



# Module 3: Every Day Counts Initiative in Puerto Rico

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*30 Years of Excellence in the Training of Transportation Officials at Municipal, State and Federal Level in Puerto Rico and the United States Virgin Islands*





# Good Afternoon!





# Acronyms



- ∞ EDC – Every Day Counts
- ∞ FHWA – Federal Highway Administration
- ∞ T<sup>2</sup> Center – Puerto Rico Transportation Technology Transfer Center
- ∞ USVI – United States Virgin Islands



# Agenda



## ∞ Part I

- The Role of the Puerto Rico T<sup>2</sup> Center in the EDC Implementation in Puerto Rico

## ∞ Part II – EDC Initiatives in Puerto Rico

- EDC 1 | 2011-2012
- EDC 2 | 2013-2014
- EDC 3 | 2015-2016

## ∞ Part III – EDC Safety Initiatives

- Safety Edge
- Traffic Incident Management
- Smarter Work Zones

# Part I: The Role of the Puerto Rico T<sup>2</sup> Center in the EDC Implementation in Puerto Rico





# Puerto Rico Transportation Technology Transfer Center

## T<sup>2</sup> - El Centro - Puerto Rico LTAP



- Established in 1986
- Civil Engineering and Surveying Department of the University of Puerto Rico, Mayagüez Campus
- Funded by:



Puerto Rico Department of Transportation and Public Works (DTPW)



US Virgin Islands Department Public Works (DPW)

