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Special Issue

# El Puente

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

Inside this issue:



## Roadway Improvements to Reduce Motorcycle Crashes

Motorcycle-related fatalities have steadily increased in the United States since 1997. This road safety issue has receive national attention as motorcycle fatalities reached 4,810 in 2006, exceeding the number of pedestrian fatalities for the first time. A total of 115 motorcycle-related fatalities (22.7% of all road fatalities) occurred in the Commonwealth of Puerto Rico during the year 2006.

The amount of motorcycles and motor scooters on the Puerto Rico road network increased dramatically by 243% in a ten-year period (from about 33,000 in 1997 to more than 115,000 in 2007). The increase in motorcycle use might be associated to a variety of factors, such as the rising cost of fuel, the traffic congestion throughout the major urban areas of the island, the relatively low acquisition vehicle cost, recreational purposes, and the special attraction and rising fascination for these vehicles among the population, especially young and middle-aged drivers.

The lack of motorcycle riding experience, the sudden increase of motorcycles in the traffic mix, and the absence of strict training and licensing requirements are some of the factors that can be identified as causes for the increasing trend of motorcycle crashes and fatalities and the apparent inadequate motorcycle riding habits in Puerto Rico. In addition, drivers of passenger vehicles and larger vehicles not used to look for motorcycles in the road environment can be associated with the negative safety trend.

*(article continues on page 4)*

## New MUTCD Minimum Sign Retroreflectivity Requirements

Traffic signs provide important information to road users at all times, both day and night. In order to be effective, their visibility and retroreflectivity need to be maintained. The second revision of the 2003 Manual on Uniform Traffic Control Devices (MUTCD) introduces new language establishing minimum retroreflectivity levels that must be maintained for traffic signs. The 2003 MUTCD addresses factors such as uniformity, design, placement, operation, and maintenance. Previously, this manual did not specify minimum retroreflectivity levels for signs.


*(article continues on page 6)*

# Promoting Safety in Road Work Zones: Important Rules and Available Resources

**For free information and resources on work zone safety visit**

workzonesafety.org

THE NATIONAL WORK ZONE SAFETY INFORMATION CLEARINGHOUSE

All state and local governments that receive federal-aid highway funding are affected by the rule and are required to comply with its provisions **no later than October 12, 2007.**

The full text of the rule is online at: www.ops.fhwa.dot.gov/wz/docs/wz_final_rule.pdf.

Work zone safety is a uprising national concern. More than 40,000 people are injured each year as result of motor vehicle crashes in work zones. The number of persons killed in motor vehicle crashes in work zones has risen from 989 in 2001 to 1,074 in 2005. About 15% of the fatalities were pedestrians and bicyclists and 22% involves large trucks.

More roadwork activities are done under live and heavy traffic, which increases pressure on contractors to compress schedules, finish projects early, and perform work at night while maintaining safety and the quality of work. Travelers get frustrated with delays, unexpected road conditions, and inconsistencies caused by work zones.

The design and layout of Traffic Control Plans (TCP) on work zones shall consider the safety of all road users and construction workers; its impact may extend beyond the physical location of the work zone itself. Impacts may be felt on the roadway on which work is being performed, other highway corridors, other modes of transportation, and the transportation network.

The Federal Highway Administration (FHWA) recently updated **23 CFR 630 Subpart J**, its regulation on work zone safety and mobility to facilitate comprehensive consideration of the broader safety and mobility impacts of work zones. The amendments are focus on:

- Stablish state-level work zone policy approach to institutionalize work zone processes and procedures.
- Reflects changing times to address more traffic, more congestion, greater safety issues, and more work zones.
- Broadens the regulation to address more of the current issues affecting work zone "safety" and "mobility."
- Facilitates customer-focused project development for comprehensive consideration of "work zone impacts."

During October and November 2007, the PR-LTAP Center offered an OSHA Seminar on Safety of Highway Construction Work Zones.

