



TTAP Obtains New Handheld Sign Retroreflectometer

by Matt Cate, P.E., Technical Assistance Coordinator

By now, you have almost certainly heard about the new minimum sign retroreflectivity requirements introduced in Revision 2 to the 2003 Edition of the Manual on Uniform Traffic Control Devices (MUTCD). If not, FHWA has established minimum retroreflectivity values that vary by sign color, location, and type. These new standards are scheduled to be phased in over a period of ten years, with the first requirement for transportation agencies to implement a sign management or assessment method by January 2012. Most affected signs must be compliant with the new retroreflectivity standards by January 2015, while street name signs and overhead guide signs must

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The retroreflectometer must be seated flat against the face of the sign to obtain a reading. The head of the extension pole swivels to simplify the measurement process.

New Director for Center for Transportation Research

The TTAP team congratulates their director, Dr. David Clarke, on his new appointment as the Executive Director of the UT Center for Transportation Research effective October 1, 2008. Dave succeeds Dr. Stephen Richards, who is making a short move to the University's Department of Civil and Environmental Engineering after 20 fruitful years at the helm of the Center. Dave will continue in the role of TTAP Director while serving as the point person for the Center's many research, service, and educational activities. Please join us in wishing Dave continued success in his new role as the Director of the Center.



Dr. David Clarke was presented with an "All Aboard for Dave" poster signed by the Center staff to start his new journey.

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RoadTalk is a publication of the Tennessee Transportation Assistance Program (TTAP). TTAP is part of a nationwide Local Technical Assistance Program (LTAP) financed jointly by the Federal Highway Administration (FHWA) and Tennessee Department of Transportation (TDOT). Its purpose is to translate into understandable terms the latest state-of-the-art technologies in the areas of roads, bridges, and public transportation to local highway and transportation personnel.

The views, opinions, and recommendations contained within this newsletter are those of the authors and do not necessarily reflect the views of FHWA and TDOT.

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From the Director

It's been an interesting two months since my last column. By the time you read this, the election will be over. The candidates have been preaching "change" all fall. I'll be glad to not hear any more of that. It seems like we're seeing a lot of change well in advance of the election—some good, some bad.

I wrote optimistically about "Football Time in Tennessee!" last issue. Well, things aren't looking so great for our in-state teams, as I write, regardless of who you pull for. I'm a native of South Carolina, and for years I've kidded my relatives and friends over there, because their favorite saying about this point in the football season is "wait 'til next year!" Well, optimism is a good state of mind. Life is sure more pleasant when you have that attitude.

The big news, no doubt, is our economy. It seems that in a few short weeks, our long time era of prosperity may have ended. Certainly, for those in the banking or mortgage industry, it's been cataclysmic. I wish I knew what the outlook for those of us in the public works arena was. Right now, I'm trending optimistic about the future. Fuel and material prices are headed downward, and that's good news. I actually filled my car up for less than \$40 this past weekend.

Downward prices work in our favor as long as we have money to spend. In the public sector, we depend largely upon fuel taxes and government appropriations for infrastructure financing. If the economy falters and people continue to drive less, both revenue sources fall off. We have to work smarter to get the job done in the face of a static or declining revenue base. But, there are lots of ways to make any organization more efficient. That's what TTAP is here to help you with. We get lots of information from innovative people all over the country. We include this in our assistance and technology transfer activities. Call us if you have a question about how to do something better. We're always glad to help! If we don't know the answer, we'll find someone who does.

As always, we look forward to serving you.

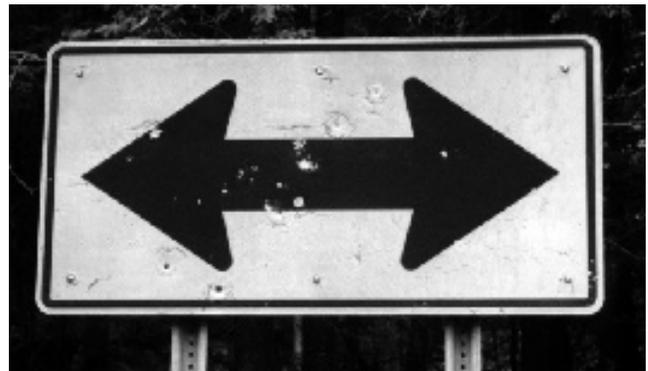
Field Repair of Scrapes and Holes of Sign Panels

reprinted from FHWA-RT-00-00, A Guide for Street & Highway Maintenance Personnel

Signs with scraped faces (usually as a result of being hit) or signs that have holes in them (occasionally as a result of vandalism) are often no longer legible, particularly at night. The damaged areas no longer reflect light back to the driver. These signs often cannot be read at night. While signs with severe damage are usually replaced minor damage can often be repaired in the field.

