



INDIANA



A Federal Highway Administration LTAP Technology Transfer Newsletter

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Spotlight on Rural Innovation

Dubois County installed actuated signs at an intersection with limited sight distance to alert drivers to the presence of vehicles that may be hard to see. LTAP interviewed Brent Wendholt P.E., Dubois County Highway Engineer, about this system and its benefits.

Where was this system installed and when?

We installed the system at the intersection of Schnellville Road and Santine Road. Schnellville Road is one of our more heavily traveled roadways. As you can see in the pictures (see next page), site distance to the east on Schnellville Road from Santine Road is very low, approximately 310 feet. We installed the system in August of 2016.

What does this system do? What information is provided to drivers?

This system alerts drivers on Schnellville Road that there is traffic at the intersection with Santine Road. The goal

of the alert is to slow drivers down on Schnellville Road, to give traffic at Santine Road a better chance to enter traffic on Schnellville Road safely. The signs on Schnellville Road have flashing LED lights built into the sign that only blink when they are activated by sensors on Santine Road.

What are the components of this system and how are they connected and powered?

All the signs, sensors and radios are battery powered and recharged with solar panels. The sensors talk to each other through a radio network. We have two signs on Schnellville Road, one east and one west of the intersection with Santine Road. Then, there are two sensors along Santine Road, one north and one south of Schnellville Road. The sensors activate the signs along Schnellville Road, and then the signs will flash for approximately 45 seconds. This will give the traffic on Santine Road ample time to enter or cross traffic on Schnellville Road.

Continued on Page 2



What led you to seek out this innovative solution?

With the lack of sight distance, there have been a number of accidents. None have been serious, but definitely a cause for concern. The County looked at cutting down the hill and reworking the geometry of the roadway, but there is a high pressure natural gas line running through the hill. The cost to relocate the gas line was so high that the County could not afford the project. The County heard of this option through a vendor at the Purdue Road School, and decided to investigate it further.

What type(s) of locations can benefit from this type of system?

The best locations are areas with lack of sight distance, or places where out of the ordinary needs to be easily communicated to the traveling public. The flashing lights in the MUTCD approved sign help draw attention to the traveling public. When something is there that requires additional attention, the sensors draw attention to the sign.

What are the costs associated with this project?

This project cost the County approximately \$15,000.

What have been motorists' reactions to this system?

It took some education through the local media, but after that has been very positive. There have been no accidents since the signs were installed, but we are unsure if there were any close calls that were not reported.

Do you have other locations where you are considering installing this system?

The County has one other location where we are going to install this system and for a similar reason: utility relocation work is outside of the County's budget and is unfeasible.

What advice do you have for other local agencies considering similar projects?

This product is not for every situation, but when needed to communicate with motorists about special a situation, it does work.

If your agency is interested in an innovative solution like this, contact LTAP's HELPERS engineer at ltaphelpers@ecn.purdue.edu or (765) 494-2164.

APAI Annual Winter Conference and Trade Show: Some Highlights

December 14 & 15, 2017 in Indianapolis, IN



LTAP Director Dr. John Haddock gave opening remarks at the event.



Our Training Specialist Rich Domonkos shared a sneak peek of LTAP's newest training technology and introduced micro-learning.

EVERY DAY COUNTS

FHWA Spotlight of the Month: February
Using Data to Improve Traffic Incident Management

From the FHWA Website:

"The Every Day Counts round four (EDC-4) innovation of the month for February is using data to improve traffic incident management (TIM). Increasing the amount, consistency, and quality of TIM data collection supports development of performance measures for evaluating and improving traffic incident response.

The EDC team on using data to improve TIM conducted workshops with 15 States to help them identify goals and objectives. The team also assisted 10 States to review existing systems, data, and report mechanisms and develop recommendations to improve and streamline processes and increase the use of existing data. Peer-to-peer exchanges have energized stakeholders to make positive changes in their States."

Indiana is listed as an example of places utilizing the innovation:

"The Indiana Department of Transportation achieved two of its goals: training traffic management center operators to record key data for roadway and incident clearance times and transforming existing text data to numerical formats to support data analysis."