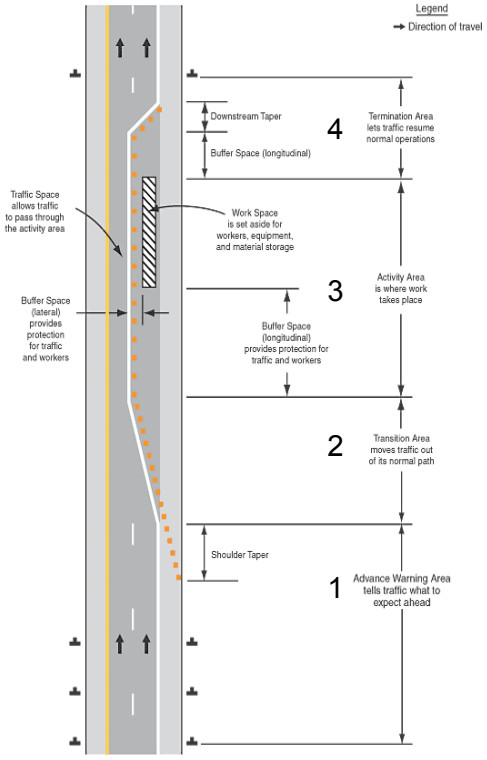
The Occupational Safety and Health Administration (OSHA) was designed to make the employers responsible for the safety and health of their workers. OSHA develops norms, inspect the employees, investigate occupational injuries and death cases, emits citations, imposes penalties, and assist the training of safety and occupational health.

A summary of some of the topics discussed in the seminar are presented herein:

### Work Zone Areas

There are four significant areas in a work zone (see MUTCD 6C-1 figure below ):

1. Area of advanced warning
2. Area of transition
3. Activity area
4. Termination area



A TCP describes the traffic controls that have to be used and its location in order to safely handle the vehicles and pedestrians passageway along the temporary control zone or work zone. Traffic control devices (TCD) include portable changeable message signs, arrow panels, high-level warning devices, pavement markings that channelize vehicle flow, portable barriers, cones and drums, lighting devices, signs, and traffic delineators, among others.

### Personal Protective Equipment and High Visibility Clothing

Wearing appropriate personal protection equipment (PPE) is essential in a work zone. This equipment includes hardhead, face protection, earplugs, and safety shoes. Workers should wear high visibility clothing when exposed to low visibility or when working close to vehicles or mobile equipment.

High visibility clothing shall be in compliance with *ANSI/ ISEA 107-1999.* This standard provides consistent, authoritative guidelines for the selection and use of high-visibility apparel in the United States, and includes offers performance specifications for reflective materials, including minimum amounts, placement, background material, test methods and care labeling. The garment classes are:

***Class III***

Highest level of visibility to workers in high-risk environments that involve high task loads, a wide range of weather conditions and traffic speeds exceeding 50 mph. Provides coverage to the arms and/or legs, as well as the torso, and can include pants, jackets, coveralls or rain wear. Recommended for all roadway construction personnel and vehicle operators, utility workers, survey crews, emergency responders, railway workers and crash site investigators.

***Class II***

For users who need greater visibility in poor weather conditions and whose activities occur near roadways where traffic speeds exceed 25 mph. Recommended for railway workers, school crossing guards, parking and toll gate personnel, airport ground crews and law enforcement personnel directing traffic.

*(article continues on page 8)*


**April 7-11, 2008 is the National Work Zone Awareness Week — The 9th Annual National Media Event will be observed on April 8 in Sacramento, California.**

## Center News

The Puerto Rico Transportation Technology Transfer Center announces the addition of Dr. Alberto M. Figueroa Medina as the new member of its family. Dr. Figueroa is the Center's new Deputy Director since August 2007.

Natural from the city of Arecibo, Puerto Rico, Dr. Figueroa is an Assistant Professor in the Department of Civil Engineering and Surveying at the University of Puerto Rico at Mayagüez (UPRM). He is a faculty member of the Transportation Engineering area since 1999.

Dr. Figueroa obtained his Bachelor of Science and Master of Science degrees in Civil Engineering from UPRM. In 2005, he received the degree of Doctor of Philosophy (Ph.D.) in Civil Engineering from Purdue University in the state of Indiana.

Registered Civil Engineer in Puerto Rico and Member of the College of Engineers and Surveyors of Puerto Rico and the Institute of Transportation Engineers, his topics of interest in education and research are the geometric design of roads, the analysis of road safety and the behavior of the users in transportation systems, and the development of statistical models for predicting traffic operations and evaluating transportation systems.