Field patching can be done by preparing a repair kit that includes the appropriate colors and types of new sheeting materials (including pressure sensitive adhesive sheeting), cleaners and sealants.

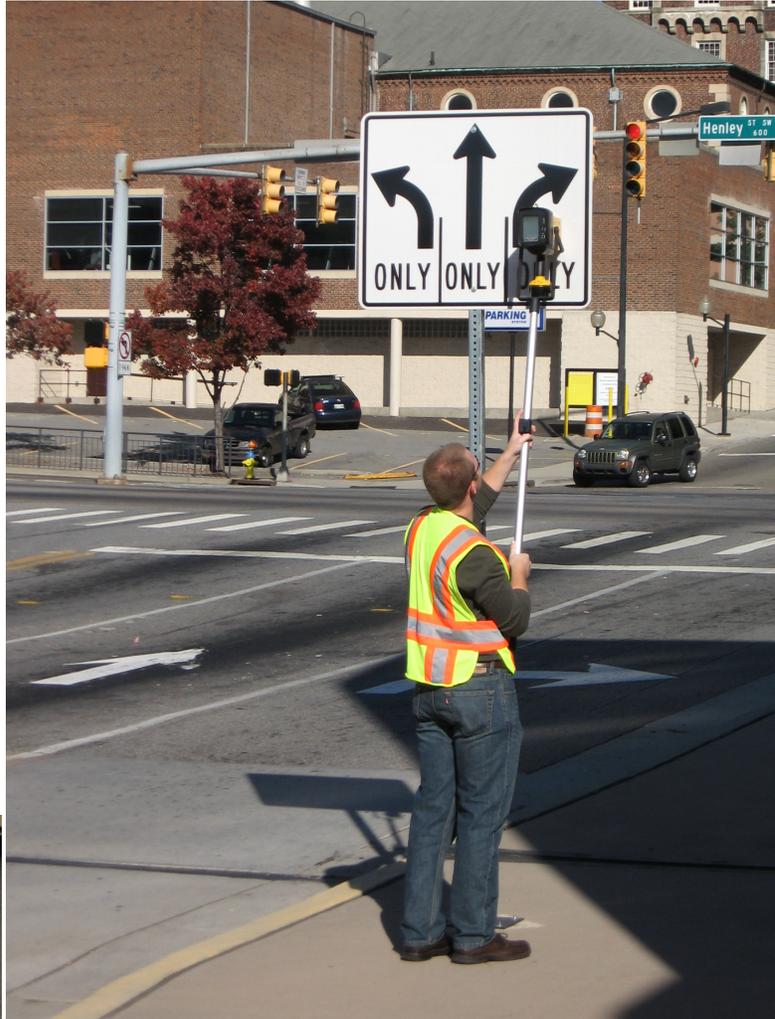
1. Once the sign has been straightened and any bullet holes pounded flat (when necessary), new sheeting can be applied to the face of the sign.
2. Clean the area(s) to be patched with Xylol, then Varnish naphtha.
3. If you carry replacement sign faces or patching materials, make sure that the retroreflective material being used for patching is the same as the material on the face of the sign. There are different grades of retro-reflective sheeting; generally the manufacturer's material will have a certain mark or pattern which will allow you to determine the type of retroreflective material on the sign face. (It is important to use the same retroreflective materials to ensure the sign will remain legible at night.) If in doubt about what type of sheeting to use replace the sign.



4. Follow the manufacturer's recommendations. Cut background field patches slightly larger than the damaged area. Pressure sensitive material should be extended at least 1/2-inch beyond the damaged area.
5. Replace the damaged legend with diecut, pressure sensitive, pre-spaced letters, borders and symbols and firmly squeegee into place.
6. Seal the hole on the back of the sign by applying aluminum foil tape to stop moisture from reaching the adhesive on the sign sheeting patch. For large holes, start placing the foil at the bottom of the hole, overlapping about 1/2-inch in a shingle fashion as you move up covering the hole.
7. If the sign is subject to snow burial and the replacement sheeting extends to the top edge of the sign, place transparent film along the top edge to seal out any moisture. Of course, if signs can be relocated to an area to avoid burial, they should be.

be compliant by January 2018. Complete coverage of these retroreflectivity standards is available online at the Federal Highway Administration's MUTCD website (<http://mutcd.fhwa.dot.gov/>).

