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El Puente

Newsletter of the Puerto Rico Transportation Technology Transfer Center
University of Puerto Rico at Mayagüez

Inside this issue:

Proposed Amendments to Roadway Signs in the Manual on Uniform Traffic Control Devices

A Notice of Proposed Amendments (NPA) to the Manual on Uniform Traffic Control Devices (MUTCD) was published in the Federal Register on January 2, 2008 for public review and comments. The NPA contains comprehensive revisions that are proposed for incorporation into the MUTCD 2009 edition. The proposed changes are intended to expedite traffic, promote uniformity, improve safety, and incorporate technology advances in traffic control device application.

This article is the first of a series that will present general information about the main changes included in the NPA to the MUTCD text or the new rules or guidelines. This article includes changes proposed to Part 1 - General and Part 2 - Signs.

MUTCD Applicability

The MUTCD defines the standards used by road managers nationwide to install and maintain traffic control devices on all roads and highways open to public travel. FHWA proposes that the standard statements about MUTCD applicability reflects the final CFR rule of 2006 that indicated that "*open to public travel*" includes toll roads and roads within shopping centers, parking lots, airports, sports arenas, and other similar business and recreation facilities that are privately owned, but where the public is allowed to travel without access restrictions.

(This article continues on page 4)

Global Trends in Transportation: Current Challenges and Future Prospects for Sustainability

The world is more populous, urbanized, and wealthier than ever before. In conjunction with these trends, there are a series of transportation challenges that require comprehensive actions in order to ensure a sustainable future for next generations.

This article presents a summary of the main issues about transportation and sustainability presented by Dr. Kumares C. Sinha, Professor at Purdue University and worldwide-renowned expert on Transportation Systems and Infrastructure. This keynote lecture was part of the Seminar titled *Status of Transportation in Puerto Rico and Global Trends and Challenges Toward a Sustainable Future* that was held on September 9, 2008 at the auditorium of the College of Engineers and Surveyors of Puerto Rico in Hato Rey.

(This article continues on page 6)

Ten Ways You Can Help Your Employees "Get It Done" Every Day

The execution of the daily tasks in any construction project or enterprise is significantly important for its timely completion and the efficient management of personnel and resources. Project managers are in charge of keeping the progress of the projects according to its corresponding schedule. This article presents ten (10) keys to inspire an "***execution revolution***" at your agency or company and establish a "***get it done***" culture.

1. Recognize that execution starts with a plan.

A solid plan can immensely improve the efficiency with which a project is carried out. It facilitates the coordination of related work tasks and helps people avoid duplication of effort. It also enables employees to set priorities and meet deadlines. Remember that the best plans are flexible starting points that can be easily changed to address new challenges as you encounter them.

2. Ensure plans are aligned and coordinated across the project.

A common slip-up at many projects is that a manager implements a new initiative or process without contemplating its effects on other project tasks. For example, a manager realized the project budget wasn't going to be met and decided to cutback employees on particular project tasks in order to reduce expenses. Unfortunately, the reduction of employees increased the duration of tasks belonging to the critical path of the project schedule having the undesirable effect of delaying the entire project. By establishing an initiative that is not compatible across the project, the manager could cause penalties or performance fines for the project.

3. Clarify, clarify, clarify.

It's difficult to get tasks done when people don't understand exactly what they should be doing, or for that matter, when they should be doing it. One reason for this is that project managers tend to assume that employees automatically understand what needs to be done to complete a task. Many managers also fear they might insult an employee's intelligence by stating what might seem obvious to them. Some leaders may simply believe they are too busy to spell things out. Make sure you do not fall into any of these categories.

4. Establish clear expectations.

Goals help managers give constructive feedback to team members. Performance will improve because specific objectives guide effort toward the most productive activities, and challenging objectives tend to energize a higher level of effort. Goals should be set even for those things that can't be easily measured. It's important to remember that although some goals may be difficult to quantify, all goals can be verified.