His major research projects have been related to the identification of mass transit alternatives for the expansion of the Tren Urbano rail system, the evaluation of the quality of service of urban bus systems, the development of statistical and econometric models for speed and road safety predictions, and the analysis of motorcycle-related crashes in Puerto Rico.

*(continued from page 1)*

**Examples of roadside and pavement conditions potentially hazardous for the operation of motorcycles**

The effect of the roadway design and its condition and the road environment also plays a significant role in the safety of motorcycle riders, as well as other road users. Motorcycles are not typical design vehicles for road geometry design purposes or the consideration of roadside safety devices. For example, metal guardrails are designed to redirect passenger vehicles, but can be fatal when a motorcycle rider crashes against the rail or the posts, so their location with respect to the traveled way must be carefully evaluated.

Design aspects of road curves, intersections and other road components do not typically consider motorcycles, as vehicle performance and other attributes for other vehicle classes govern the design decisions. Lack of or poor pavement maintenance can also significantly contribute to increase the potential of motorcycle crashes and severity. Three (3) fundamental issues that are related to the standard of care of the road network in Puerto Rico that need upgrading in order to improve safety are: overloading of heavy vehicles, road construction defects and lack of preventive maintenance programs.

## Roadway Strategies for Safer Riding

Road design and maintenance factors can, and do, affect motorcycle crashes, injuries and fatalities. Design, construction, maintenance, and roadway practitioners can reduce hazards to motorcyclist and other road users by considering motorcyclist safety.

### *Pavement Surface*

Promptly patch potholes and treat other pavement defects and deformations, such as rutting, bleeding, and polished aggregate as they pose a greater hazard to the operation of motorcycles than to larger vehicles.

- Specify pavement surfaces with adequate pavement friction.
- Examine the friction characteristics of asphalt sealants and of intersection markings.
- The use of thermoplastics, particularly for broad, horizontal intersection lines, can create slippery surfaces for motorcycles.
- Metal plates – either temporary or permanent – offer limited traction, particularly when wet, and are difficult to see on night conditions.
- Reduce uneven road surfaces. Milled surfaces, parallel paving lane joints, parallel grids on bridges, and other uneven roadway surfaces can be especially hazardous for motorcycles.
- Remove debris and fluid spills quickly and thoroughly. Roadway debris and fluid spills pose greater hazards to the operation of motorcycles than to larger vehicles. Debris can deflect motorcycle's wheel or hit the motorcyclist. Fluid spills can easily cause loss of traction.

### *Roadside Safety*

Install safety edges. Adopting a standard contract specification requiring a 30-35° angle asphalt wedge along each side of the roadway in all construction and resurfacing projects could be a simple and cost-effective way to improve pavement edge safety in most cases.

Consider motorcyclist safety when designing roadsides. The potential impact on motorcycle riders should be considered in design and placement of roadside safety hardware, clear zones and side slopes, and other roadside safety strategies.

***Visibility and Warning***


Consider the development and location of motorcyclist hazard warning signs. Signage targeted toward motorcyclists can warn of conditions that are especially hazardous for them. These might include uneven pavement surfaces, rumble strips or crosswinds. Also is important to ensure visibility and retroreflectivity of signs and roadway markings and keep in mind that many motorcycles have only a single headlamp for illumination.

**The Integrated Safety Solution – Safe Drivers, Safe Vehicles, Safe Roads**

Safer roadways are part of the solution to reduce motorcycle-related injuries and fatalities. Motorcyclists should equip themselves with adequate helmets and other protective clothing, get training, maximize their conspicuity through lighting and apparel, obtain the proper motorcycle license, and absolutely never drink and ride. Motorcycles should be properly maintained and operated. All road users, including drivers, motorcycle riders, and pedestrians need to obey the rules of the road and respect the rights of all. Only by addressing the problem from all angles can we achieve the desired result of safer roadways for all users.

*(Text adapted from FHWA Safe Roads for a Safer Future: http://safety.fhwa.dot.gov/mac)*

**A research project by the University of Puerto Rico at Mayagüez in 2007 identified factors related to motorcycle crashes and developed advanced warning road signs for Puerto Rico**

# Amendments to the Puerto Rico's Traffic and Motor Vehicles Law to Address Motorcycle Safety

Amendments were made recently to the Puerto Rico Traffic and Motor Vehicles Law #22 (Law #107 of August 10, 2007) to establish minimum requirements to ride a motorcycle, stricter licensing and operating regulations, and a strategic motorcycle safety education plan and funding.

