apply to the most recent AASHTO LRFL Specifications to bridge ratings and how the Louisiana DOTD rating requirements encompass these LRFR specifications. The course introduced participants to applications of LRFR specifications that can be used to enhance bridge safety and to identify and discuss the steps to ensure successful transition to this new state-of-the-art technology. Paul Fossier, P.E., Bridge Design Engineer Administrator,

DOTD, gave the Introduction and gave an overview on the Load Rating Program. Artur D'Andrea, P.E., Assistant Bridge Design Engineer Administrator, DOTD, delivered a presentation on FHWA and LADOTD Policies and Procedures. Steven Sibley, P.E., Bridge Inspection Engineer, DOTD, told participants about Timber Bridge Rating Requirements. Dana Feng, P.E., Bridge Rating Manager, DOTD, spoke about Rating Methodology and Procedures. Billy Metcalf, P.E., Bridge Rating Engineer, DOTD, worked through several Load Rating examples for the participants. For more information on Bridge Load Rating, you can contact William "Bill" King, Jr., P.E., Off Systems Bridge Rating Engineer at Bill.King@la.gov or Dana Feng, P.E., Bridge Rating Manager, DOTD at Dana.Feng@la.gov.

NBI, cont. from page 4

30, 2017, again for each parish to assist the DOTD in finding and providing missing bridge files necessary to fully comply with the NBIS requirements. He anticipates communicating with each parish by email with follow-up field visits as needed.

The Louisiana Parish Engineers and Supervisors Association (LPESA) and LTAP have communicated frequently with the DOTD Bridge Design and Bridge Inspection and Maintenance Sections on issues related to the bridge rating, bridge file documentation and other compliance issues. The LTAP bridge classes and workshops were developed in partnership with DOTD to ensure that the proper techniques and most recent information were included. In addition, DOTD has participated in LPESA meetings and activities to explain the requirements and the importance of working together to meet the compliance deadlines. Mr. King encourages all bridge owners with questions regarding their bridge inventory and compliance profile to call him to set up a meeting to review the Priority A and B lists.



LPA 3-day Workshop Coming Spring 2016

Is this upcoming 3-Day Workshop for you? Read on and answer these easy questions:

- Does your community receive funds from the DOTD to improve your local transportation network through popular programs like the Transportation Alternative Program (TAP), Urban Systems, the Local Road Safety Program or Recreational Trails?
- Do you perform engineering services on these types of projects as a consulting engineer under contract or as an employee of a local entity?

If you answered yes, to either of these questions this training program is for you.

- Is your agency considering applying for funding through one of these programs?
- Are you considering accepting a design or CE&I assignment on a DOTD funded LPA project?

Once again, if you answered yes, this training program is for you.

The Local Public Agency (LPA) Training Program has been developed to help local agencies with project development and delivery for local transportation projects that utilize state and federal funds. This 3-day series debuted in 2015 and was a huge success. There were two training sessions, in which over 150 were trained. In 2016, there will be another round of workshops in Baton Rouge, April 19-21. Be on the lookout for information on registration on LTAP's website www.louisianaltap.org.

The funds used in the LPA programs listed above are administered by the DOTD on behalf of the Federal Highway Administration (FHWA). There are specific criteria and requirements for use of these funds that must be followed to stay in compliance with all state and federal regulations. These requirements which impact every aspect of the project from accounting and project management to design and construction are considerably different and in most cases much more stringent than agencies generally follow for locally funded projects. The LPA Training Program introduces the basic requirements that local agencies need to understand and follow in order to utilize the Federal Aid Transportation funds to successfully complete these projects. The first module, the LPA Qualification Core Training is required for

all LPAs that have an existing project or have been awarded project funding. It is strongly suggested that all LPAs with active projects participate in the other modules as well to better understand the process, be informed of changes to the programs and meet the new DOTD Program Managers and LPA project staff. The 3 day program is described on the next page. Participants can register for one or more of the modules.