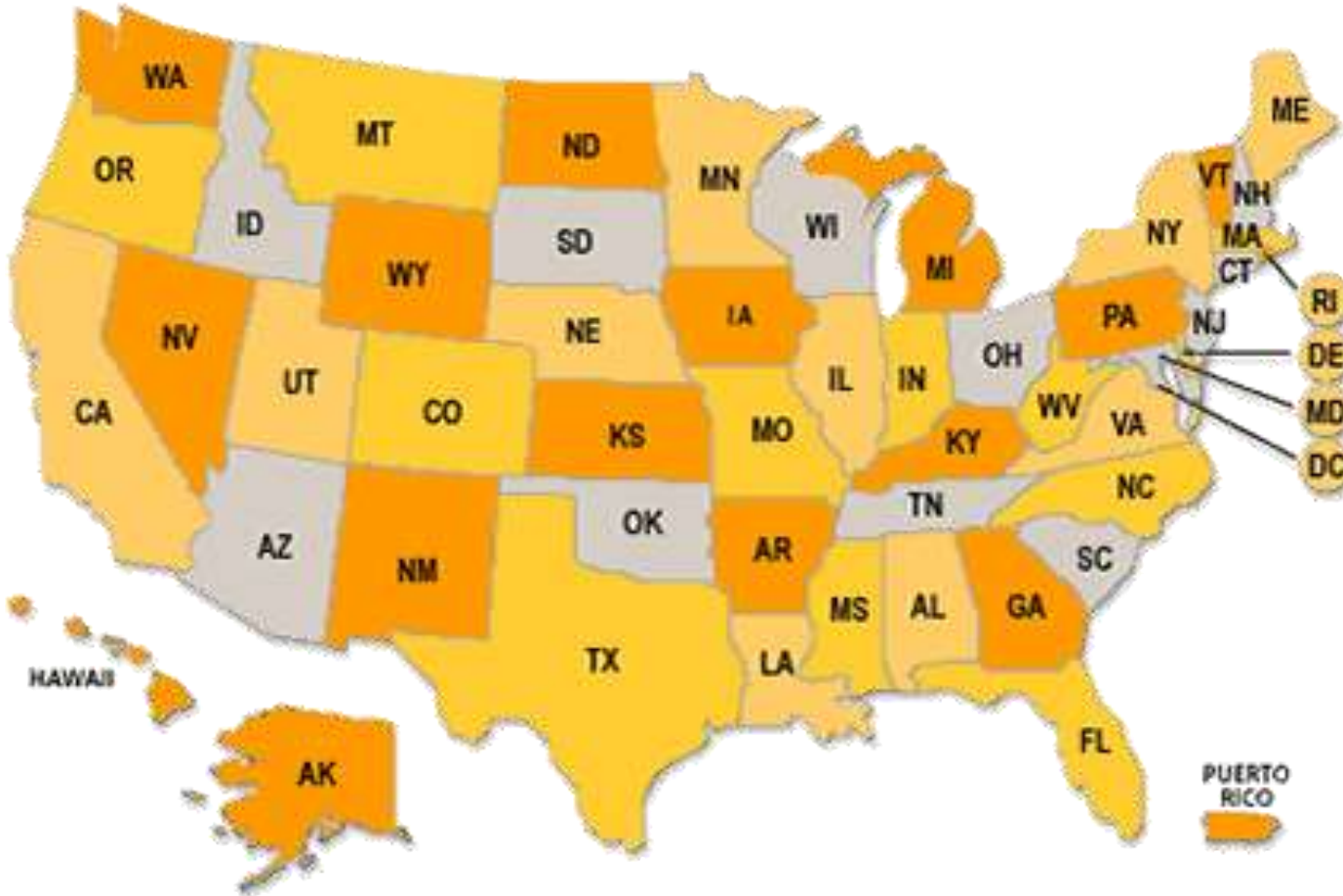


Local Technical Assistance Program (LTAP), FHWA





# Current Network of T<sup>2</sup> /LTAP Centers



## 51 LTAP Centers (PR and USVI T<sup>2</sup> Center) and 7 Tribal (TTAP) Centers :

1. East Mississippi
2. Colorado
3. California
4. North Valleys
5. Alaska
6. North East
7. Oklahoma



# T<sup>2</sup> Center Objectives



- ∞ Provide technical assistance to municipalities and local transportation agencies on current and emerging technology.
- ∞ Provide information regarding planning, design, construction, evaluation, maintenance and operation of highway transportation infrastructure facilities
- ∞ Emphasis on safety, infrastructure management, workforce development and organizational excellence.





# Every Day Counts (EDC) Initiatives



- ∞ Is a national federal program designed to identify and deploy innovation in strategic areas aimed at
  - ✓ shortening project delivery,
  - ✓ enhancing the safety of our roadways, and
  - ✓ protecting the environment.
- ∞ The DOT's have the responsibility to implement this national innovative program.
- ∞ The coverage of the EDC national program includes the 50 states, Washington D.C., Puerto Rico and the USVI.



# EDC and the 4 I's



1. Innovation
2. Ingenuity
3. Invention
4. Imagination

*“...EDC deployment is a Calculated Educated Risk”*

*Gregg Nadeau  
FHWA Deputy Administrator  
December 14, 2010  
Atlanta, GA*





# The Role of Puerto Rico LTAP in the EDC Initiatives



1. Assisting in the EDC Implementation Plan of the Department of Transportation and Public Works (DTPW) of the Government of Puerto Rico.
2. Serving as a technical oversight of each EDC.
3. Assisting in the development of training modules.
4. New training resources.
5. Provided technical assistance to undergraduate and graduate students to work on EDC research projects.