A review of requirements to use a motorcycle is included:

- Be mentally and physically qualified
- Be 18 years or older
- Be authorized to drive a motor vehicle
- Approve a theoretical and technical exam
- Take a rider training if the minimum score necessary to pass the theoretical exam is not achieved on the first trial

Some of the new motorcycle operating regulations are:

- Blood alcohol content for motorcycle drivers must not surpass 0.02% (0.2 grams of alcohol per 1,000 grams of blood)
- Drivers and passengers must use and properly fasten a DOT-approved helmet and must wear eye protection, gloves, ankle-high shoes, and long pants
- Motorcycle riders and passengers must wear reflective vests or devices when driving between 6:00 PM and 6:00 AM
- Front and rear lights must be on when driving a motorcycle
- Motorcycle passengers must be 12 years or older
- Drivers with learner permits cannot ride motorcycles on highways and municipality and state roads
- All traffic violations will entail a $50 fine

For more information about the amendments or to obtain a copy of the law, contact the Puerto Rico Traffic Safety Commission at (787)721-4142.

*(continued from page 1)*

**Agencies have until January 2012 to establish and implement a sign assessment or management method to maintain minimum levels of sign retroreflectivity.**

The new standard in **MUTCD Section 2A.09** requires that agencies maintain traffic signs to a minimum level of retroreflectivity as outlined in MUTCD Table 2A-3 (in next page).

The new MUTCD language describes five methods that agencies can use to maintain traffic sign retroreflectivity at or above minimum levels. Agencies can choose from these methods combine them, or develop other appropriate and consistent methods based on engineering studies, that produce results that correspond to Table 2A-3.

The MUTCD describes two basic types of methods that agencies can use to maintain sign retroreflectivity at or above the MUTCD minimum maintained retroreflectivity levels: *assessment methods and management methods*.

## A. ASSESSMENT METHODS

Assessment methods require evaluation of individual signs within an agency's jurisdiction. There are two assessment methods: *visual assessment* and *measured sign retroreflectivity*.

### 1. VISUAL ASSESSMENT

*Nighttime Inspection*

On-the-fly assessments of retroreflectivity are made by an inspector during nighttime conditions. The following recommendations provide general guidance for inspections:

- Develop guidelines and procedures and train inspectors.
- Conduct inspections at normal speed from the travel lane(s).
- Conduct inspections using low-beam headlights.
- Evaluate signs at typical viewing distances so that adequate time is available for an appropriate driving response.

One or more of the following procedures should be used to support visual inspections.

*Calibration Signs Procedure*

An inspector views "calibration signs" (signs with known retroreflectivity levels at or above minimum levels) prior to conducting the nighttime inspection.

*Comparison Panels Procedure*

When the visual inspection identifies the retroreflectivity of a sign as marginal, a comparison panel (at retroreflectivity levels at or above the minimum levels) is attached to the sign and the sign/panel combination is viewed and compared.

*Consistent Parameters Procedure*

Nighttime inspections are conducted under similar factors that were used in the research to develop the minimum retroreflectivity levels. These factors include using:

- A sport utility vehicle or pick-up truck
- A model year 2000 or newer vehicle
- An inspector of at least 60 years old.

### 2. MEASURED SIGN RETROREFLECTIVITY

Retroreflectivity of a sign is measured and directly compared to the minimum level appropriate for that sign. *ASTM E1709, Standard Test Method for Measurement of Retroreflective Signs Using a Portable Retroreflectometer*, provides a standard method for measuring sign retroreflectivity.