LPA Qualification Core Training

Tuesday, April 19 – 9:00am-3:30pm – 6 PDHs

Using Federal and State Funds for Transportation Projects on Locally Owned Roads

Required for all LPA project sponsors and their consultants to be qualified to participate in the state and federal programs on future transportation projects.

This class includes:

- LPA Project Funding
- Available Programs
- Responsible Charge Duties and Requirements
- Planning for a Project
- Entity-State Agreement
- Working with LDOTD District and Headquarters
- Project Reporting Requirements

Project Design and Delivery: Developing an LPA Project for Bidding

Wednesday, April 20 – 8:00am-4:00pm – 7 PDHs

Intended for all engineers and professionals involved in the design process and plan submittal for a federally funded LPA Project. The LPA Responsible Charge for the engineering design phase including consultant selection (if applicable) should also participate to understand the DOTD requirements for design and plan development. Project design and delivery is a complicated and often very lengthy phase of a project. This class includes an overview of DOTD requirements for development and approval of plans and the bid package and advice on how to move through this phase by adhering to DOTD protocols and requirements. Failure to follow DOTD requirements often results in more time and money being spent on this phase than allocated with the net effect being project delays and additional cost to the entity.

Key topic areas include:

- Project Setup
- National Environmental Policy Act (NEPA) Requirements
- Permit Overview
- DOTD Design Requirements, Policies, and Procedures

- Plan Development and Submittal to DOTD
- Response to Comments and Estimates
- Specifications
- Construction Bid Process

Construction, Engineering, and Inspection (CE&I)

Thursday, April 21 – 8:00am-4:00pm – 7 PDHs

This module covers construction contract administration for Local Public Agency administered Federal Aid transportation projects and is intended for LPA construction project personnel, engineers who serve as the LPA Project Engineer (PE), and the Responsible Charge. DOTD construction management protocols and requirements often far exceed those followed by local entities on routine projects. Attend this class before your project starts to learn what is required and who is responsible at each step so that you follow all of the projects to successful project construction and closeout.

Class focusses on the following areas:

- Construction Administration Overview
- Disadvantaged Business Enterprise (DBE)/Small Business Enterprise (SBE) Programs
- Materials and Testing
- Contract Administration for Work Zone Safety
- Site Manager
- Partial Estimates for Payment
- Construction Project Closeout Procedures

For more information regarding any of these classes contact Ann Wills, DOTD Manager of LPA Programs, at Ann.Wills@la.gov or Marie Walsh, LTAP Director, at Marie.Walsh@la.gov.

Complete Streets Peer Exchange

A Complete Streets Peer Exchange was hosted by the FHWA Louisiana Division, the FTA Region 6 Office, and the Louisiana LTAP Center on Jan 19-20, 2016 in Baton Rouge, Louisiana. “Complete Streets are streets for everyone. They are designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities. Complete Streets make it easy to cross the street, walk to shops, and bicycle to work.” – as defined by Smart Growth America.

The purpose of this Peer Exchange was to bring peers to Louisiana from places where Complete Streets initiatives have been successfully implemented and to learn from their experiences. Over 90 people from the State DOT, local agencies, consultants and stakeholders from all across Louisiana attended this event. Speakers from Louisiana, the cities of Charlotte, NC and Austin, TX as well as Virginia DOT shared their experiences in the implementation of Complete Streets. Speakers were asked to focus on the topic areas listed below:

- Practical implementation, especially retrofitting Complete Streets into existing roadways
- Design standards that had to be updated or changed
- Issues faced during design phase
- What public outreach efforts were effective and which were not
- Pros and Cons of implementing Complete Streets during design and construction phases and after implementation
- Examples of Implementation, actual new construction or retrofitting – what worked well and what did not? How did the driving public accept the change?
- What lessons were learned – If you had it to do all over again, what would you change?

When registering for the Peer Exchange, attendees were asked to submit one question about Complete Streets. These questions were summarized and sent to all the speakers before the Peer Exchange so that they could gauge the interest of the audience.