5. Don't micromanage your entrepreneurial-minded employees.

But do monitor them. Employees who take individual initiative and do an effective job with little direction are the gems of your agency or company. But, just because you can give them a strong degree of independence, that doesn't mean that you shouldn't follow up periodically. In fact, when you empower employees in this way, monitoring becomes even more important.

6. Don't shoot the messenger.

Encourage your employees to share bad news with you. Getting information from employees can be easier said than done. If there is a problem in your project, either existing or potential, they may be hesitant to inform you because they might fear looking incompetent or receiving an angry outburst from you. It's essential to be careful about how you react to information concerning problems.

7. Balance careful analysis of a problem and decisive action to solve it.

You must move quickly to deal with a threat or problem in your project. But you must come up with an analysis for the right remedies before taking action, or you may end up implementing ineffective solutions or solving the wrong problem—both of which can make things worse instead of better.

8. Make decisions close to the action.

The key here is to ensure that decisions are being made with the best information in order to receive quick and valuable responsiveness. It's not uncommon for agencies to swing back and forth from centralizing to decentralizing as they try to deal with a strategic issue or competitive threat. But organizational redesign is not necessarily the best solution to a competitive or strategic problem. Leaders frequently find that the change just presents a different set of problems and issues. The key is to determine what processes and work would benefit from centralization or decentralization.

9. Facilitate spontaneous interaction among employees.

Your employees' informal relationships are vital. Connecting with other managers or inspectors "in the moment" when handling a problem or new information is essential for execution. But in today's fast-paced projects, it can be difficult to make these connections. Try to get people in the same location on a regular basis so they can interact with one another.

10. Transform your performance management system into a business tool.

This system is one of the essential tools for creating execution. It ensures goals are aligned across levels and work units, helps people know what they need to do and allows leaders to monitor progress. However, if you view performance management only as an end-of-the-year review, it isn't going to help you get things done any more efficiently. Affirming the collective benefit of the changes, employees will get focused on being more efficient and monitoring the quality of their work.

Adapted from: Sales and Marketing Management Magazine; Author: Richard Lepsinger, OnPoint Consulting

Future Seminars and Events

Upcoming PR-LTAP Center Seminars

Effective Management of Changes

DATE: December 4, 2008
TIME: 8:30 am - 4:30 pm
CONTACT HOURS: 6

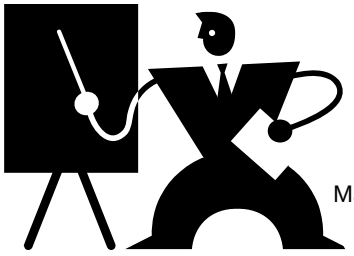
PLACE: House of the Mayaguez Chapter of the Puerto Rico College of Engineers and Surveyors
Corner of Obispado and Ingenieros Streets
Miradero, Mayagüez, P.R.

Applied Hydraulic Modeling in H-H Studies for Puerto Rico

DATE: December 10, 2008
TIME: 8:30 am - 4:30 pm
CONTACT HOURS: 6

PLACE: Computer Lab, Engineering Building Luis Stefani, UPRM, Mayagüez, P.R.

For information about the Center's Seminars, please contact:
Grisel Villarrubia
Telephone: 787-834-6385
E-mail address: gvilla@uprm.edu
Or visit us at http://academic.uprm.edu/prt2/



Upcoming Conferences

88th Transportation Research Board Annual Meeting

January 11-15, 2009

Marriott Wardman Park, Omni Shoreham, and Hilton Washington Hotels
Connecticut Avenue, Washington, D.C.

The spotlight theme for the 2009 meeting is Transportation, Energy, and Climate Change.

For more information please visit:
http://www.trb.org/meeting/2009/

Proposed Amendments to the Manual on Uniform Traffic Control Devices (MUTCD)

(continued from page 1)

Signs on all roads open to the public must comply with MUTCD Standards. Non-compliant signs, like this green STOP sign with the pictograph in a mall parking lot shown on the photo above, will have to be replaced.