For more information, please visit:

<https://www.fhwa.dot.gov/innovation/everydaycounts/>



Pedestrian Warning Device Revoked

Rectangular Rapid Flashing Beacon use disallowed due to patent concerns

Rectangular Rapid Flashing Beacon use disallowed due to patent concerns

You may have been surprised lately by the news that Rectangular Rapid Flashing Beacons (RRFBs) are no longer allowed. With this article, we will explain what happened and what you should be doing now if you have RRFBs already installed or were planning to use them on a future project. Note this change is very recent and more information and options may be forthcoming as industry leaders strive to reach an amenable outcome.



RRFBs are pedestrian crossing warning devices consisting of user-activated rapidly flashing amber LEDs to supplement warning signs at unsignalized intersections or mid-block crosswalks.

What Happened?

The Federal Highway Administration (FHWA) rescinded its Interim Approval for the RRFB on December 21, 2017. This action was taken by FHWA's Office of Traffic Operations, which oversees the Manual of Uniform Traffic Control Devices (MUTCD), in order to comply with federal regulations prohibiting the use of patented devices in the MUTCD. The memo from FHWA announcing this action can be found here:

https://mutcd.fhwa.dot.gov/resources/interim_approval/ia11/terminationmemo/index.htm

This means all individual or blanket Interim Approvals for RRFBs, which States and other agencies had previously received, are rescinded. RRFBs can no longer be installed on public roads in any jurisdiction in the United States.

FHWA issued this decision based on patent protection and FHWA experimentation rules, not on performance of the device. Four existing patents and one pending patent exist for the flashing component of the RRFB. FHWA discovered this and recognized the MUTCD could not approve use of a patented device. While FHWA sought resolution, none was found, so this action was taken.

Background

The MUTCD is the legal national standard for all traffic control devices on all public roads in the country. It applies to all projects on public roads regardless of the funding source; it does not matter if federal, state, or local funds are involved in a project. Changes to the federal MUTCD apply to all state MUTCDs. If a traffic device is not in the MUTCD, FHWA may issue an Interim Approval for optional use of the device, thereby granting special permission to agencies that submit written requests to use it.

The Interim Approval (IA) requirement is not widely known. Consultants, planners, engineers, and agencies may see new or different traffic control devices in other communities and decide that would be a good option for their next project, not realizing those devices are not currently in the MUTCD. Many times those devices under Interim Approvals are included in future versions of the MUTCD; however, there are times like now where that is not the case. Part of the requirements when granted an Interim Approval is keeping track of all installed locations of the device so they could be removed if requested by FHWA. For more information on IAs, see Section 1A.10 in the MUTCD.

Several agencies in Indiana applied and were approved to use the RRFB. IN agencies approved to use the RRFB under IA-11 are listed on FHWA's MUTCD website here:

https://mutcd.fhwa.dot.gov/resources/interim_approval/ialistreq.htm

Several more Indiana agencies applied but FHWA had not acted on those requests, pending resolution of the patent issues. However, FHWA determined that a resolution to the patent issue was at an impasse, therefore, the applications that had been approved were rescinded, and pending applications have been denied.

RRFBs Already Installed

What happens for those agencies who already have RRFBs installed under Interim Approval 11? Those can remain in place for their useful service life. If maintenance is needed, such as bulb replacement or fixing a solar panel wiring that supplies power to the flashers, that can be done to keep the unit working properly. However, if the entire system needs replacement, an RRFB could not be re-installed at that location.

What happens if an agency did not have Interim Approval but already has RRFBs installed? Any traffic control devices not currently in the MUTCD, or not currently

approved by FHWA for use by that particular agency, are non-standard devices and may present potential liability concerns for agencies. To avoid potential liability, non-approved RRFBs should be removed. Where RRFBs are removed, agencies should explore other options to maintain awareness and safety of the pedestrian crossing. RRFBs are typically included as part of a pedestrian warning sign package at a crossing; it's important to note the signs do not have to be removed, just the flashing beacon component.

Options

With the absence of the Rectangular Rapid Flash Beacon as an option for pedestrian crossings, FHWA has compiled a brief that identifies numerous other options that can be used, depending on the situation. This brief can be found here:

https://mutcd.fhwa.dot.gov/resources/interim_approval/ia11/informationalbrief/index.htm

Note the majority of these options are also traffic control devices and the reference to the MUTCD section is included in each description. The several at the end of the list without MUTCD references are considered more as design options. Some of these design options and traffic control devices can be used together. If your agency is unsure which device(s) to use, the LTAP HELPERS Engineer can provide advice for your particular situation. Contact Laura Slusher at lslusher@purdue.edu or 765-494-7038.