***The Second Revision of the 2003 MUTCD was published in the Federal Register on December 21, 2007 and was effective on January 22, 2008***

**Summary of New MUTCD Table 2A-3. Minimum Maintained Retroreflectivity Levels [1]**

| SIGN COLOR | SHEETING TYPE (ASTM D4956-04) | | | | ADITIONAL CRITERIA |
|---|---|---|---|---|---|
| | Beaded Sheeting | | | Prismatic Sheeting | |
| | I | II | III | III, IV, VI, VII, VIII, IX, X | |
| White on Green | W*; G ≥ 7 | W*; G ≥ 15 | W*; G ≥ 25 | W ≥ 250; G ≥ 25 | Overhead |
| | W*; G ≥ 7 | W ≥ 120; G ≥ 15 | | | Ground Mounted |
| Black on Yellow or Black on Orange | Y*; O* | Y ≥ 50; O ≥ 50 | | | Note [2] |
| | Y*; O* | Y ≥ 75; O ≥ 75 | | | Note [3] |
| White on Red | W ≥ 35; G ≥ 7 | | | | Note [4] |
| Black on White | W ≥ 50 | | | | — |

NOTES
1. The minimum maintained retroreflectivity levels shown are in units of cd/lx/m$^2$ measured at an observation angle of 0.2° and an entrance angle of -4.0°
2. For text and fine symbol signs measuring at least 1200 mm (48 in) and for all sizes of bold symbol signs
3. For text and fine symbol signs measuring less than 1200 mm (48 in)
4. Minimum Sign Contrast Ratio ≥ 3:1 (white retroreflectivity ÷ red retroreflectivity)

* This sheeting type should not be used for this color for this application

**SPECIAL CASES**

- W3-1 – Stop Ahead: Red retroreflectivity ≥ 7
- W3-2 – Yield Ahead: Red retroreflectivity ≥ 7; White retroreflectivity ≥ 35
- W3-3 – Signal Ahead: Red retroreflectivity ≥ 7; Green retroreflectivity ≥ 7
- W3-5 – Speed Reduction: White retroreflectivity ≥ 50
- For non-diamond shaped signs such W14-3 (No Passing Zone), W4-4p (Cross Traffic Does Not Stop), or W13-1, -2, -3, -5 (Speed Advisory Plaques), use largest sign dimension to determine proper minimum retroreflectivity level.


## B. MANAGEMENT METHODS

Provide an agency the ability to maintain sign retroreflectivity without having to assess individual signs. There are three basic management methods: *sign replacement based on expected sign life, blanket replacement of large numbers of signs at appropriate intervals, and use of control signs*.

### 1. EXPECTED SIGN LIFE

Individual signs are replaced before they reach the end of their expected service life, which is the time anticipated for the retroreflective material to degrade to the appropriate minimum level. Expected service life can be based on sign sheeting warranties, weathering deck results, measurements of field signs, or other criteria. This method requires a system for tracking sign age. A common approach for identifying the age of individual signs uses a label on the sign to mark the year of fabrication or installation. Sign management systems can also be used to track the age of individual signs.

### 2. BLANKET REPLACEMENT

All signs in an area, or of a given type, at specified time intervals are replaced based on the relevant expected sign life. This method typically requires that all of the designated signs within a replacement area, or of the particular sign type, be replaced even if a sign was recently installed.

### 3. CONTROL SIGNS

A control sample of signs is used to represent all of an agency's signs. The retroreflectivity of the control signs is monitored and sign replacement is based on the performance of the control signs. Agencies should develop a sampling plan to determine the appropriate number and type of control signs needed to represent the agency's signs. Retroreflectivity of the control signs should be monitored using an assessment method.

The minimum retroreflectivity levels will promote safety while providing sufficient flexibility for agencies to choose a maintenance method that best matches their specific conditions.

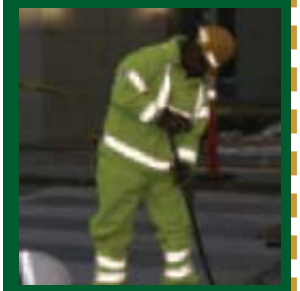
*For more information visit www.fhwa.dot.gov/retro and http://mutcd.fhwa.dot.gov.*

*(adapted from FHWA Know your retro brochure)*

## Examples of High-Visibility Garment (ANSI-ISEA 107-1999)

Class I

Class II



Class III

**(continued from page 3)**

***Class I***

Intended for workers with ample separation from vehicular traffic that does not exceed 25 mph. Class I garments are often safety vests, recommended for parking service attendants, workers in warehouses with equipment traffic, shopping cart retrievers, sidewalk maintenance workers and delivery vehicle drivers.