Examples of new signs proposed:

1. Turning traffic must yield to pedestrians
2. Do not pass
3. No straight through movement allowed
4. Preferential bus lane
5. Uneven lanes / Shoulder drop-off
6. Falling rocks
7. Horizontal alignment - intersection combination
8. Ferry terminal
9. Tsunami evacuation route
10. Wireless internet
11. Adopt a highway sign
12. Parking way finding directional sign

A new standard was added that prohibits classifying a residential street in a neighborhood as a low-volume road for the purposes of MUTCD Part 5 - Traffic Control Devices for Low-Volume Roads. Low-volume roads are required to be facilities lying outside the built-up areas of cities, towns, and communities.

Toll Plaza Specifications

The evolution of electronic toll technology (ETC) has improve capacity and reduce congestion at toll plazas. In an effort to improve safety and traffic operations, new provisions are included throughout the MUTCD to provide consistency and uniformity of signs, pavement markings and traffic signals used for these types of facilities.

The **COLOR PURPLE** is being assigned to signs and pavement markings that indicate facilities or lanes restricted to use only by vehicles equipped with ETC transponders in order to readily identify such facilities or lanes.

Part 2 - Signs

The recommendation that signs should only be used where justified by engineering studies or engineering judgment is being deleted from several places. These revisions do not detract from the requirements that engineering studies must be done under engineering supervision for very specific traffic control decisions. However, it is not required that an engineer be involved in the decisions for each device at every location.

New signs are being added to provide an uniform message for common road conditions.

Sign Letters

Sign letters should be based on 1 inch of letter height per 30 feet of legibility distance in order for sign legibility to be based on 20/40 vision (currently is 1 inch height per 40 feet distance). This change is consistent with the FHWA Older Driver Handbook that recommends that sign legibility be based on 20/40 vision.

The option of using all upper-case letters for names of places, streets, and highways is being deleted, and a requirement that these names be composed of lower-case letters with an initial upper-case letter is added to improve legibility and recognition distances.

Sign Sizes

Larger minimum sizes for certain regulatory signs (such as speed limits, critical right of way control signs, one way, do not enter, etc.) facing traffic on multi-lane conventional roads, and specific minimum size for STOP signs that face multi-lane approaches are proposed.

The minimum size for all diamond-shaped warning signs facing traffic on multi-lane conventional roads shall be 36 x 36 inches.

These larger sizes are based on older-driver research and the practice in most States of licensing drivers with 20/40 corrected vision or better.

Fluorescent Yellow-Green Background

The use of a Fluorescent Yellow-Green (FYG) background is being changed to a requirement for school and school bus warning signs, and from an option to a recommendation for warning signs associated with pedestrians, bicyclists, and playgrounds. The FYG background provides enhanced conspicuity, particularly during dawn and twilight periods.

Guide Signs

A new requirement is being added to limit the colors **BLUE**, **BROWN**, or **BLACK** as the only acceptable alternatives to the color **GREEN** for the background color of Street Name signs to eliminate the wide variation in practice among jurisdictions.

New provisions are being added about the uniform use and location of community way-finding guide signs to direct tourists and other road users to key civic, cultural, visitor, and recreational attractions and other destinations within a city or a local urbanized or downtown area. Many of the cities currently using community way-finding signs are using different colors, design layouts, fonts, and arrows, and many of these signs are not well designed to properly serve road users.

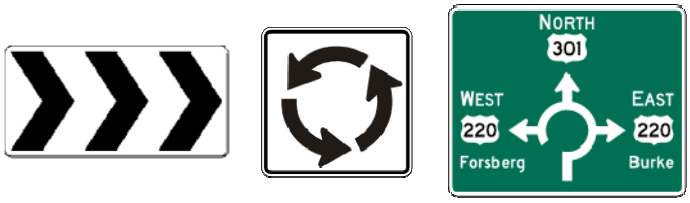
The use of downward slanting arrows on overhead guide signs is prohibited. The use of more than one down or diagonal arrow pointing to the same lane is also being prohibited to avoid confusion to drivers because they imply movement out of a lane.

A requirement is being added that down arrows on overhead signs shall always be vertical and positioned directly over the approximate center of the applicable lane.