The speakers did an excellent job conveying their experiences with Complete Streets. The audience had many thought provoking questions for the speakers to answer.

In an effort to engage the audience throughout the peer exchange, interactive software was used to poll the audience by having them answer various demographic and opinion questions. Participants used “clickers” or small remotes to individually answer group questions.

When asked what the greatest pedestrian design challenge is, most people answered lack of right-of-way and large intersections. When asked what the greatest bicyclist design challenge is, most people answered lack of right of way and vehicle & pedestrian conflict points with the bicyclist. When asked what the greatest transit stop design challenge is, most people answered lack of right-of-way and lack of pedestrian access/ADA. When asked what design element contributes most to a better Complete Streets solution, most people answered lane reductions and access management. When asked what the best performance measure for implementing a Complete Streets policy is, most people answered the number of people walking and biking and the number of bridged gaps in multimodal connectivity.

Overall the peer exchange was very successful. Over 90% of attendees rated the exchange good to excellent. Many of the attendees stated learning about the examples, practices, techniques and approaches to implementation of Complete Streets was the most important thing they learned during the Peer Exchange.

Following the Peer Exchange, speakers from Virginia DOT and the City of Austin stayed to have a one-on-one session with representatives from the City of Baton Rouge. Baton Rouge representatives asked questions about parking, transit, Complete Streets implementation, safety, planning, public perception, and education. When completed, representatives from the City of Baton Rouge stated they found the Peer Exchange and one-on-one session to be helpful and informative, giving them great ideas on how to move forward with Complete Streets in Baton Rouge.

Using GIS and Google Earth to Report Flood Damage to FEMA

By: Lisa Harris, Kansas LTAP Communications Coordinator

John Remmert is a self-described “old guy.” A few years ago he would not have imagined himself using a GIS system to track road work, maintenance-related receipts and other road and bridge documentation. But seeing geo-referencing and Google Earth in action, and using it himself, has changed all that. He’s a convert. Remmert is saving the county a lot of time and money as a result. When we asked Remmert to describe how these technologies are benefiting his county, he said “Wow... where to start?” (See the sidebar on page 5 for a few applications.) He said what really brought home the power of GIS, though, was using it to organize documentation for flood remediation in 2013.



Remmert at work at the County’s “file cabinet.”

Challenge: Managing and Tracking Paperwork

After a period of particularly heavy rains and subsequent flooding, the county qualified for FEMA funds for clearing debris and repairing damage to roads, bridges and culverts. Remmert said FEMA is very careful about reimbursing expenses and requires substantial documentation, which FEMA also audits.

Required documentation for each location runs the gamut from multiple photographs taken at different times, to invoices to time sheets. The “paper trail” must show that the damage was caused by the flood and that the repairs were actually made.

Barton County had 50 different damaged locations, and staff needed to provide documentation for each of them. If they had submitted hard copies to FEMA, they would have “killed a forest,” said Remmert.

Solution: Geo-reference All the Documents and Create a Virtual Filing Cabinet

Instead, they used a computer to file, organize, and report geo-referenced documents. The county scanned, created or received all kinds of documents related to the repairs (showing conditions before and after flooding, and during and after repair) and “filed” them electronically by the lat-long coordinates of the site. Then they could pull up a damaged site in Google Earth and see the

physical location and all the files for that location, each of which could be clicked on to see a pop-up window with more detail. For example, when looking in Google Earth at the location of a damaged culvert that needed replacement and debris cleanup at NE 70, NE 30 Road, the names of picture files could be seen for the structure six months before the flood, the crew cleaning debris at the location, and after clean-up. You would also see invoice files for crane rental and the new culvert, a photo of the crane working at the site, and a photo of the finished work.

To start creating the documentation, county personnel took photographs of each damaged location with a digital camera that also recorded its GIS coordinates. The photographs showed debris piled up, roads washed out, and structural damage. “When we dropped [the photos] into Google Earth, we could take a tour of the flood-damaged areas without getting into a truck,” Remmert said.