Other safety equipment are: safety belts, ropes, lanyards and/or a safety mesh, among others. A safety mesh is required when the work zone is 25 feet or more over the ground or water. PPE should be cleaned, inspected, maintained and properly stored.

***Traffic Crashes***

The traffic space is the area that is isolated from the work zone reserved for the vehicle flow. Incidents occur when vehicles accidentally get out of the traffic space and invade the work zone causing injuries to workers. Incidents can also occur when workers enter the traffic space. A TCP indicates how the interaction would be between the traffic space and work zone in a project; and includes public advisory, area delimitations, and traffic management.

The MUTCD shows typical TCP applications for a variety of work zone situations. An engineer must adapt and design the TCP based on the established rules and practices. The TCP's must be revised and approved by the transportation agency.

***Nighttime Work***

Some of the problems associated to nighttime work zone activities are: low visibility, inappropriate artificial lighting, low drivers' attention, workers fatigue or sleepiness, and low maintenance of TCD. Possible solutions to these problems are: increase police participation, use of retroreflective devices which make workers visible to drivers, adequately locate drums to direct traffic, use of TCDs in good conditions and provide appropriate lighting. To cut down sleepy or fatigued workers, avoid assigning consecutive night shifts and continuous shift changes, provide some weekends or days off, and minimize the amount of extra work hours for your personnel.

***Electric Safety***

To maintain electric-related work zone safety is indispensable for your personnel to have knowledge on electricity concepts. Promote caution on your workers when working close to a electric source including: deactivate all electric equipment before inspection or reparations, verify conditions of electric tools, be attentive of open electric lines and manage it appropriately, get information about underground public utilities before performing any excavation or using heavy equipment and wear the PPE.

***Trench and Excavations***

The earth accumulation on the side of a excavation may undergo different stresses and deformations that could produce the soil to collapse over the personnel causing several injuries or fatalities due to suffocation. Landslide can also occur as result of tension cracks, in which earth portions detach from the border and ends of the trench or excavation. Tension cracks have 0.5 to 0.75 times the trench depth. Toppling occurs when the vertical side of the trench is detached along the tension crack line and ends at the excavation. If the mentioned situation is not avoided the side of the trench or excavation may fall over the workers and trapped them.

# Transportation Challenges for Next Decade

Transportation mobility is one of the main factors that significantly impact the economy of any country. The future situation and condition of our transportation system is one of the main subjects under discussion by government officials and the transportation community.

The next decade comes with a collection of challenges for the development and preservation of transportation systems. Some challenges expected by the year 2020 are related to funding issues and increases in traffic congestion in metropolitan areas, airport delays, total freight traffic, inspection and maintenance cost of roads and bridges, and road roughness, among other issues.

Transportation leaders at the National Transportation Vision and Strategy for the 21st Century Summit identified ten essential steps that need to be urgently taken to transform our transportation system:

1. Promote and deploy safety improvements — policies, geometric standards, and countermeasures
2. Enact and enforce stricter legislation toward alcohol, seat belt use, teen graduated licensing, speeding. etc.
3. Increase core highways and transit infrastructure programs
4. Invest in public transportation: all metropolitan regions should have a fully functioning transit system within 15 years
5. Generate net new funding outside of the Highway Trust Fund for strategic national improvements
6. Make the transition from fuel taxes to a more diversified and reliable funding base
7. Give priority to the preservation and modernization of the highway, transit and rail systems
8. Promote the use of advanced technologies, multimodal integration, and more efficient management techniques to improve the performance of highways and transit.
9. Invest in increasing the capacity of the transportation system to sustain the expected population and employment growth
10. Create a new Critical Commerce Corridors Program to fund national freight mobility-related projects in a 25-year period

(adapted from US-DOT, AASHTO and NCPP sources)

# Leadership and Excellence in Educating and Training Transportation Officials

Dr. Felipe Luyanda Villafañe has been involved in traffic engineering, road safety, and public transportation projects as a researcher and consultant since the early 1980's. He was Professor of the Department of Civil Engineering and Surveying at the University of Puerto Rico at Mayaguez (UPRM) for 32 years and Co-Director of the Puerto Rico Transportation Technology Transfer Center for 21 years.

