

Country Roads & City Streets

WV Local Technical Assistance Program

Spring 2014

Benjamin M. Statler College of Engineering & Mineral Resources

Vol. 29 No. 1

RESPONSIBILITIES OF A FLAGGER

Andrew Morgan, WV LTAP



This photo by Cathy Morrison, Missouri Dept. of Transportation, is an example of flagging being done correctly.

Temperatures are beginning to rise, which means it is time to start addressing the potholes left behind by winter, along with other maintenance and construction issues. As roadway employees, this means once again being subjected to the hazards that come with working in the road. These hazards are varied, but a primary one is drivers.

FLAGGER RESPONSIBILITIES

While flagging is often a boring and exhausting task, it is important to recognize and remember that the flagger is the most important person on a crew with regards to crew and driver safety and keeping traffic moving. Flaggers serve as an early warning system of potential traffic hazards; without flaggers, there may be no warning before a vehicle inadvertently enters the work area.

Anytime you close a lane on a two-lane road you should have flaggers in place to direct drivers. Without flaggers, you are dependent on drivers trying to find the proper safe path, and you are expecting them to determine who yields to whom. These are two tasks that drivers are not always good at accomplishing on their own. You are putting the crew members' safety and the drivers' safety in the hands of drivers that may be distracted or in a hurry.

 West Virginia University


WV LTAP
West Virginia
wvltap.wvu.edu

IN THIS ISSUE

Pages 1 and 2
Responsibilities of a
Flagger

Page 2
WV LTAP's Build
a Better Mousetrap
Competition Deadline
Extended

Page 3
Non-Verbal
Communication Speaks
Volumes

Pages 4 thru 7
It's the Stupid Drivers
Fault

Page 8
Ron Eck named 2013
NCWV ASHE Man of the
Year

Country Roads & City Streets is typically published quarterly. The purpose of this newsletter is to provide information that is beneficial to decision makers, elected officials, and roadway construction, maintenance, and management personnel.

The material and opinions included in this newsletter are those of the West Virginia LTAP and do not necessarily reflect the views of the Federal Highway Administration or the West Virginia Department of Transportation. Every effort has been made to ensure the integrity and accuracy of both original and borrowed material; however, the West Virginia LTAP does not assume responsibility for any information that is found to be incorrect.



The West Virginia LTAP is part of the National Local Technical Assistance Program, which is funded by the Federal Highway Administration. West Virginia LTAP also receives funding from the West Virginia Department of Transportation.

MISSION:

The mission of the WV LTAP is to foster a safe, efficient, and environmentally sound surface transportation system by improving skills and increasing knowledge of the transportation workforce and decision makers.

To help achieve this mission, training, demonstrations, personalized technical assistance, and resource materials are provided.

The best way to control two-way traffic in a work area with only one lane open is to use two flaggers. With two flaggers, each one can focus their attention on a single approach. When using only one flagger, that flagger is still required to have control over both directions of traffic, which can be extremely demanding and difficult. One flagger should only be considered when that person can adequately see both directions, speeds are low, and there is very little traffic.

SIGNS, PROPER EQUIPMENT AND CLOTHING

Advance warning signs must be in place before flaggers begin controlling traffic. Work areas create a hazard in and along the road, and you must warn drivers of that hazard. Not warning drivers with a FLAGGER AHEAD (or flagger symbol) sign that a flagger is near the road controlling traffic puts the crew, and specifically the flagger, at risk of being hit. Additionally, flaggers are required to use stop/slow paddles, not flags, except in emergency situations. Studies have shown that drivers respond better to a stop/slow paddle than a flag.

Drivers can only respond to a flagger if they can see them, which is why it is so important that flaggers wear high visibility clothing, typically a vest. The high visibility clothing must meet American National Standards Institute (ANSI) Class II requirements, which include orange or yellow-green materials covering the flaggers front, back, and sides. Class II vests also contain a designated amount of retro-reflective stripes. A simple way to ensure a vest meets ANSI Class II requirements is to check the tag.