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All of these Complete Streets presentations and more are available for viewing online www.ltrc.lsu.edu/ltap/resources.html



Chainsaw Safety Trains a Record Number!

LTAP delivered one of our most popular classes during National Public Works Week this year in May of 2015: Chainsaw Safety, Precision Felling and Maintenance. Rip Tompkins of ArborMaster, nationally recognized chainsaw operation and safety instructor, presented four classes in four days to agencies across the state in Lake Charles, West Monroe, Baker and Hammond. LTAP trained over 300 students at these classes! Rip discussed safety and risk management, chainsaw operation/handling, chainsaw cutting, felling procedures, specialized cutting situations and chainsaw maintenance. Afterwards, Rip took the class outside to perform 2-3 tree fellings. While doing so, he explained to the class why he chose certain methods in different situations. Participants said in their evaluations that this was “the best workshop LTAP has had yet!,” and When asked what they would do differently now that they had taken the training, they intended to “work safer, evaluate situations, and get everyone home safely,” “handle the saw more carefully,” and “look for safety hazards and plan before cutting a tree down.” See below for some of ArborMaster and OSHA’s most helpful tips.



When felling a tree, remember **H.O.P.E.**

Hazards

1. Inspect the tree and site
2. Check for:
 - Electrical conductors, communication lines
 - Tree defects such as decay, dead or broken limbs, splits, hangers, etc.
 - Eliminate hazards or compensate for them

Obstacles

1. Structures
2. Paved surfaces
3. Landscape
4. Utilities

Plan

1. Felling direction
2. Lean
3. Notch, hinge, back cut
4. Need for ropes, wedges, etc.
5. Escape route

Equipment

1. Saws
2. Wedges
3. Ropes
4. Rigging Equipment



The Felling Plan

1. Check for hazards - conductors, tree defects, decay, obstacles, wind, etc.
2. Assess the lean - determine the best felling direction
3. Plan your “escape route” - 45 degree angle opposite the felling direction
4. Establish the hinge plan - size, depth, placement of notch; thickness of hinge
5. Plan the back cut - straight or bore cut, position when finishing

According to OSHA, “Operating a chain saw is inherently hazardous. Potential injuries can be minimized by using proper personal equipment and safe operating procedures.”

Personal Protective Equipment

Personal Protective Equipment (PPE) is imperative for the chainsaw operator. This includes:

- leg protection (chaps, wrap-chaps, chainsaw pants, or bib style pants)
- hard hats
- hearing protection (muffs or ear plugs)
- eye protection (goggles or glasses)
- hand protection (gloves or mitts)
- footwear

Daily Inspection of the chainsaw’s engine should include:

- Air Filter
- Throttle Interlock
- Trigger
- Choke Lever
- On/Off Switch
- Chain Brake
- Chain Catcher Pin
- Check for Cracks
- Check Working Mechanisms, including
 - o Starting System
 - o Drive System
 - o Sprocket
 - o Car
 - o Fuel Mix

Reactive Forces:

1. Pull - When the chainsaw operator is cutting with the bottom part of the bar, the saw tends to pull away from the operator and into the cut.
2. Push - When the operator cuts with the top of the bar, the saw tends to push back toward the operator and out of the cut.
3. Kickback - Anytime the front upper quadrant (kickback quadrant) of the tip of the chainsaw bar contacts an object, the chainsaw reacts by rotating back towards the operator. NOTE: Kickback occurs at a rate seven times faster than a human can react. Dodging the saw’s reaction is not an option.



Nine is the Magic Number for FHWA Proven Safety Countermeasures

What's a sure thing when it comes to driving safe? Avoiding impairment, buckling up, staying alert, and knowing the rules of the road are all important. When it comes to infrastructure, though, owners of the infrastructure have some valuable and proven tools to keep users safe, too. The Federal Highway Administration's Proven Safety Countermeasures are nine solutions that, based on the latest safety research, have shown great effectiveness in improving safety. Unfortunately, these research proven ideas are not widely applied on a national basis even though they are among the most effective, and in some cases, lowest cost, infrastructure related improvements to reduce crashes. These are all safety measures that are eligible for funding through the Local Road Safety Program.