## Part II: EDC Initiatives in Puerto Rico





# EDC 1 Initiatives for Puerto Rico



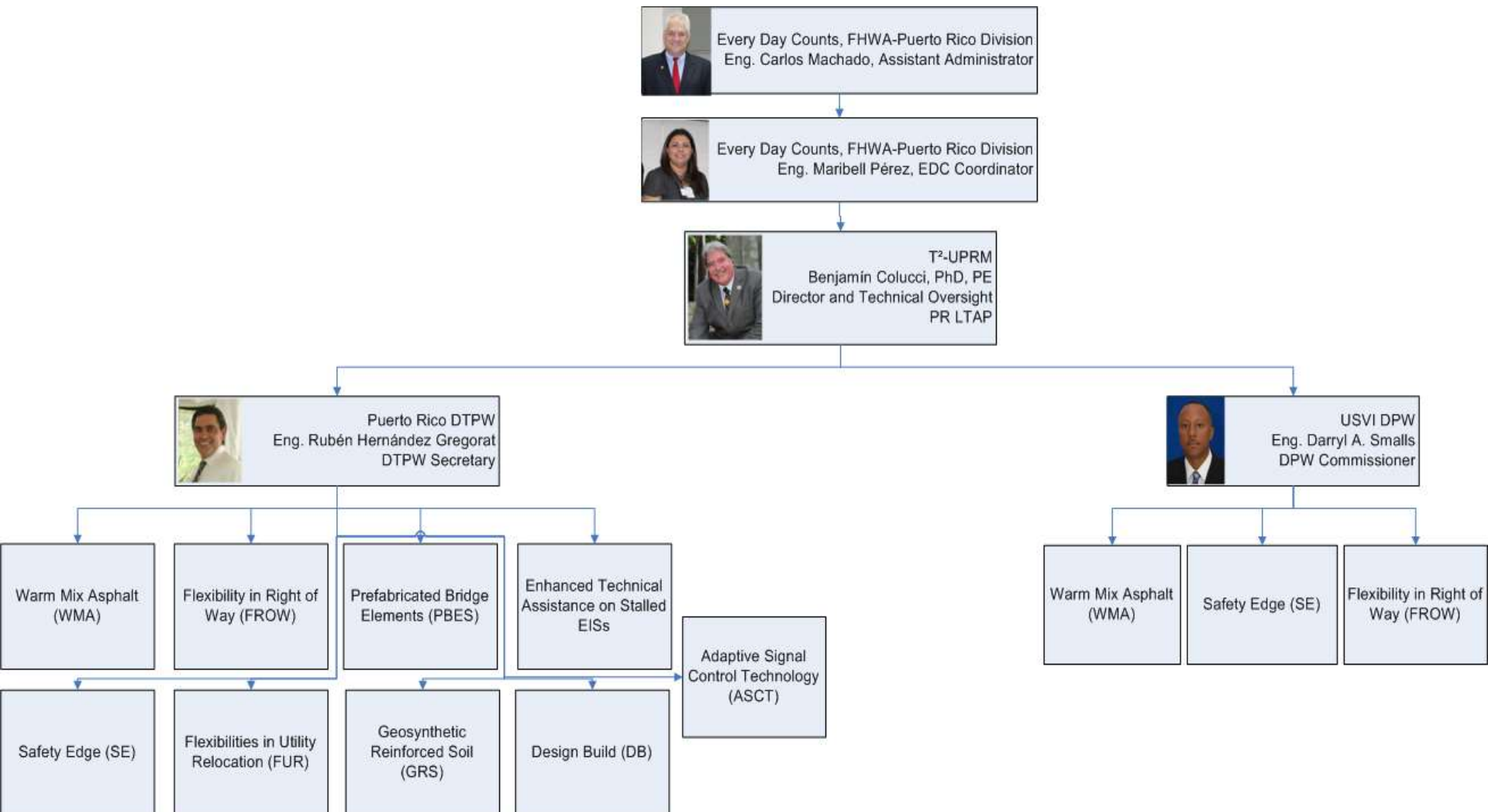
## EDC 1 (2011-2012)

- Warm – Mix Asphalt (WMA)
- Safety Edge
- Geosynthetic Reinforced Soil (GRS-IBS)
- Prefabricated Bridge Elements & Systems (PBES)
- Adaptive Signal Control Technologies (ASCT)
- Enhanced Technical Assistance on Stalled EISs
- Flexibilities in Right of Way (ROW)
- Flexibility in Utility Relocation



# EDC 1 Management and Implementation

## Structure: Commonwealth of Puerto Rico





# EDC 1 Puerto Rico Champions



	EDC Initiative	PRHTA Champion	E-mail
1	Warm-Mix Asphalt	Eng. Juan C. Bonet Materials Engineer	jbonet@act.dtop.gov.pr
2	Safety Edge	Eng. Ana L. Torres Construction Management Engineering	antorres@dtop.gov.pr
3	Prefabricated Bridge Elements & Systems	Eng. Héctor Laureano Special Assistant to the PRHTA Executive Director	hlaureano@dtop.gov.pr
4	Geosynthetic Reinforced Soil	Eng. Héctor Laureano Special Assistant to the PRHTA Executive Director	hlaureano@dtop.gov.pr
5	Design Build	Eng. Héctor Laureano Special Assistant to the PRHTA Executive Director	hlaureano@dtop.gov.pr
6	Adaptive Signal Control Technologies	Eng. Cándido Camacho Director, Traffic Operations Area	ccamacho@dtop.gov.pr
7	Enhanced Technical Assistance on Stalled EISs	Eng. Carmen G. Alicea Chief of Environmental Studies Office	calicea@dtop.gov.pr
8	Flexibilities in Right of Way	Atty. Aarón Hernández Right of Way Manager	alhernandez@dtop.gov.pr
9	Flexibility in Utility Relocation	Eng. María Marcano Utilities and Illumination Office Active Chief	mmarcano@dtop.gov.pr