To help Tennessee cities and counties prepare for these compliance dates, TTAP has obtained a new handheld sign retroreflectometer for use in sign-related training and technical assistance activities. The purchase of this new device was made possible in large part by a grant from FHWA's Tennessee Division Office. Our new retroreflectometer is the RoadVista Model 922, which is compliant with the ASTM E1709 measurement standard. The instrument measures sign retroreflectivity (in units of candelas per lux per square meter, or $cd/lx/m^2$), logs GPS coordinates for each measurement, and is equipped with a barcode scanner. The unit also includes an optional extension pole to allow measurement of signs mounted beyond the reach of the retroreflectometer operator's arms.



TTAP staffer Jonathan Watson uses the new handheld sign retroreflectometer to measure a regulatory sign in downtown Knoxville.



The retroreflectometer features a simple touch-screen interface. Measurements are collected by pulling a trigger on the device or using a remote trigger at the base of the extension pole.

Handheld sign retroreflectometers can be used in the sign management or assessment process in a number of ways. Obviously, they can be used to collect a measured value for each sign maintained by the agency. While this method is the most accurate, it is time consuming and expensive. This requires a staff member to exit the vehicle and collect several measurements on the face of each of hundreds or thousands of signs. This information also must be updated on a regular basis. For this reason, many agencies will choose to trade accuracy for simplicity, utilizing techniques such as nighttime visual inspection, expected sign life, blanket replacement, or control signs.

While alternate sign management methods are not as time-intensive as the direct measurement of all signs, most

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require a comparison of signs to a reference standard or the periodic measurement of control signs. It is important to ensure that control signs are measured accurately. Reference standards for nighttime visual inspection techniques must have retroreflectivity values at or near a desired minimum level. In each case the handheld retroreflector can be used to assess the performance of a small number of signs used to represent the condition of the overall inventory in a wide area.

In the coming months we expect to add three additional retroreflectometers to our technical assistance toolbox. Once these new instruments are online we will be able to loan retroreflectometers to city and county transportation agencies across the state. Many thanks go to TDOT for making this retroreflector loan program possible. If you are interested in learning more about TTAP's retroreflectometers, or about traffic sign retroreflectivity requirements in general, please contact Matt Cate, TTAP Technical Assistance Coordinator, at 1-800-252-7623 or mcate@utk.edu.

FHWA has distributed new training materials to the Local Technical Assistance Program (LTAP) centers to help local agencies prepare for the new sign management and minimum retroreflectivity requirements contained in Revision 2 to the 2003 Edition of the MUTCD. TTAP will be working to adapt and deliver these new courses in 2009. Watch the TTAP training calendar <http://ctr.utk.edu/ttap> and future issues of RoadTalk for more course details, dates, and locations.

Asphalt Pavement Alliance Announces Winners of 2007 Perpetual Pavement Awards

The Asphalt Pavement Alliance (APA) has announced the winners of its 2007 Perpetual Pavement Awards.

The award is given to owners of asphalt pavements that are at least 35 years old and have never had a structural failure. The average interval between resurfacing of each winning pavement must be no less than 13 years. The road must demonstrate the qualities expected from long-life asphalt pavements: excellence in design, quality in construction, and value to the traveling public.

The Tennessee Department of Transportation (TDOT) was one of the winners for a 5-mile section of Tennessee State Route 11 in Marshall County

Engineers at the National Center for Asphalt Technology (NCAT) evaluated the nominations for the Perpetual Pavement Award and a panel of industry experts validated the winners.

"Even though each of these pavements has been punished by more than 35 years of heavy use, motorists are still using the original pavement structures. The only maintenance has been periodic replacement of the surface," said Mike O'Leary, APA Co-Chairman. "The extraordinary performance of these pavements is worthy of attention."

The Asphalt Pavement Alliance is a coalition of the National Asphalt Pavement Association, the Asphalt Institute, and the State Asphalt Pavement Associations. The Alliance's mission is to further the use and quality of hot mix asphalt pavements. The Alliance will accomplish this through research, technology transfer, engineering, education, and innovation.

TTAP Workshops

In 2008, TTAP offered a variety of training topics, including Tractor Safety with Mowers and Back Hoes; Trench Safety; Drainage Maintenance; Work Zones; and Intersections. Some workshops focused on worker or road user safety; others were oriented toward infrastructure management.

A list of workshops proposed for 2009, including dates and locations, will soon be posted on the TTAP website <http://ctr.utk.edu/ttap/training/index.html>. Please notify us if there is a specific training topic that you would like for you or your agency; we are continually seeking new or revised training titles to meet your needs. TTAP is also able to set up on-site workshops if there is sufficient demand. If you have any questions about the 2009 TTAP training calendar, please call us at (865) 974-5255 or 800-252-7623.