1. Safety Edge – Known in Louisiana as the “Shoulder Wedge,” this technology shapes the edge of a roadway at approximately 30 degrees from the pavement cross slope, eliminating tire scrubbing, a major factor in loss of control for vehicles attempting to reenter a roadway after leaving the pavement. Louisiana DOTD has adopted the Shoulder Wedge as a baseline improvement for all State sponsored asphalt resurfacing projects. Overall crash reduction with this improvement on two-lane roads is estimated at 6 percent, and the severity of the types of crashes that can be prevented result in high benefit to cost ratios from 4:1 up to 63:1.

2. Roundabouts – These intersection designs, characterized by low speeds, reduced number of conflict points, and yield on entry operation, have been shown to reduce crashes in urban and rural areas under a wide range of traffic conditions. According to the Highway Safety Manual (HSM), modern roundabouts can provide an estimated 82 percent reduction in severe (fatal and serious injury) crashes compared to two-way stop control. When replacing traffic signal control, roundabouts can “yield” reductions in severe crashes up to 78 percent. While not a cure for every intersection, roundabouts can also provide a transition between high and low speed environments, such as the entrance to a settled area on a rural roadway, and serve as a traffic calming device for managing speeds. LADOTD and several local agencies in Louisiana have constructed roundabouts, with more on the way.

3. Corridor Access Management – Simply put, the fewer the conflict points, the fewer the crashes. The key to Corridor Access Management is limiting the number of access points to a roadway (streets and driveways) and in some cases restricting the movements at the points that remain. The HSM predicts reductions of 5 to 23 percent in total on two lane rural highways, and 25 to 31 percent in severe crashes on urban and suburban arterial streets. While establishing access management on newly constructed



*This roundabout in Tangipahoa Parish replaced a Four Way Stop intersection
Photo courtesy Scott Boyle, DOTD*



Well placed warning signs in curves can reduce severe crashes by 13 percent. Enhanced markings can provide further benefits. These signs were provided as part of a “purchase and install” Local Road Safety project in Bossier Parish.

roadways is relatively straightforward, managing these improvements in a built environment requires that the traffic engineer or road manager strike a delicate balance between access and mobility with an eye toward safety. Cooperation of elected officials, developers, land use planning and zoning authorities, business owners, roadway users, and safety advocates of all kinds must be cultivated for such a program to succeed.

4. Backplates with Retroreflective Borders – Signal backplates with retroreflective borders, now a standard at LA DOTD for new installations, have been shown to reduce day and nighttime crashes by making the traffic signal heads more conspicuous to the road user. Reductions in total crashes of 15 percent are typical, according to the HSM. While backplates have been around for decades, research has shown that the safety benefit of adding the retroreflective strip around the border is particularly important for older drivers, and those who are colorblind and cannot discern the position of the illuminated lens under low visibility conditions.

5. Longitudinal Rumble Strips and Stripes on 2-Lane Roads – Roadway and lane departure crashes on rural two lane roads constitute the highest instance of fatalities and serious injuries on Louisiana’s roads. The rumble effect created by centerline and shoulder rumble strips can alert drivers to a lane departure, allowing them to correct their mistakes before a catastrophe occurs. Reduction in severe crashes of 36% and 44% can be expected on rural roads from shoulder and centerline rumble strips, respectively. Reductions of 64% in urban severe roadway departure crashes have also been proven, though the judicious placement of these devices

is recommended due to noise concerns from nearby residents, particularly at night when ambient noise is reduced. Rumble stripes are a form of this countermeasure where the lane marking is placed over the ground-in rumble strip itself, increasing the nighttime visibility of the marking. Where practical to install, these rumble strips or stripes are highly recommended by both DOTD and LTAP as a low cost, systemic safety improvement.