# EDC 2 Initiatives for Puerto Rico



## EDC 2 (2013-2014)

- Intelligent Compaction
- Accelerated Bridge Construction
- Programmatic Agreements
- National Traffic Incident Management
- Implementing Quality Environmental Documentation



# EDC 2 Puerto Rico Champions



	EDC Initiative	PRHTA Champion	E-mail
1	Intelligent Compaction	<b>Eng. José M. López</b>	<a href="mailto:jolopez@dtop.gov.pr">jolopez@dtop.gov.pr</a>
2	Programmatic Agreements	<b>Eng. Carmen G. Alicea</b>	<a href="mailto:calicea@dtop.gov.pr">calicea@dtop.gov.pr</a>
3	ABC / PBES	<b>Eng. Héctor Laureano</b>	<a href="mailto:hlaureano@dtop.gov.pr">hlaureano@dtop.gov.pr</a>
4	Implementing Quality Environmental Documentation	<b>Eng. Carmen A. Morales</b>	<a href="mailto:cmorales@dtop.gov.pr">cmorales@dtop.gov.pr</a>
5	National Traffic Incident Management Training	<b>Eng. Samuel Forestier</b>	<a href="mailto:sforestier@act.dtop.gov.pr">sforestier@act.dtop.gov.pr</a>



# EDC 3 Management and Implementation

## Structure: Commonwealth of Puerto Rico



Every Day Counts, FHWA-Puerto Rico Division  
Eng. Mike Avery, Assistant Administrator



Every Day Counts, FHWA-Puerto Rico Division  
Eng. Maribell Perez, EDC Coordinator



PRLTAP - T<sup>2</sup>-UPRM  
Benjamin Colucci, PhD, PE  
Director and Technical Oversight



Puerto Rico Highway and Transportation Authority  
Eng. Carmen Villar  
Executive Director

Puerto Rico Highway and Transportation Authority  
Eng. Zulma Marín  
Office of Federal Liaison

Smarter Work Zones

Geosynthetic Reinforced  
Soil (GRS) & Integrated  
Bridge Elements (IBS)

Road Diets

Implementing Quality  
Environmental  
Documentation



# EDC 3 Initiatives for Puerto Rico



## EDC 3 (2015-2016)

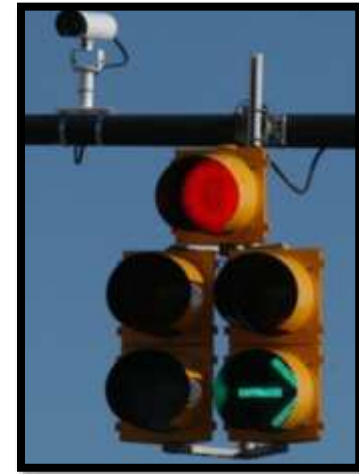
- Intelligent Compaction
- Accelerated Bridge Construction
- Programmatic Agreements
- National Traffic Incident Management
- Implementing Quality Environmental Documentation



# Accomplishments of the Puerto Rico LTAP related to EDC in Puerto Rico and USVI



1. Participated in Train the trainer course related to Model Systems Engineering Documents for Adaptive Signal Control Technology (ASCT) Systems, January 2012.
2. Participated in the preparation of the 1<sup>st</sup> ConOps report that is required by FHWA-HOP-11-027 report dated August 2011, in terms of developing Model Systems Engineering Documents and implementing to ASCT, February to June 2012.
3. Extended our partnerships with Purdue University and the Joint Transportation Research Program (JTRP), and his Director, Dr. Darcy Bullock, to continue collaborating in training and technology transfer aspects associated with the implementation of ASCT in Puerto Rico and USVI.