Roundabout Signs

The use of roundabouts has increased over the past 10 years, and it is important that more detailed information on effective regulatory signing of roundabouts be provided. New types of movement arrows are being added that may be used as Intersection Lane Control signs on approaches to roundabouts to correspond with similar proposed options for pavement marking arrows on roundabout approaches in Part 3.

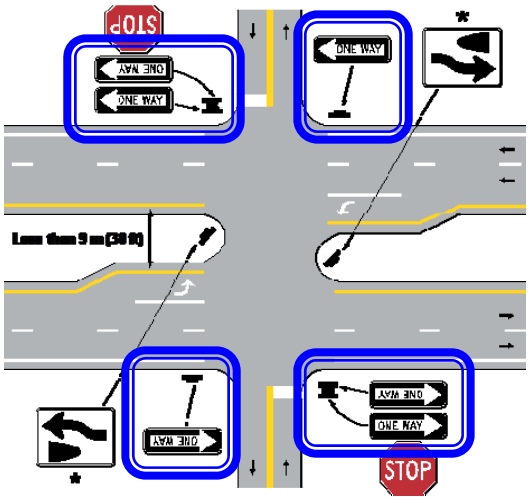
New Roundabout Directional Arrow signs and a new Roundabout Circulation sign are being added. New provisions regarding the use of ONE WAY signs on central islands of roundabouts are being added to provide consistency in signing for roundabouts. The black and white arrow signs are not chevrons. The terminology will remove the current dichotomy of black on yellow Chevrons and reserve it only for horizontal curves. The Roundabout Circulation sign is for use as a plaque with the YIELD sign at mini-roundabouts where placing Roundabout Directional Arrows on the central island is not feasible.



Use of Directional Signs on Intersections

A new requirement is added that Divided Highway Crossing Signs be installed on the near right corner of the intersection for all approaches to divided highways (unless the divided highway has an AADT of less than 400 vehicles per day and a speed limit of 25 mph or less).

The existing recommendation that ONE WAY signs be placed on the near right, far left, and far right corners of each intersection with the directional roadways of divided highways is being revised to a requirement, based on FHWA Older Driver research. The existing option that allows agencies to omit the use of ONE WAY signs at intersections with medians of less than 30 feet is being revised to allow these signs to be omitted only on the median, thus requiring them to be installed on the outside corners of the intersection.

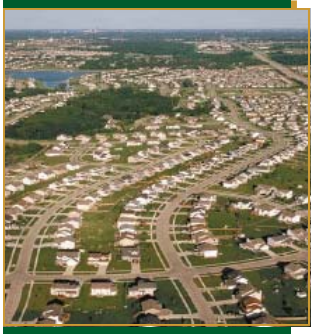


For the complete NPA and the proposed MUTCD text, figures, and tables please visit: http://mutcd.fhwa.dot.gov/.

Global Trends in Transportation: Current Challenges and Future Prospects for Sustainability

(continued from page 1)

Current Trends in Transportation



Coupled with the rapid growth of developing countries and urban populations is the increasing demand for travel and the use of the motor vehicles. Since the year 1999 China has experienced an annual growth of 6-10% in total vehicle-kilometers travelled. The global trend in motorization has serious consequences.

Greater travel demand means higher investments in infrastructure construction and maintenance. Currently, the USA invest only 2.4% of its Gross Domestic Product (GDP) in Transportation Infrastructure, while Europe invest 6% and China 9%. To cope with the current transportation demand a larger investment is required.

Dr. Kumares C. Sinha discussing the worldwide impacts of the increase in motorization in developing countries.

Vehicular congestion is another major consequence of motorization. In 2005, traffic congestion represented a cost of $78.2 billion in the USA, a 6.9% increase from the year before. The congestion problem is even more acute in developing countries. Downtown average speed during peak congestion in Beijing has decreased from 28 mph in 1994 to a range of 3-8 mph in 2003.

In addition, motorization has an adverse impact on the air quality of many cities. Motor vehicles account for as much as 70-85% of airborne pollutants in cities such as Mexico City and Sao Paulo, Brazil. These and other trends command serious consideration from planners and policy makers.