6. Enhanced Delineation and Friction for Horizontal Curves – Low cost treatments for horizontal curves include signing, delineation, and pavement markings to increase the driver’s awareness of the curve and to assist with navigating them. They are an ideal treatment for spot locations where crashes have occurred, or as a systemic improvement for a number of similar locations. The LRSP has been promoting their purchase/install projects, where the materials are purchased with safety funds and the local agency agrees to install the devices, as a quick and efficient method of applying these countermeasures. Activated signs or other devices increase driver awareness if the vehicle is approaching at higher speed than is recommended for the curve. High friction surface treatments are applied to the pavement in curves in order to improve the friction characteristics of the curve, and do not require a response from the driver to function. Severe crash reductions of 13 percent for signs alone, and up to 43 percent for active devices or high friction treatments can be achieved, according to the FHWA Crash Modification Factors (CMF) Clearinghouse.

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When used appropriately, the Pedestrian Hybrid Beacon, or HAWK, can reduce pedestrian-related crashes by 69 percent. Photo courtesy FHWA

can reduce pedestrian crashes by 69 percent and vehicular crashes by 29 percent. Like any traffic control device, the Pedestrian Hybrid Beacon should only be installed upon recommendation of a traffic engineering study where all reasonable alternatives are also explored.

9. “Road Diets” (Roadway Reconfiguration)- Once considered folly to “classically trained” traffic engineers concerned primarily with vehicular capacity, the concept of Roadway Reconfiguration or “Road Diets” is gaining traction both nationwide and here in Louisiana. The advantages of reducing the number of through lanes in order to facilitate the introduction of dedicated turn lanes, bicycle lanes, median refuge islands for pedestrians, and other amenities are numerous: reduced overall vehicle speeds through traffic calming, provision for left turn storage out of the main travel lanes, separation of bicycle and vehicular access, easier access for pedestrians, expanded sidewalk areas and curb extensions to accommodate pedestrian access, the list goes on. When a street is modified from a four lane undivided street to a three lane street with a two-way left turn lane, overall crash history can be reduced 29 percent. Four lane roadways with Average Daily Traffic of 20,000 or less may be good candidates for Road Diets, but like any reconfiguration, the individual situation must be evaluated, including the effects on through traffic, neighboring development, and the street network as a whole. A variation on this theme is the reduction of through lanes from six to four on urban arterials that have seen reduction in volumes due to changes in traffic patterns from freeway construction or urban redevelopment. Road Diets can be catalysts for significant urban revitalization as the street scene is transformed with pedestrian and neighborhood business friendly amenities such as landscaping and curbside parking as well as bike lanes and transit oriented development.

Any of these nine proven countermeasures, where justified by data or as part of a systemic safety approach, are good candidates for Local Road Safety projects. For more information on the Proven Safety Countermeasures, visit the FHWA Proven Safety Countermeasures website at <http://safety.fhwa.dot.gov/provencountermeasures/> or contact LTAP.

Nine is the Magic Number, cont. from page 13

7. Medians and Pedestrian Crossing Islands in Urban and Suburban Areas – Simplifying the task of navigating in an urban environment improves safety for pedestrians as well as vehicles, and that is the science behind use of medians and pedestrian crossing islands. By allowing the pedestrian to cross one direction of traffic at a time, and providing a refuge in between, crashes involving pedestrians may be reduced by 46 percent and vehicular crashes by 39 percent. The medians and refuge areas, when properly designed, enhance the visibility of crossings, reduce the speed of approaching vehicles, and reduce delays for motorists versus crossings where the pedestrian must cross the entire highway. Medians also have the benefit of providing space for supplemental signage, and facilitating access management measures, such as right-in/right-out restrictions at driveway intersections.