# Accomplishments of the Puerto Rico LTAP related to EDC in Puerto Rico and USVI (Cont.)



4. The Center expanded liaison with private partners, Betterroads and Robles Asphalt, among others, that assisted in the implementation of Warm Mix Asphalt and Safety Edge in Puerto Rico and the US Virgin Islands.
- On-going laboratory research on binder modification.
  - Additives:
    - Sasobit
    - Evotherm M1
    - Kaoamin 14
    - Rediset





# Accomplishments of the Puerto Rico LTAP related to EDC in Puerto Rico and USVI (Cont.)



5. EDC has expanded our **network of collaboration** with **state and federal administrative agencies** such as:
  - **“Instituto de Cultura Puertorriqueña” (ICP)** – Arq. Belford Matías Maldonado and Glorilyn Olivencia.
  - **“Oficina de Gerencia de Permisos” (OGPe)** – Eng. Jaime Green, Director of the Environmental Evaluation and Compliance Division; Rosa Otero and Luis Morales.
  - **State Historic Preservation Office (SHPO)** – Marinés Colón González, Historic Property Specialist.
  - **United States Army Corps of Engineers (USACE)** – Eng. Sindulfo Castillo, Chief of the Antilles Regulatory Section.
  - **United States Fish and Wildlife Service (US FWS)** – Dr. José Cruz Burgos, Biologist.
  - **Puerto Rico Planning Board (JP)** – Geo. María del C. Gordillo, Vice-President.
  - **Puerto Rico Highway and Transportation Authority (PRHTA)** – Eng. Carmen Alicea, Chief of the Environmental Studies Office



# Accomplishments of the Puerto Rico LTAP related to EDC in Puerto Rico and USVI (Cont.)



6. Publication of our bilingual quarterly newsletter “El Puente”, hardcopy and electronic version, editions with feature articles associated with EDC Success Stories in Puerto Rico and USVI.
7. Major changes in the Center webpage that incorporate EDC as well as our involvement in safety related initiative endorsed by USDOT and FHWA, namely, Decade of Action for Road Safety: 2011-2020 and Toward Zero Death (TZD).





*This edition is the eighth of a series that focus on the implementation activities of EVERY DAY COUNTS (EDC) in Puerto Rico and the U.S. Virgin Islands.*

## ***Launch of the State Transportation Innovation Council (STIC) in Puerto Rico***

The Administrator of the Federal Highway Administration (FHWA), Eng. Víctor Méndez, visited Puerto Rico on Thursday, October 24, 2013, in order to announce the launch of the State Transportation Innovation Council (STIC). The STIC is a concept developed by the FHWA, which promotes innovation and cooperation between representatives of the transportation industry at federal and state level, and the public and private sector to working together for the development and implementation of new technologies in transportation projects.

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**Puerto Rico LTAP**



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The Puerto Rico Transportation Technology Transfer Center is part of a network of 58 Centers through the United States that comprises the Local Technical Assistance Program (LTAP) and the Tribal Technical Assistance Program (TTAP), which enable local governments, countries and cities to improve their roads and bridges by supplying them with a variety of training programs, an information clearinghouse, new and existing technology updates, personalized technical assistance, and newsletters.





# El Puente Publications



**EL PUENTE**  
 Newsletter of the Puerto Rico Transportation Technology Transfer Center  
 University of Puerto Rico, Mayagüez Campus  
 Volume 28, Number 2, 2014

**Introduction of GRS-IBS in Puerto Rico**

Over the past four years the Federal Highway Administration (FHWA) has been promoting the Every Day Counts (EDC) initiative as an effort to accelerate the implementation of proven ready market technology by state and local transportation agencies. These technologies and initiatives are selected to accelerate project delivery, improve safety, and protect the environment. Geosynthetic Reinforced Soils Integrated Bridge System (GRS-IBS) was one of the technologies selected in the first round of EDC which was then continued into

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Puerto Rico ETAP

**TAP**

The Puerto Rico Transportation Technology Transfer Center is part of a network of 58 Centers through the United States that includes the local Technical Assistance Program (TAP) and the Tribal Technical Assistance Program (TTAP), which enable local governments, counties and cities to improve their roads and bridges by supplying them with a variety of training programs, an information clearinghouse, new and existing technology systems, personnel technical assistance, and newsletters.

**EL PUENTE**  
 Newsletter of the Puerto Rico Transportation Technology Transfer Center  
 University of Puerto Rico, Mayagüez Campus  
 Volume 28, Number 3, 2014

**Educating to Save Lives on the Highways**

Putting Puerto Rico on the Map in Traffic Incident Management Training

**Successful Traffic Incident Management (TIM) Workshop**

Three injury crashes occur every minute in the United States, potentially putting police, fire, highway workers, tow truck drivers, and other incident responders in harm's way every day. Congestion from these incidents can generate secondary crashes, increasing traveler delay and frustration. The longer responders remain at the scene, the greater the risk they, and the traveling public, face. Every additional minute clearing a crash increases the chance of a secondary crash by 2.8 percent.