In Summary

FHWA has rescinded the use of Rectangular Rapid Flash Beacons as of 12/21/2017. All Interim Approvals have been canceled. No new installations are allowed on any public road in any jurisdiction in the United States. All pending projects with an RRFB planned, regardless of funding, must be redesigned without using an RRFB at the crossing.

FHWA realizes this may cause agencies some difficulties as they redesign projects where RRFBs were planned. However, due the legal nature of this situation, rescinding the Interim Approval for RRFB use was unavoidable.

The Indiana Section of the FHWA is available to answer any questions you have regarding RRFBs. Contact Rick Drumm (Rick.Drumm@dot.gov or 317-226-7487) or Karen Stippich (Karen.Stippich@dot.gov or 317-226-7122).

6 Interesting Facts About Roads and Bridges in the United States



For many people, roads and bridges are merely commonplace. They drive on them every day, sometimes taking the same route over and over again. We, those who work to build and maintain roads and bridges, see them in a much more complicated way. But, how often do we think about the historical reasons behind the design of our roads, bridges, and safety signs? The following are 6 interesting facts to enhance your experience with roads and bridges.

1 Did you know that one of the justifications for the development of the United States interstate system in the 1950s was so that citizens could evacuate major cities if necessary? Because of the Formosa crisis, President Eisenhower worried about evacuating major cities in case of a nuclear attack. He knew the current roads would not suit this purpose (*FHWA*).

2 The nursery rhyme “London Bridge is Falling Down” tells the story of a bridge once spanning the Thames River in London. The bridge now resides in Lake Havasu City, Arizona (some 5,400 miles away from its original home). In 1968, Lake Havasu City founder and entrepreneur Robert P. McCulloch placed the winning bid of \$2,460,000 on the bridge after the Common Council of the City of London started looking for buyers (*Go Lake Havasu website*). Each block was numbered and the

bridge was disassembled. The blocks made their way through the Panama Canal to California and finally trucked to Arizona.

3 The concept of traffic lights was invented by a traffic cop, Officer Lester F. Wire, who didn’t feel safe directing traffic in Salt Lake City in 1912. According to Henry Petroski, author of *The Road Taken*:

“He built a birdhouse made of plywood, painted it yellow, and punched six-inch holes on either side. He then dipped bulbs in red and green paint and used a manual switch to change the lights from red to green. By 1917, Salt Lake City had traffic signals at six connected intersections, all controlled simultaneously from one manual switch. It was the first interconnected traffic signal system in the United States.” (*Mental Floss*)

The first yellow light was added to the mix in 1917 by Detroit police officer William Potts (*Mental Floss*).

4 In 1917, the first modern road centerline was painted. According to *Mental Floss*, “White was chosen by its designer, Edward Hines, who was inspired after seeing milk spill from a delivery wagon on a newly-paved road” (Yellow didn’t become mandated until 1971).

5 The color red had long been associated with STOP before the STOP sign, but there is a reason it took so long for our most common road sign to get its red attire. “Red has always been associated with stop,” explains Gene Hawkins, a professor of civil engineering at Texas A&M University. “The problem was they could not produce a reflective material in red that would last. It just was not durable until companies came up with a product in the late ‘40s, early ‘50s” (*New York Times*).



6 The stop sign got its octagonal shape when a Detroit police sergeant cut the corners from the common diamond-shape stop sign. He did so, because it had an identical design to other traffic signs (*Mental Floss*).

SOURCES

- “Arizona Attractions - The Iconic London Bridge.” *Go Lake Havasu*. <https://golakehasu.com/activities/attractions/london-bridge/>
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U.S. Interstate System.” *Mental Floss*. 12 April 2016. <http://mentalfloss.com/article/67990/10-things-you-might-not-know-about-us-interstate-system>

- Brown, David. “8 Fascinating Facts About the Roads You Take Every Day,” *Mental Floss*. 25 April 2016. <http://mentalfloss.com/article/78981/8-fascinating-facts-about-roads-you-take-every-day>
- Greenbaum, Hilary and Dana Rubinstein. “The Stop Sign Wasn’t Always Red.” *The New York Times*. 9 December 2011. <http://www.nytimes.com/2011/12/11/magazine/stop-sign.html>
- “Highway History.” *FHWA*. <https://www.fhwa.dot.gov/infrastructure/civildef.cfm>

London Bridge in Lake Havasu City, Arizona



ADA Corner

QUESTION

Michele, I am so embarrassed. I thought I knew all the changes in the 2010 ADA guidelines when the changed height for signs at a door entrance hit me straight on. I corrected someone on my punch list review when I first found out. Will you please address this for your readers, so they don't make the same mistake? Thank you. - Aubrey, MS

ANSWER

Absolutely! I also made this mistake. As closely as I studied the 2010 ADA, this change slipped my mind. Wearing egg on my face, I remembered the change when also questioning the height of a sign. So here it is!