Transportation in the USA

Worldwide, 85 million barrels of petroleum are burned daily. USA consumes one-quarter of that total. In 2006, transportation accounted for 69% of the total domestic petroleum demand, being highway transportation responsible for 92% of that transportation-related demand. *About one of every nine barrels of the world oil goes into American gasoline tanks.* This high consumption of gasoline can be explained as:

- *Passenger vehicles, SUV's, vans, and pick-up trucks in the USA get poor gas mileage.* Fleet-wide standards for new vehicles in Japan is 46 mpg, in the European Union is 43 mpg, in China is 36 mpg, but in the USA is 27.5 mpg for cars and 22.2 mpg for light trucks.

- *Americans drive much more than in other countries.* Miles per vehicle driven annually is 12,427 in the USA, whereas it is 7,829 in the European Union and 7,097 in Japan.

- *Modal split is skewed toward the private vehicle.* In the daily commute to work, for every person that rides a bike, 5 persons walk, 9 take public transit, 21 ride in car-pools, and 154 drive alone.

Options for Conservation

Three steps could reduce the annual gasoline consumption in the USA by more than 30%:

STEP 1 **-** *If one of four light trucks (SUV's, vans and pick-ups) is replaced with a car, gasoline consumption could be cut by 2.5%.*

STEP 2 **-** *If one in four vehicles is swap to diesel, gasoline consumption could be cut by 5%.*

STEP 3 **-** *If the distance driven in individual vehicles is reduced by a quarter, gasoline consumption could be cut by 25%.*

Future Prospects for Sustainability

The increasing pressure for more mobility, accessibility, and personal space needs to be balanced by planners and policy makers to render travel demand compatible with sustainable development. This entails minimizing the need for travel, creating a public transportation system that complements the motor vehicle, facilitating non-motorized travel, encouraging the use of energy efficient vehicles, and increasing vehicle occupancy.

To achieve these goals the implementation of several measures need analysis. The economical inefficiencies created by the current transportation paradigm must be evaluated.

Current pricing mechanisms do not consider the full cost of automotive transportation since road safety and environmental impacts are not internalized. A pricing mechanism would translate those impacts into user charges to slow down demand for road traffic. The revenues collected through congestion pricing mechanisms can be used to improve road safety, develop vehicle and fuel technologies, and improve public transportation. Singapore and London are among the cities that have implemented congestion pricing strategies with positive results.

Integrated land use and transportation management policies must be developed and implemented to minimize urban sprawl and travel. Long-range land use and transportation policies that incorporate smart growth in central cities and suburbs and transit-oriented developments would create an urban fabric that improves the quality of life and contributes to a sustainable future.

Public transportation must be transformed into an attractive alternative. This requires an increase in the level of service and the quality of public transportation by new suburban rail and bus rapid transit systems, seamless travel through regional integration of services, infrastructure for non-motorized transportation and the use of cleaner technologies.

Dr. Benjamín Colucci (far left) and Dr. Alberto M. Figueroa (far right) with the four Seminar's Guest Speakers (from left): Mr. Marco A. Quiñones (Exec. Director of the Integrated Transportation Alternative), Dr. Guillermo Riera (Exec. Director of the Infrastructure Financing Authority), Dr. Carlos González (Secretary of the Department of Transportation and Public Works), and Dr. Kumares C. Sinha (Transportation Expert from Purdue University).

The long-term vision for sustainable urbanization must consider not only the relationship between land and transportation, but also the importance of harnessing the potential of emerging information/communication technologies and the need for proactive outreach programs that contribute to public awareness of the issues that affect their future.

The presentations can be downloaded from the Seminar-Material section at the PR-LTAP Center website menu.

Seminar and Product Showcase: *Selection and Inspection Procedures of Roadside Barriers and Crash Cushions*

On July 9-10, 2008, the PR-LTAP Center offered the seminar "Guides for the Selection and Inspection of Roadside Safety Barriers".