**The National Traffic Incident Management (TIM) Responder**

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Puerto Rico ETAP

**TAP**

The Puerto Rico Transportation Technology Transfer Center is part of a network of 58 Centers through the United States that includes the local Technical Assistance Program (TAP) and the Tribal Technical Assistance Program (TTAP), which enable local governments, counties and cities to improve their roads and bridges by supplying them with a variety of training programs, an information clearinghouse, new and existing technology systems, personnel technical assistance, and newsletters.



# Relation of EDC with the Strategic Highway Safety Plan



- The safety research component within the UPRM UTC project is synchronized with the objectives of the recently adopted 5 year Strategic Highway Safety Plan (SHSP): 2014-2018
  - Approved by the Puerto Rico Highway and Transportation Authority (PRHTA) with FHWA funding match of \$32 million/year.




Formal Presentation of the Puerto Rico Strategic Highway Safety Plan 2014-2018  
"Working together toward HIGHWAY SAFETY ... TO SAVE MORE LIVES"



# Accomplishments of the Puerto Rico LTAP related to EDC in Puerto Rico and USVI (Cont.)



8. Created a Facebook  page in the internet to document the success stories and promoting EDC related activities.
9. Preparation of a database program to manage all EDC related reports.
10. Keep training our staff in new emerging technologies associated to EDC related disciplines.
11. Collaboration with professional organizations such as Puerto Rico ITE by promoting pertinent research studies associated to EDC.



# Part III — EDC Safety Initiatives





# 1. Safety Edge



## Benefits

- Has the potential to save lives allowing drivers who drift off highways to return to the road safely.
- Provides a strong, durable transition for all vehicles. Even at higher speeds, vehicles can return to the paved road smoothly and easily.



Verifying the 30° safety edge angle at paving project, Yabucoa, PR





# 1. Safety Edge (Cont.)



## Tasks Performed

- Acquisition of the Advant-Edge Model Ramp Champ and TransTech: Shoulder Wedge Maker (FHWA loan program).
- Selection of candidate paving projects to implement safety edge technology.
- Preparing the screed unit of the paver for the installation of safety edge devices.
- Layout of experimental plan for safety edge and density measurements.
- Train undergraduate and graduate students on the installation and measurements requirements for the safety edge experiment.





# 1. Safety Edge (Cont.)



## On-going Phase in Safety Edge

- Verify the integrity of safety edge in experimental segments in the highway network in Puerto Rico
- Approve safety edge specifications
- Complete public policy of implementation of safety edge in Puerto Rico
- Develop training module on safety edge with the collaboration of FHWA and PR-LTAP (T<sup>2</sup>)





# 1. Safety Edge (Cont.)



**Advant-Edge Model Ramp Champ**



**TransTech: Shoulder Wedge Maker**





# 1. Safety Edge (Cont.)



## Tasks Performed: Betterroads Asphalt Corp. Patillas, PR

- Training maintenance crew on the installation of TransTech: Shoulder Wedge Maker and Advant-EDGE: Ramp Champ on paver screed unit

Laydown and Compaction, Patillas, PR-  
Betterroads Asphalt Corp. (June 24, 2011)





# Advant-EDGE: Ramp Champ



- ∞ The shoes can be detachable to create a tapered Safety Edge or a longitudinal center lane joint
- ∞ The slope of the Safety Edge can be adjusted from 5° to 30°
- ∞ The ramp champ is reversible and can be used for either the left or right side





# Advant-EDGE: Ramp Champ Components



**Height Adjusting Screw**

**Radial Force Cylinder**  
Produces downward and inward force on the shoe creating a stronger edge

**Mounting Plate**  
Remains fixed and is bolted to the screed

**Wedge**  
Designed to form different slope angles and allows it to change with the elevation of the adjacent road shoulder



**Cotter Pin**  
Removal of piece is necessary to remove box from plate

**Cover Plate**  
Protects inner adjustment elements from dirt and asphalt

**Box**  
The box contains a slope set screw where the slope of the angle can be adjusted

**Shoe**  
Produces either a tapered safety edge or a longitudinal center lane joint



# Advant-EDGE: Ramp Champ Installation Protocol



Clear debris on the screed unit of the paver



Place a 1" shim at the bottom of the screed



Remove cotter pin and place the mounting plate on top of the shim



Start drilling the screed unit with a 1/2" drill bit



Place mounting plate onto screed unit. Insert and tighten a bolt and washer



Reattach the box to the mounting plate and reinsert the cotter pin



# TransTech: Shoulder Wedge Maker



- ☞ Creates a tapered shoulder wedge.
- ☞ Typically used in a match pair, one for the right side and one for the left side of the paver.
- ☞ Needs adjusting to keep the bottom of the edge in contact with the shoulder surface.