From 1990 to 1994 he was Director of the UPRM Department of Civil Engineering and Surveying. Aso he was selected as Distinguished Engineering Professor in 1994 by the College of Engineers and Surveyors of Puerto Rico.

Author of the book "Public Transportation in the New Millennium: The Case of Puerto Rico and the Tren Urbano". Dr. Luyanda has advised numerous graduate students in Transportation Engineering related topics and since 1994 has been studying qualitative and quantitative characteristics of urban rail transit systems as part of his participation in the UPR/MIT/Tren Urbano and UPR/PUPR/ATI Professional Development Programs.

A retirement activity was dedicated to Dr. Luyanda on June 28, 2007 in gratitude to his excellent leadership and dedication toward the education and training of students, engineers, and transportation officials. The family of the Puerto Rico Transportation Technology Transfer Center wants to thank Felipe for his excellent work as the Center Co-Director and as Professor of the Department of Civil Engineering and Surveying in the University of Puerto Rico at Mayagüez.

Dr. Luyanda (at the center) sharing with UPRM faculty and personnel from the PR-LTAP Center and the UPRM Department of Civil Engineering and Surveying.

# Heroes on the Road: Roadway Service Patrols

Roadway service patrols, or motorist assistance programs, are essential components of Incident Management Systems. Generally, this public service is deployed along with Intelligent Transportation Systems and Traffic Management Centers (TMC).

Service patrols typically consist of specially equipped vehicles and trained staff that can assist stranded motorists, help clear minor incidents and assist with the safe management of traffic around major incident scenes. Their primary target is to use rapid response to reduce traffic congestion on freeways or major arterials.

The service patrols are considered cost-effective methods to deal with congestion, especially in metropolitan areas where land for highway expansion is either unavailable or prohibitively expensive. The benefit-cost ratio for some service patrols has been estimated as high as 36:1.

The Florida Department of Transportation and its partners offer the Road Ranger Service Patrol since December 1999 with the objective of providing free highway assistance services during incidents to reduce delay and improve safety for the motoring public and responders. The benefits of the program have been:

- Reduction of crashes
- Reduction of incident duration by assisting the Florida Highway Patrol
- Assistance to disabled or stranded motorists (tire change, phone calls, gas and water, jump starts, among other services)
- Removal of road debris
- Reduction of congestion-produced air pollutants
- Increased safety at incident scenes

The significant value of the Service Patrols and the dedication of the Road Rangers was demonstrated in July 2006. A Broward County Deputy was dangling 100 feet in the air from a I-595 bridge after an out-of-control car forced him over a concrete median wall after he stopped on his way home from work to help with a traffic crash about 7:30 AM. The crash sent the Deputy over the median wall, but he held on to the concrete until Broward Sheriff's Office Deputy Shannon Belanger and Road Ranger Cesar Cintrón went for his rescue and pull him up to safety.

**César Cintrón (below left) receives the Broward Sheriff's Office Life Saving Award in recognition of his valiant effort in saving a Florida Highway Patrol Officer**

César Cintrón, a Road Ranger since 2003, and Deputy Belanger received an award for the courageous act of saving the life of Deputy Michael Rosenbluth. The Transportation Technology Transfer Center Directors learned about this heroic act and met César during a trip to the SMART SunGuide TMC in Fort Lauderdale, Florida. César is originally from Puerto Rico. His mom, Carmen Flores, is from Ponce and his dad, Herminio Cintrón, is from Juana Díaz. We want to congratulate César for his dedication and good service to the public.

# Future Seminars and Events

**The Transportation Technology Transfer Center would be offering the following seminars:**

April 10 & 11, 2008
**Practical Guidelines of solid Waste Disposal**

April 9 & 16, 2008
**Practical Guidelines for the Inspection and Quality Control of Placing and Compaction of Hot Mix Asphalt Mixture**

April 24 & 25, 2008
**Practical Guidelines of Project Management**

June 3 & 4, 2008
**Practical Guidelines in Inspection of the Design and Construction of Transportation and Public Works Projects**

June 12 & 13, 2008
**Basic Supervisory Skills for Transportation and Public Works Officials**