This site has an excellent animation concerning signs and other trainings. The picture in the right column (next page) is from the animation: <https://www.access-board.gov/guidelines-and-standards/buildings-and-sites/about-the-ada-standards/guide-to-the-ada-standards/animations>

Feel free to call me (816) 350-3487 or email me michele@michele-able.com if you have any questions. Once again wishing you well as you proceed in following the spirit of the ADA while not allowing misuse of the intent of the ADA.

Michele w/ Sufra with her own mark!

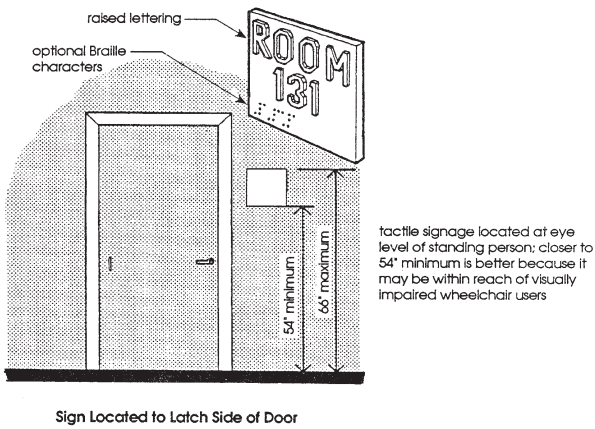
A handwritten signature in black ink that reads "Michele". The signature is written in a cursive style with a small red and black mark above the letter 'e'.

1994 ADAAG ADA ACCESSIBLE GUIDELINES

4.30.6 Mounting Location and Height

Where permanent identification is provided for rooms and spaces, signs shall be installed on the wall adjacent to the latch side of the door. Where there is no wall space to the latch side of the door, including at double leaf doors, signs shall be placed on the nearest adjacent wall. Mounting height shall be 60 in (1525 mm) above the finish floor to the centerline of the sign. Mounting location for such signage shall be so that a person may approach within 3 in (76 mm) of signage without encountering protruding objects or standing within the swing of a door.

Graphic from USFAS Retrofit manual w. 1994 ADAAG Guidelines dimensions. This guide can be download from site as shown below graphic



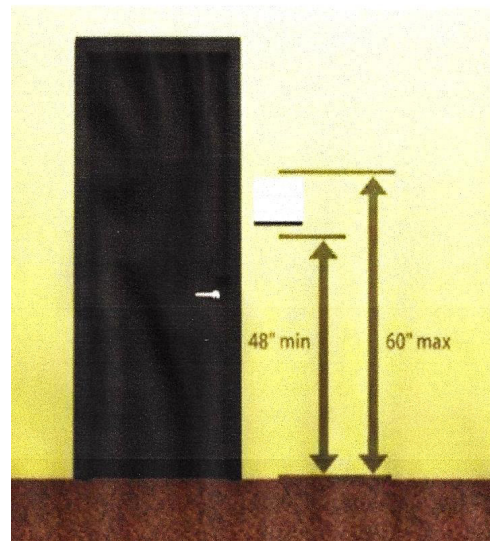
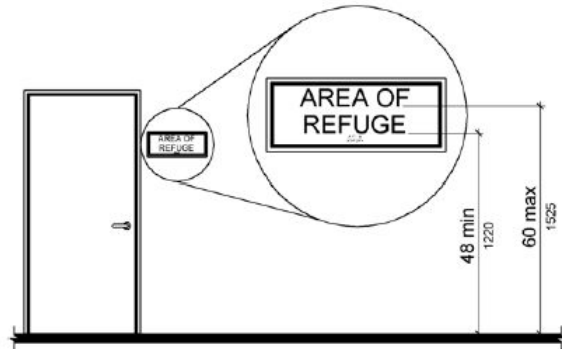
openlibrary.org/.../OL11040470W/UFAS_retrofit_manual

2010 ADA ACCESSIBLE DESIGN GUIDELINES

4.30.6 Mounting Location and Height

703.4.1 Height Above Finish Floor or Ground. Tactile characters on signs shall be located 48 inches (1220 mm) minimum above the finish floor or ground surface, measured from the baseline of the lowest tactile character and 60 inches (1525 mm) maximum above the finish floor or ground surface, measured from the baseline of the highest tactile character.