TRAINING

Training is critical. Flagging is more than simply turning a stop/slow paddle back and forth, and expecting a flagger to learn solely from experience can be very dangerous for them, the crew, and drivers they are responsible for protecting. The WV LTAP Center offers the ATSSA Flagger Certification course, which can be helpful in training your flaggers. Having your flaggers attend a structured course can provide them with the knowledge to properly protect those in a work zone and share experiences with others. The WV LTAP can also provide you with flagger pocket guides for your crews.

WV LTAP'S BUILD A BETTER MOUSETRAP COMPETITION DEADLINE EXTENDED



BigStockPhoto.com Image

Spring has finally sprung! The WV LTAP recognizes that your local or state agency has been swamped these past few months because of this year's harsh winter weather. For this reason, we have moved the Build a Better Mousetrap Competition deadline to May 15, 2014.

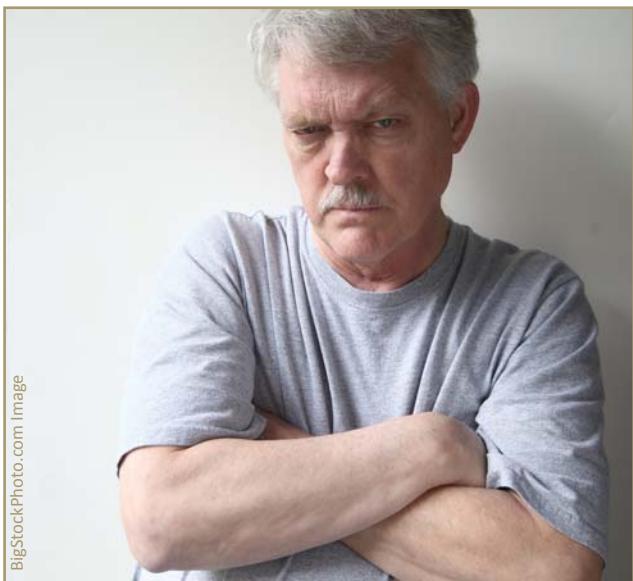
We'd love to know if you, one of your coworkers, or one of your employees recently built an innovative gadget or developed an improved way/process to accomplish an everyday task. If either of these apply, you've built

a better mousetrap and now is the time to show off your project in WV LTAP's inaugural Build a Better Mousetrap competition. As a reminder, the purpose of this competition is to collect and disseminate real world examples of best practices, tips from the field, and assist in the transfer of technology.

For more information or to enter the competition, visit wvltap.wvu.edu. You can access the competition's additional information including the judging criteria and entry form on our website's homepage or by viewing the 2013 fall and winter newsletter at wvltap.wvu.edu/2013. If you have questions or would like an entry form emailed or mailed to you, please email Kim Carr at Kim.Carr@mail.wvu.edu or call (304) 293-9924.

NON-VERBAL COMMUNICATION SPEAKS VOLUMES

Kim Carr, WV LTAP



BigStockPhoto.com Image

This guy's body language is pretty easy to interpret, but not all non-verbal communication is this apparent.

are aware of their body language and the messages they are sending, assessing their body language as a whole. For instance, if you are speaking to someone and their arms are crossed, your first instinct might be to think they are angry or irritated. However, it's also possible they are just cold or more comfortable standing or sitting that way. If in addition to crossed arms, they are talking louder and faster and scowling, it's likely they are agitated. Now, what if you are discussing a policy change and they say, "I'm fine with that and I have no concerns," but their body language clearly sends a different message? Which message is going to be stronger?

It is important to ask for clarification if you are not sure that you are interpreting another person's non-verbal cues correctly, especially when communicating about an important or time-sensitive issue. You could ask a simple question such as, "I noticed that when we started discussing the overtime policy, you became very quiet. Are you worried about this policy?" You could also make an observation such as, "I'm getting the feeling that this issue is very stressing for you. Am I accurate in making this assumption?"

TIPS FOR IMPROVING YOUR BODY LANGUAGE

If you aren't sure what your body language is saying, you may want to try any or all of these tips.

- Practice in front of a mirror.
- Record yourself making a presentation.
- Look at pictures you are in and pay attention to your facial expressions, posture, and other body language.
- Ask trusted friends or colleagues for feedback regarding your mannerisms.