July 9 & 10, 2008
**Basic Guidelines for Guardrail Inspection and Treatments**

November 12, 2008
**Basic Concepts of Management of Change**

*For information about PR-LTAP Center's Seminars please contact:*
*Grisel Villarrubia*
*Telephone: 787-834-6385*
*E-mail address: gvilla@uprm.edu*
*www..uprm.edu/prt2*

**Conferences**

May 27-31, 2008
**10th International Conference on Application of Advanced Technologies in Transportation**
Athens, Greece

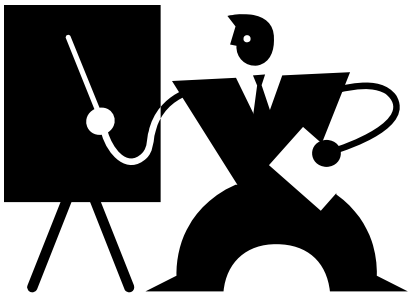
Contact: Prof. Matthew G. Karlaftis
National Technical University of Athens
Telephone: +30 (210) 772-1280
E-mail address: mgk@central.ntua.gr
Website: http://www.civil.ntua.gr/aatt/aatt.html

July 14-18, 2008
**2008 National LTAP/TTAP Conference**
Breckenridge, Colorado

Mail to: Colorado LTAP ATTN: NLTAPA Conference
3100 Marine St., Rm A213 UCB 561 Boulder, CO 80309-0561
Telephone: 303-735-3530
Fax: 303-735-2968
Website: www.ltappt2.org/conference/2008

September 24 -26, 2008
**National Workshop on Highway Asset Inventory & Data Collection**
Durham, North Carolina

Contact: Terry Canales, PE NCDOT
Telephone: (919) 733-2210
E-mail address: tcanales@dot.state.nc.us



# New Collaborative Agreements to Increase Access to the Center's Seminars

During the second half of 2007 the PR-LTAP Center added two partners to continue fulfilling its mission of providing technology transfer and workforce development services for the primary benefit of local agencies in Puerto Rico and the U.S. Virgin Islands.

The objectives for the partnerships are to:

- Leverage local partner resources to help the Center achieve its mission to local agencies
- Support the national strategy for partnerships through their local relationships
- Communicate information regarding efforts, initiatives and best practices to wider Program community

On October 2, 2007, the PR-LTAP Center signed a collaborative agreement with the Mayagüez Chapter of the Puerto Rico College of Engineers and Land Surveyors (CIAPR). As part of the agreement, CIAPR members can participate of the Center's seminars and training sessions and the PR-LTAP will have access to the CIAPR facilities for the offering of seminars.

**Dr. Benjamín Colucci, Center Director (left), and Dr. Fernando Benítez, President CIAPR-Mayagüez Chapter (right), during the signing of the collaborative agreement at the CIAPR-Mayagüez office.**


**Lic. Ángel Castillo, OCAM Commissioner, and Dr. Benjamín Colucci, Center Director, signing the agreement during the Western Summit of Infrastructure and Safety. Also in the picture: Hon. Pedro García, Hormigueros Mayor; Hon. José G. Rodríguez, Mayagüez Mayor; Dr. Alberto Figueroa, Summit Director; Hon. Javier Jiménez, San Sebastián Mayor; and Hon. Luis A. Echeverría, Aguada Mayor.**

On November 16, 2007, the Center signed a collaborative agreement with the Commissioner's Office of Municipal Affairs (OCAM). The purpose of the agreement is to promote and increase the participation of the municipalities in the Center's training seminars and workshops.

*Visit the PR-LTAP Center website (http://www.uprm.edu/prt2) to read the text of the two collaborative agreements.*

## Message from the EL PUENTE Editors

We hope that you enjoy the new appearance of the EL PUENTE. The goal of this newsletter is to provide you the most current and relevant information about new transportation-related developments, research results, and technology advances to improve the efficiency, safety and preservation of the transportation system. The newsletter includes articles containing essential information and announcements of new or revised recommended standards, guidelines, and recommended practices to help state and local transportation officials improve the quality of care and condition of transportation services. In addition, transportation officials and other stakeholders will have available information about upcoming Center seminars, conferences and other training opportunities for the development of the transportation workforce.

Send us your comments and suggestions on how we can continue improving our Newsletter and the other communication media so we can serve you better!

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!

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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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Technology Transfer Center

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