8. Pedestrian Hybrid Beacon- a lesser known countermeasure, at least in Louisiana, is the Pedestrian Hybrid Beacon, also known as the High intensity, Activated crosswalk, or HAWK. This treatment differs from conventional beacons in that it actually requires the roadway traffic to stop for a red signal, and while activated by the pedestrian, like a Rectangular Rapid Flashing Beacon, or RRFB, it also gives the pedestrian a steady “walk” and flashing “don’t walk” indication like a standard traffic signal pedestrian phase. During the pedestrian clearance phase, the HAWK beacon displays a flashing red indication, allowing traffic to proceed after stopping once the pedestrian has cleared the near side of the crossing in their lane. HAWK beacons remain dark when not activated by a pedestrian. Research shows the HAWK



This map shows the location of a damaged bridge replaced with a railroad car bridge and the files associated with that remediation.

Staff took photographs of the repair work under way, as well. If a crane was rented to set a new culvert, they took a picture of the crane working at the job site. That came in handy when FEMA did their audit, and they could match it up against the invoice for the crane, which was also scanned and geo-coded to the location. When crews did work orders, Remmert tracked those and then marked locations that had been remediated.

When the work was completed, the county photographed the location one last time, to document “after” conditions. Barton County had a lucky break in pulling together their “before” documentation due to the fact that, six months before, Kirkham and Michael had done a bridge survey of 50 percent of their bridges, and the survey included taking geo-located photos. This provided the County with electronic images of those bridges before they were damaged by the flood.

The documentation came in handy for bridges on the federal aid system (FAS) too, Remmert said. “FEMA won’t pay for FAS bridges but we use the same documentation to submit to the state to get those fixed as well.” Barton County kept records for a township that sustained damages too. “It was really quite easy,” Remmert said, “and we’re a lot better set up for that kind of thing than the township.”

Benefits of Geo-referencing Files

“The time savings are phenomenal,” Remmert said. “Think about the filing aspect. You might have the documents for a structure in several locations—an electronic photo in one place, a hard copy photo in another, the plans in another. Then you start adding in the documentation for repairs—the hard copy invoices for structures, materials, cranes, more pictures... you could end up with 35 documents per location, when all is said and done.”

Road and bridge documents can be filed any number of ways... by street number, 911 location, township location, bridge inventory number, etc., Remmert said. “Geo-coding the documents eliminates the guesswork and looking around. It’s all in one place by lat-long. It took me longer to photocopy time sheets than to assemble all the rest of the documents,” he said. “We could have scanned those, too, but we learned at a conference that FEMA prefers to see copies of the originals.”

FEMA Audit and Reaction

Remmert said FEMA wanted to monitor 10 percent of Barton County’s sites as part of a routine audit. A “site” for FEMA might be 3-4 locations in an area or along a particular road. The County’s Google Earth formatting benefited the FEMA audit process because FEMA is also Google Earth-based. When the auditor asked for supporting documentation, Remmert downloaded the spreadsheet of damages and the GIS-located documentation onto a zip drive which the auditor was able to open and use. The auditors didn’t have to look for an invoice to tie to a site; they just clicked on a site pop-up.

FEMA has three categories for reimbursement: cleanup, remediation and emergency call out. Each could be separated out. At the FEMA close-out meeting, Remmert heard the state FEMA director tell a national FEMA rep who asked about documentation: “You have no idea how well this guy has this documented.” That was nice to hear, Remmert said, especially because using GIS had been, until recently, “a real stretch of technology for this old guy.” For more information, contact John Remmert at (620) 793-1816 or highwaydept@bartoncounty.org.



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The purpose of the Local Technical Assistance Center is to provide technical materials, information, and training to help local government agencies in Louisiana maintain and improve their roads and bridges in a cost-effective manner. To accomplish this purpose, we publish a quarterly newsletter; conduct seminars, workshops, and mini-workshops covering various aspects of road and transportation issues; provide a lending library service of audio/visual programs; provide technical assistance through phone and mail-in requests relating to transportation technology; and undertake special projects of interest to municipalities in Louisiana.