We are always communicating and sending messages, and we often communicate more non-verbally (body and voice cues) than we do with the actual words we use. Whether engaged in a conversation, participating in a meeting or group discussion, giving a presentation, or simply listening, it's important to make sure that our body language is saying and reinforcing what we want and doesn't contradict or interfere with our message.

It's also equally important as we listen to others, that we notice they are sending, assessing their body language as a whole. For instance, if you are speaking to someone and their arms are crossed, your first instinct might be to think they are angry or irritated. However, it's also possible they are just cold or more comfortable standing or sitting that way. If in addition to crossed arms, they are talking louder and faster and scowling, it's likely they are agitated. Now, what if you are discussing a policy change and they say, "I'm fine with that and I have no concerns," but their body language clearly sends a different message? Which message is going to be stronger?

It is important to ask for clarification if you are not sure that you are interpreting another person's non-verbal cues correctly, especially when communicating about an important or time-sensitive issue. You could ask a simple question such as, "I noticed that when we started discussing the overtime policy, you became very quiet. Are you worried about this policy?" You could also make an observation such as, "I'm getting the feeling that this issue is very stressing for you. Am I accurate in making this assumption?"

TYPICAL BODY LANGUAGE AND POSSIBLE MEANINGS

Crossed Arms - defensive, not receptive, cold

Eye Contact (Limited or None) - nervous, lying, cultural reasons, uncomfortable

Eye Rolling - annoyed, disgusted

Eyes Squinted - angry, irritated, light is too bright

Leaning Forward - engaged and listening

Licking Lips - nervous, dry mouth, lips are chapped, habit

Raised Voice - frustrated, angry, annoyed, excited

Shaky Voice - nervous, angry, frustrated, sad

Sighing - tired, frustrated, bored

Silence - thinking, listening, disagreement, shy

Stepping Back - wants personal space

Tapping Foot or Shaking Leg - agitated, restless, habit

Yawning - bored, tired, lack of oxygen, saw someone else yawn

When the eyes say one thing, and the tongue another, a practiced man relies on the language of the first.

Ralph Waldo Emerson

ADVISORY BOARD

FHWA-WV Division

Ryan Brumfield
Charleston, WV

Bert Buchanan
Charleston, WV

Kevin Burgess
Charleston, WV

WVDOT

Steve Cole
Charleston, WV

Marvin Murphy
Charleston, WV

Ronald Tenney
Weston, WV

Donald Williams
Morgantown, WV

Vacant Position
West Virginia Governor's
Highway Safety Program
Charleston, WV

Municipal

Michael DeMary
Retired Stormwater
Program Manager
Fairmont, WV

Terry Hough
City Engineer &
Public Works Director
Morgantown, WV

Chris Knox
City Engineer
Charleston, WV

Bill Lanham
Town Superintendent
Fayetteville, WV

Private

Robert Amtower
Rummel, Klepper & Kahl
Burlington, WV

Dale Hill
Builders Supply
Association of WV
Charleston, WV

Pat Parsons
Asphalt Pavement
Association of WV
Charleston, WV

IT'S THE STUPID DRIVERS FAULT

Rick O. Drumm, FHWA Safety Engineer (Indiana Division)



BigStockPhoto.com Image

When discussing safety on our roads and highways with many individuals who work on the "hardware" side of the issue (supervising the maintenance, design, or construction of the roads), there is a recurring theme: "It's the stupid driver's fault." Anecdotal information abounds. Often at the center of these stories is a person who was driving under the influence, texting, speeding, or simply not paying attention.

But do these stories accurately reflect the only contributing factors to driving accidents? Is there anything on the hardware side we can do to increase safety on the roads under our jurisdiction?

THE CAUSES OF MOTOR VEHICLE CRASHES

As with most areas of life, if one tries to determine *THE* cause or the *Main* cause of a negative occurrence, it gets quite complicated. A person may get a particular disease and it may be that genetics played a role, or maybe diet, or exposure to environmental factors, or habits. Or, as is most frequently the case, a combination of many factors may be the

cause—and picking the degree one factor contributed to the situation over another may be very difficult to determine.