# TransTech: Shoulder Wedge Maker Components



## Adjusting Screw

Sets the height of the SWM and when adjusted, creates a downward force to keep the device in contact with the surface

## Self-adjusting Internal Spring

Provides a downward force to keep the guide rail in connection with the surface

## 1/2" Radius Leading Edge

Provides a smooth transition from the asphalt being extruded under the SWM

## 45° Compound Angle Surface

Forces asphalt mix under the device and increases compaction of the wedge fillet

## Outboard Mounting Slot

## Inboard Mounting Slot

## Mounting Plate

## Cover Plate

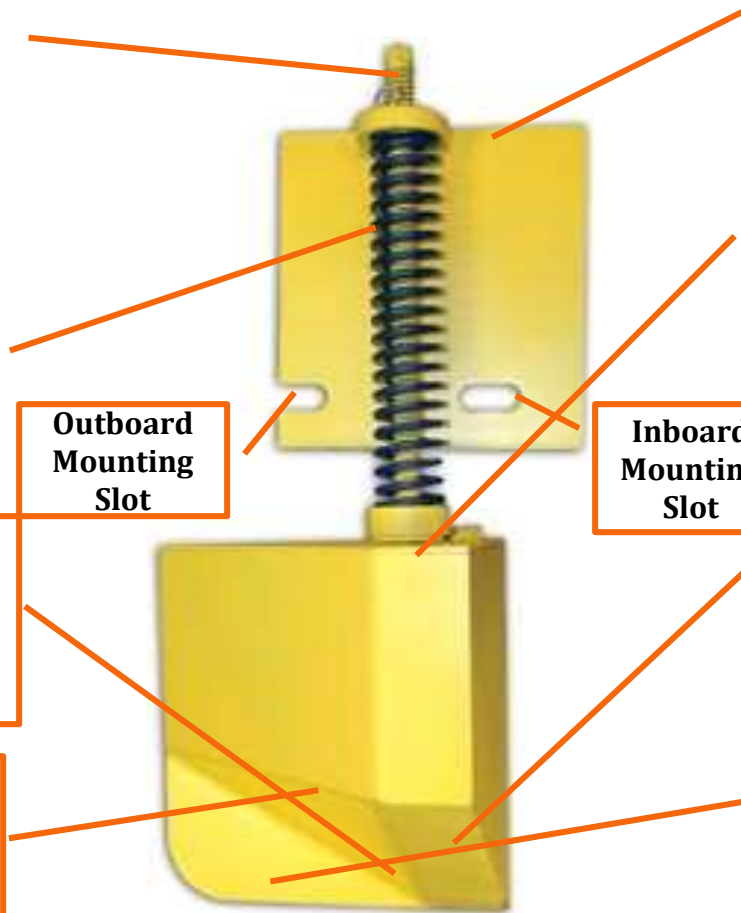
Protects the inner adjustment elements from any dirt or asphalt that may enter

## 30° Forming Edge

Extends below the screed strike-off plate and extrudes the fillet at the given angle

## Guide Rail with a 2" radius

- Allows the SWM to ride along the surface of the shoulder
- The 2" radius allows for better transitions between obstacles

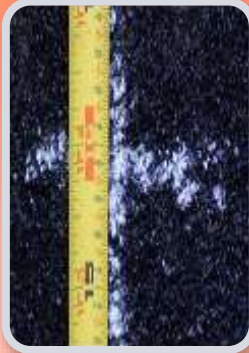




# Shoulder Wedge Maker Installation Protocol



Clear debris on the screed unit of the paver



Measure and mark the location for the two mounting holes



Drill a 1/2" diameter hole in each marked location



Remove cotter pin and position plate over mounting holes



Insert a 1/2" bolt and washer into each mounting slot and tighten



Insert adjusting screw through the mounting plate and insert cotter pin



# Safety Edge Job Site Location in 2013





# Preliminary Data Analysis: Compaction and Safety Edge Angle

## Patillas, PR-Betterroads Asphalt Corp. (June 24, 2011)



### TransTech: Shoulder Wedge Maker

Variable	Mean	Std. Dev.	Coefficient of Variation	Minimum	Median	Maximum
% Compaction (%)	93.49	0.98	1.05	92.3	93.3	95.1
% Compaction (%)@ 1 ft.	82.90	2.56	3.09	78.2	83.1	86.8
Slope(°)	25.8	5.69	22.05	13.8	27.15	36.4