EXCEPTION: Tactile characters for elevator car controls shall not be required to comply with 703.4.1.



Upcoming Events

SAVE THE DATE

North American Snow Conference

May 6-9, 2018 in Indianapolis, IN

APWA's annual North American Snow Conference brings together thousands of snowfighters from every corner of the winter maintenance community for expert-led snow and ice education sessions and the opportunity to meet with numerous exhibitors to "kick the tires" and discuss cutting-edge technology.



FOR MORE INFORMATION, PLEASE VISIT:

<https://www.apwa.net/SNOW/>



REGISTER TODAY

for Purdue Road School!

Join us at the 104th Annual Purdue Road School on March 5-8, 2018!

Purdue Road School attracts over 2,000 Indiana local and state officials, consultants, and suppliers each year. Important updates on pertinent transportation issues, as well as sessions on topics of general interest, are provided in the two-day conference. A draft of the technical program and registration can be found on the website below.

Road School Banquet: March 7, Purdue Memorial Union



FOR MORE INFORMATION, PLEASE VISIT:

<https://roadschool.purdue.edu/>

Association Information

Asphalt Pavement Association

www.asphaltindiana.org

APAI Spring Shooting for Scholarships

April 24, 2018

Indiana Gun Club, Noblesville

APAI Trine Scholarship Golf Outing

June 22, 2018

Trine University, Angola

APAI Summer Meeting

July 27-29, 2018

Hotel Alexander, Indianapolis

Indiana Ready Mixed Concrete Association

www.irmca.com

IRMCA Hiring Initiatives Meeting

February 21

IRMCA Office

12045 N Michigan Road

Zionsville, IN 46077

Indiana Association of County Engineers and Supervisors

<https://www.iaches.org/>

Summer Conference

June 5-8

Indianapolis Marriott East

American Public Works Association

www.apwa.net

<http://indiana.apwa.net/>

North American Snow Conference

May 6-9, 2018

Indianapolis, IN

(See last page)

AIM (originally Indiana Association of Cities and Towns)

<https://aimindiana.org/>

Legislative Dinner

February 26

The Crane Bay

551 W. Merrill Street

Indianapolis, IN 46225

Webinar: Utilizing Next Level Jobs to become Hubs of Talent

March 1

10:00 a.m. – 11:30 a.m.

<https://aimindiana.org/members/events/webinars/>

Aim Youth Councils Network

March 3

Indiana University,

Bloomington

National Association of County Engineers

<http://www.countyengineers.org/>

Annual Meeting / Management & Technical Conference

April 22-26

Wisconsin Dells

American Concrete Pavement Association

<http://indianaconcretepavement.com>

Indiana Concrete Pavement Workshop

February 22

Indianapolis Marriott North

Indiana Farm Bureau

<https://www.iaches.org/>

Summer Conference

June 5-8

Indianapolis Marriott East

Institute of Transportation Engineers - Indiana Section

<http://indianaite.org/>

Technical Luncheon - Legislative Update

Feb 13

Rathskeller, 401 E. Michigan Street, Indianapolis

INDIANA LTAP

Purdue Technology Center
3000 Kent Ave., Suite C2-118
West Lafayette, IN 47906
765.494.2164 phone
765.496.1176 fax
800.428.7639 toll-free in Indiana
www.purdue.edu/inltap



PURDUE
ENGINEERING

Indiana Local Technical Assistance Program (LTAP) was established by the Federal Highway Administration (FHWA). The purpose of the LTAP program is to translate the latest, state-of-the-art road, highway, and bridge technologies into systems usable by local highway agencies. LTAP is funded by FHWA, the local agency distribution of the Motor Vehicle Highway Account, and Purdue University. A newsletter is published quarterly by the Indiana LTAP office at Purdue University. It is distributed free to county, city, or town road and street personnel and others with transportation responsibilities.

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