So it is with crashes on our roads. A crash could simply be one person falling asleep, running off the road, hitting an obstacle, and getting injured. Or it can be more complex, like a drunk driver who is texting and not wearing a seat belt, who runs off pavement with an eroded dropoff, which throws the car into a skid that slams it into a tree only four feet off the road . . . and it is nighttime and raining. So many factors are involved.

A comprehensive study¹ published in *Human Behavior in Traffic Safety* a number of years ago looked at the contributing factors to motor vehicle crashes. It broke down the main factors into three categories: driver, roadway, vehicle. The driver contributed to the crash if he or she did something that helped cause it—from drinking alcohol, to poor judgment and failing to yield. The roadway contributed to the crash if there was something about the roadway that was not up to standards—a sign not present or in the wrong place, or a

tree two feet off the roadway (well within the clear zone). The vehicle contributed if there was something wrong with it such as faulty brakes or tires—whether many or all of the vehicle factors can be traced back to human error is not to be investigated here.

The study was done in the United States and in England, with both yielding similar results. One of the unsurprising results is that the driver is a contributing factor in 93% of crashes. Very few times does the roadway or vehicle cause a crash without the “help” of the driver. For motor vehicle crashes, the driver is, literally and figuratively, in the driver’s seat. The driver is the one who chooses to drink, text, speed, disregard signs, cut in front of other vehicles, follow too closely, get distracted by friends in the car, not wear a seatbelt (reducing severity rather than the crash itself), or even drive while sleepy.

At this point, it is easy to see why many will say that this proves the point, “It’s the stupid driver’s fault.”

However, the data does not mean we, the overseers of the roads and highways, are free to consider it all the driver’s fault and not our responsibility. The road is a contributing factor in 34% of crashes. Signs and pavement markings may not be up to standard. Sight distance is too short. Objects are too close to the road. There are infrastructure improvements that must be made if we are to remove the road as a contributing factor.

The interaction between the driver and the road is a complicated one. The roadway gives the driver cues, information, and direction. The driver takes this all in and makes decisions based on the data. The driver will hit the brakes or turn earlier or slow down or become more aware of pedestrians or watch for other vehicles or take a number of other good driving task actions, based on the input the roads offer. Our job is to provide the driver with the best opportunities to make good decisions by providing roadways that send good messages and information to the driver.

We may be “covered” with a roadway that meets all the standards, but there will be some instances where going beyond the standards is needed to reduce crashes. The standards are there because they apply to most situations. But in special situations, more effort is needed.

Let’s take the example of a two-way, stop-controlled intersection that has had numerous crashes, most of which were caused by a driver running the stop sign. There is a stop sign placed properly on the right side of the intersection. However, after reading the crash reports from a number of crashes, a theme emerges from the narratives: “Driver said he did not see stop sign.” You look at the intersection. The stop sign is there. It is in the correct place. The sight distance for the intersection is adequate—exceeding the standards, though not by much. Yet, for whatever reason, the drivers are not seeing the stop sign clearly. It may be sunlight at a particular time of day, or visual clutter behind the sign, or a number of other reasons.

The repeated message is what is key. By placing a larger stop sign with better retroreflectivity and a second supplemental sign on the left side of the intersection, drivers may have a far better chance of seeing the stop sign and crashes of the “Failed to Yield Right of Way” sort will be reduced. Note that we were in compliance before. However, we found a way to help the driver by communicating in a different way.

These types of situations exist in numerous places throughout the entire road system. Although most locations meet standards and function well, there are still sites all around us that meet those standards yet can show safety benefits from going beyond the standards, as crash analysis shows. These may be an individual intersection or curve, or there may be a number of intersections in a region or a series of curves in an area that can be treated altogether in a systemic way.