The seminar objectives were to train transportation officials in the basic principles associated to the:

- selection, design, and location of roadside safety barriers and crash cushions
- barrier inspection and Road Safety Audit procedures
- identification of factors associated to roadside crashes and safety countermeasures to reduce the severity of crashes associated to barriers

The Product Showcase had the collaboration of various companies that displayed their products and discussed with the seminar participants the product performance and possible applications. The participants had the opportunity to learn about the capabilities of many safety features such as truck-mounted attenuators, crash cushions, portable steel longitudinal barriers, and median steel barrier gates, among other products.

The PR-LTAP Center appreciate the collaboration of the companies that responded to the invitation and made their instructors available to the seminar participants.

PR-LTAP Center Logo and Website get Revamped!

Our Internet website was redesigned to improve the accessibility of information while providing a more dynamic interface to our customers. Our website is an essential communication tool that complements the Center's mission of providing technical information services to municipalities and transportation officials in Puerto Rico and the U.S. Virgin Islands.

The redesigned website now includes a welcome animation (right) that allows the user to select the English or the Spanish version of our Internet site.

The website unveils the redesigned PR-LTAP Center logo. The logo maintains its original STOP sign shape and the colors of the University of Puerto Rico at Mayaguez: green and white. The logo shows a T-shaped road with an overlaid number 2, creating the T^2 mark typically recognized for technology transfer activities. The road emphasizes the Center's main goal of providing technical assistance and transfer technology advances in transportation. The background shows a silhouette of the *El Morro Castle* and a "Garita" (sentry post), one of the most distinctive symbols of Puerto Rico and its heritage.

The main page has a flash-built menu on top, a central body section with the information of each page, and a footer section. The menu sections present the Center and its main activities, such as the Training Program, the Technical Resources, the El Puente newsletter, our Special Projects, and a Photo Gallery, among other sections.

The animated menu titles display different surface transportation modes when the user clicks on each title, reflecting the importance of Intermodal Transportation on road networks. The background images on the menu shows pictures of distinctive transportation facilities and iconic symbols of Puerto Rico. The footer shows the logos of the Center's sponsor agencies and includes links to their websites, as well as for the National LTAP Association and other LTAP Centers.

The information provided in the website includes advice, guidance, or referral to published materials, new video releases associated to transportation issues and other relevant areas associated to the built transportation infrastructure in Puerto Rico and the USVI. We hope you enjoy the new look and features of our website. Please let us know what we could do to improve it to provide the information that you need to deliver efficient and safe transportation facilities and programs to your stakeholders.

Visit the new PR-LTAP Center website at: http://www.uprm.edu/prt2

Message from the EL PUENTE Editors

Keeping a road safe for all users is one of the main concerns for any transportation official in charge of the operation and maintenance of roadway systems. Traffic control devices are important elements in the roadway because they optimize traffic performance, promote uniformity nationwide, and help improve safety by reducing the number and severity of traffic crashes.

The Federal Highway Administration has published a Notice of Proposed Amendments (NPA) that includes modifications and new standards and guidelines affecting the installation and maintenance of traffic control devices. The final revision of these changes will be incorporated in the new version of the Manual on Uniform Traffic Control Devices (MUTCD).

This newsletter edition provides a summary of some of the proposed changes to the MUTCD Part 1 - General and Part 2 - Signs. Future editions of EL PUENTE will summarize the proposed changes to other MUTCD Parts in order to help municipalities and transportation agencies to prepare to comply with the new rules and standards. Once the final MUTCD version gets published, the Center will provide seminars to present and discuss these new changes.

Please help us update the Puerto Rico Transportation Technology Transfer Center Mailing List by completing this form and sending it via **FAX at (787) 265-5695**. Thank you!

ADD _____ DROP _____ CHANGE _____

NAME_____ TITLE _____

MUNICIPALITY/AGENCY _____

ADDRESS_____

CITY_____ STATE _____ ZIP CODE_____

TELEPHONE_____ FAX _____

E-MAIL _____

The Center's staff welcomes all your questions and suggestions. To contact the Center, please send all correspondence to the following or contact us at:

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Comments/Suggestions:_____

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