Employees from Gallatin Utilities and Gallatin Street Department at a Work Zone Flagging Workshop.

2009 Workshops

The list includes but is not limited to the following workshops:

TATE

Traffic Flow Principles*
Basic Traffic Studies*
Fundamentals of Traffic Control*
Roadway Design Principles*
Highway Safety Analysis*
Introduction to Highway Capacity Analysis*
Highway Capacity Analysis – Interrupted Flow
Highway Capacity Analysis – Uninterrupted Flow
Intersection Design
Signs & Pavement Markings
Concrete Design
Asphalt Design
Pavement Rehabilitation (Preservation)
Access Management / Site Impact
Transportation Planning Principles

*(TATE core classes – please see TATE article on page 7)



A questionable nighttime Work Zone?

Non-TATE

Work Zone Flagging
Front loader/Back Hoe
Drainage System Maintenance
Innovations in Concrete
Excavation Safety
Confined Space Entry
Erosion Control (Dust & Mud)
Construction Surveying
Roadside Vegetation Control
Traffic Signals
Retroreflectivity/Sign Management

TATE Update

The Tennessee Academy for Transportation Engineering (TATE) program offers a series of short courses and workshops addressing various topics related to the design, operation, and maintenance of transportation facilities, with a focus on roads and streets. TATE was founded in 1998 to provide continuing education for engineers, planners, designers, and technicians working in the transportation field.

As indicated in the summer 2007 RoadTalk, TATE has undergone a restructuring to make the program more “user-friendly”. Under the old rules, program participants earned a TATE certificate upon successful completion of 144 hours of eligible classes. There was no formal curriculum, and classes were offered on an irregular basis. The revised program offers a basic TATE certificate upon successful completion of 54 class hours (nine one-day classes), including six required classes. Interested persons may then earn an advanced certificate by successfully completing an additional 54 hours of eligible classes.

The six core classes for the basic TATE certificate are:

- Traffic Flow Principles
- Basic Traffic Studies
- Fundamentals of Traffic Control
- Roadway Design Principles
- Highway Safety Analysis
- Introduction to Highway Capacity Analysis

TTAP offers each of these classes several times annually, making it easier for program participants to earn the certificate in a timely fashion. Elective classes provide additional content in these and related subjects. Non-TATE participants are welcome and encouraged to attend any of the classes.

What benefit is a TATE certificate? Well, we'd like to think that it demonstrates a level of competency for the holder. It also shows a commitment to continuing professional education, which is critically important in today's world. TATE classes are certainly eligible for professional development hours required by various licensing boards.

The annual TTAP training schedule, published in RoadTalk and available on the TTAP web site, lists TATE classes.

If you have any questions, please contact TTAP (800-252-7623).

Intersection Safety Briefing Sheets

The Institute of Transportation Engineers' website:

<http://www.ite.org/library/IntersectionSafety/briefing.asp>

provides briefing sheets that concern various intersection safety-related topics. Their purpose is to enhance communications with the media, decision-makers, the general public and others about intersection safety. The primary audiences are decision makers and officials who are called upon to comment or make decisions on intersection issues. The topics that are included in these briefs include:

- » Introduction
- » The Problem
- » Traffic Control Devices
- » Stop Signs
- » Traffic Signals
- » Engineering Countermeasures to Reduce Red-Light-Running
- » Using Red-Light Cameras to Reduce Red-Light-Running
- » Toolbox of Countermeasures and Their Potential Effectiveness to Make Intersections Safer
- » Pedestrian Safety at Intersections
- » Older Drivers at Intersections
- » Pedestrian Design for Accessibility Within the Public Right-of-Way
- » Human Factors Issues in Intersection Safety
- » Access Management
- » Roundabouts
- » Road Safety Audits: An Emerging and Effective Tool for Improved Safety
- » Work Zone Intersection Safety
- » Intersection Safety Resources



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TALK TO TTAP

We are always looking for your comments, ideas and suggestions to help make the TTAP Program more useful to you. Please fill out and fax the form below to TTAP at (865) 974-3889 or mail to TTAP; Suite 309 Conference Center Building, Knoxville, TN 37996-4133.

1. Please send me more information on the following articles mentioned in this newsletter.

2. Please list any additional training workshops you would be interested in attending.

3. Please list topics for videos you would like TTAP to obtain.

4. Please list any other ideas or suggestions on how TTAP could assist you.

5. Please list your name and organization to verify for TTAP's mailing list.

Name _____

Address _____

Title _____

Organization _____

Phone _____ Fax _____

Email _____

Are you currently on TTAP's mailing list?
 ___ yes ___ no

Do you wish to be on the mailing list?
 ___ yes ___ no