CENTER STAFF & CONTACT INFORMATION

WV LTAP
West Virginia University
PO Box 6103
Engineering Sciences Building
Room 553
Morgantown, WV 26506
Phone: (304) 293-9924
Fax: (304) 293-7109
E-mail: wvltap@mail.wvu.edu
Website: wvltap.wvu.edu

Staff

Dr. John Zaniewski
Director
(304) 293-9955
John.Zaniewski@mail.wvu.edu

Kim Carr
Program Coordinator
(304) 293-9924
Kim.Carr@mail.wvu.edu

Andrew Morgan, P.E.
Program Coordinator
(304) 293-9939
Andrew.Morgan@mail.wvu.edu

Sabrina DeVall
Editor & Technical Writer
(304) 293-9930
Sabrina.DeVall@mail.wvu.edu

Ashley Collins
Student Office Assistant
(304) 293-9924
AColl15@mix.wvu.edu

Dr. Ron Eck, P.E.
Senior Advisor
(304) 293-9931
Ronald.Eck@mail.wvu.edu

Bill Wyant
Senior Volunteer
WWyant@hsc.wvu.edu

THE IMPACT OF THE “HARDWARE” SIDE

Study after study has shown that changes to the roadway—the surface, the pavement markings, the signs, design features, the roadside, etc.—can result in reductions, some significant, in the number of motor vehicle crashes or the severity of the injuries. What we do on the “hardware” side does make a difference.

The road safety community has developed Crash Modification Factors (CMFs) that are indicative of how effective a countermeasure is. These CMFs are based on thoroughly researched studies. There are many of them and they can be seen on the CMF Clearinghouse at www.cmfclearinghouse.org. Individually, if we see that a particular countermeasure has a CMF of, say, 0.80, then if we implement the countermeasure for a particular crash problem, we can expect that after implementation we will see only 80% of the crashes we have been having (or injuries, or fatalities, depending on the details of the CMF).

Taken as a whole, the CMFs scream to us this truth: We can do things to the road system that will reduce fatalities, injuries, and crashes. The driver may not get better at his or her task, but our improvements can work with the driver to improve road safety. This concept should not be taken lightly. We can make a difference. (At this point, I usually will state how we are like superheroes, saving people from serious injury or death, but I will let you make that deduction on your own.)

SOME ENCOURAGEMENT

The rate of fatalities in terms of deaths per miles traveled has been dropping since the mid-1960s. Deaths per miles driven back then was five times what it is today. We have made a lot of

progress. How did our society produce this amazing reduction in fatal crash rate over that past 40 to 50 years? Again, there is no one cause or effort. Let us consider the three factors above: the road, the vehicle, and the driver.

The Road: Efforts to fix “hot spots” or high crash locations (intersections, curves, etc.), broader adherence to standards, better design of roadside devices, more breakaway obstacles, traffic signal improvements, retroreflectivity standards, and the introduction of systemic improvements such as shoulder rumble strips, median cable guardrail, and more recently—SafetyEdge, roundabouts and centerline rumble strips.

The Vehicle: Body designed to absorb energy in a crash, air bags, anti-lock

brakes, Electronic Stability Control (ESC), seat belt warning reminders, and more recently and in the future—interconnected vehicles that drive themselves, vehicles that can brake for us or warn us about people in our blind spots when backing up or changing lanes.

The Driver: Increased seat belt usage (not just driver, but passengers, too), drinking age raised and less acceptance of drunk driving, recently—stricter laws for teens getting licensed.

All of the countermeasures do one of two things: prevent a crash from occurring or reduce the severity of a crash if it does occur. All lead to a lower number of fatalities and injuries. Most people would likely agree that the driver has made the



Photo by FHWA Office of Safety

THE IMPACT OF HARDWARE

One excellent example is the use of rumble strips. In the past decades, shoulder rumble strips have become prevalent on interstates and other freeways and expressways. Numerous friends of mine have stated clearly that these may well have saved their life as they traveled to home late at night from a job or school. Statistics have shown this is true. *National Cooperative Highway Research Program Report 641* described 10–24% reductions in single-vehicle roadway departure crashes on freeways, and 26–46% reduction on two-lane roads, with shoulder or edgeline rumble strips. Shoulder rumble strips save lives. Now, centerline rumble strips and edgeline rumble strips are being installed around the country to bring this help to drivers on 2-lane roads.



BigStockPhoto.com Image

least improvements (Can we make a better driver?) and that the hardware side and vehicles have greatly improved in safety. However, all have had a role in improving safety in the past and in improving highway safety as we move forward.

WHAT TO DO?

With respect to “hardware” side personnel, or overseers of the road system, I have arrived at this conclusion regarding our part in motor vehicle safety: Our job is to save people from their own stupidity. Yes, the driver is a factor in the vast majority of crashes. Some crashes may be the result of extremely bad actions—such as drunk driving—and some may be the result of what is considered less egregious activities—such as missing a vehicle in a blind spot, or simply not paying attention. However, the way we keep up the roads, as well as the methods we use to design and improve them, does have influence in steering drivers toward decisions that reduce both the occurrence and severity of crashes. In other words, our job, in part, is to save people from their own bad judgment.

There will be crashes we can do nothing about. We will still hear about the

guy who had a 0.25 alcohol content and was speeding when he drove off the roadway and hit a tree 50 feet away. However, we should not allow anecdotal stories to mask the statistics that show infrastructure enhancements do make roadways safer. There are many stories of people having dinner with their families this evening because of safety improvements of our roads. We typically don’t hear those stories, but they are there, and they are seen in statistics of crash reductions or crash severity reductions after we implement a countermeasure on our roads.

Until we all have cars that drive themselves through interconnected, wireless communications—eliminating the human factor in accidents (yes, we may end up there eventually), we on the hardware side of the equation of highway safety have a lot to do in order to keep the numbers going down. We need to improve our road systems to be able to communicate better with drivers, to give him or her cues to drive safely, and to reduce the consequences when they do make mistakes. A death toll of 33,000 on our nation’s roads every year is far too much. Drivers need all the help they can get.

Statements One Will Likely Not Hear

Doctor: “Hmmm. Yes, I see you have a nail in your hand from the nail gun that you were using without reading the directions and while you were drinking. Well, sorry, I only work on people who deserve help.”

Fire Fighter: “So, you decided to have a campfire on your porch, and it got out of hand and that is why your house is on fire. Too bad, we only put out the fires of people who did not do anything idiotic to start it.”

Sources and Credits

Footnote¹ K. Rumar. “The Role of Perceptual and Cognitive Filters in Observed Behavior,” *Human Behavior in Traffic Safety*, eds. L. Evans and R. Schwing, Plenum Press, 1985.

This article originally appeared in the Fall 2013 edition of the Indiana LTAP newsletter. Adapted and reprinted with permission.

DR. RON ECK NAMED 2013 NCWV ASHE MAN OF THE YEAR



The North Central West Virginia Section of the American Society of Highway Engineers (ASHE) selected Ron Eck as the recipient of their 2013 Man of the Year Award. Ron is the WV LTAP Senior Advisor and a WVU Civil and Environmental Engineering Professor Emeritus; he is the first individual from the education sector to receive this award. Ron is also the 26th recipient of this award, joining a distinguished group of previous recipients.

Ron was recognized for his numerous contributions as an engineer and educator, with Mike Nestor, President of the NCWV ASHE Chapter stating, "Dr. Eck has had the privilege of accomplishing many great things for this state in roadway engineering and safety. He sits on several boards and is a member of numerous committees all working towards bettering highway education and safety. Ron's contribution to this industry is unparalleled."

On March 12, many of Ron's colleagues, peers, friends, and former students, attended a dinner and roast in his honor. It was a fun-filled evening that included many laughs as well as many expressions of appreciation and respect.

All of us at the WV LTAP know how incredibly fortunate we are to have Ron as an active member of our staff. He is a continual educator, with an amazing work ethic. Congratulations Dr. Ron Eck! You are an inspiration to all of us.

West Virginia Local Technical Assistance Program
West Virginia University
Benjamin M. Statler College of Engineering and Mineral Resources
Department of Civil and Environmental Engineering
PO Box 6103
Morgantown, WV 26506-6103

Change Service Requested



Non-Profit Organization
U.S. Postage Paid
Morgantown, WV
Permit No. 34

The WV LTAP encourages you to share this newsletter with others or direct them to the electronic version on our website <http://wvltap.wvu.edu>.

- Road Supervisors
- Elected Officials
- Public Works Department
- Road Crew
- Managers
- City Engineers
- Others