### Advant-Edge: Ramp Champ

Variable	Mean	Std. Dev.	Coefficient of Variation	Minimum	Median	Maximum
% Compaction (%)	94.31	1.29	1.37	92.60	94.10	96.0
% Compaction (%)@ 1 ft.	83.60	3.38	4.04	79.10	85.20	87.40
Slope(°)	26.27	5.21	19.83	16.80	29.00	29.80

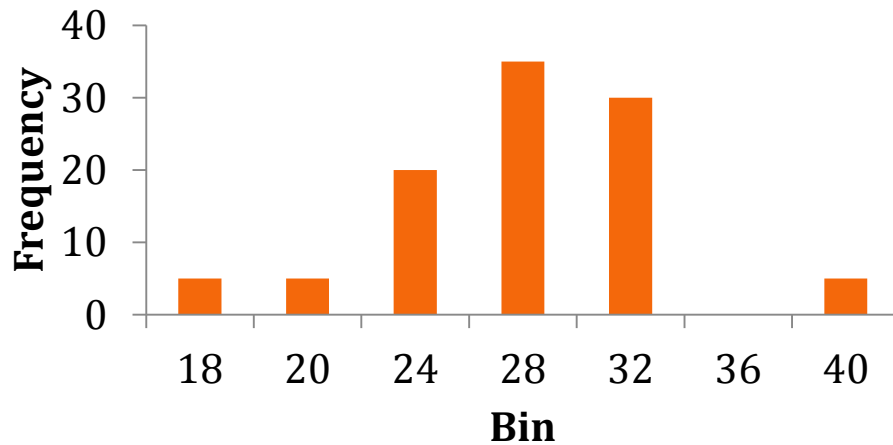


# Preliminary Data Analysis: Safety Edge Angle

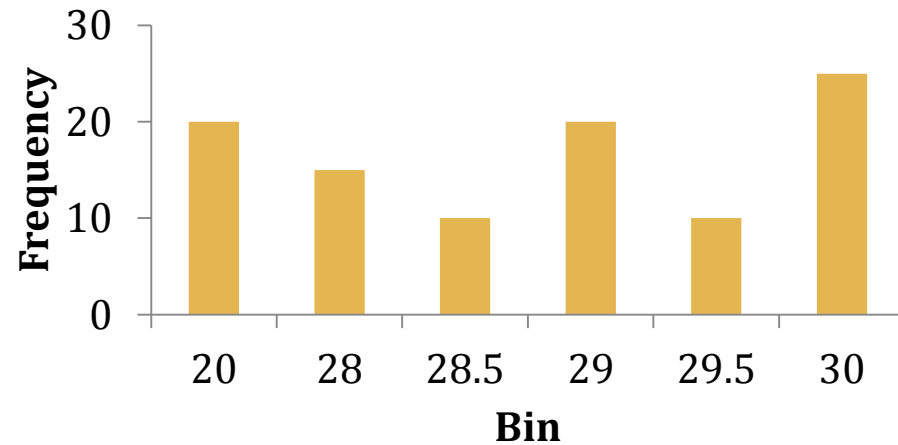
## Patillas, PR-Betterroads Asphalt Corp. (June 24, 2011)



### TransTech: SWM Slope



### Advant-Edge: RC Slope





# Tasks Performed



## Robles Asphalt, Ponce, PR

- Training maintenance crew on the installation of TransTech: Shoulder Wedge Maker and Advant-EDGE: Ramp Champ on paver screed unit
- Laydown of Saturated Surface Dry Sand, Ponce, PR September 12, 2011

## Laydown of Saturated Surface Dry Sand, Ponce, (September 12, 2011)





# Implementation of Safety Edge in Puerto Rico Symposium



## Demonstration with sand

- ∞ December 2011 in Pachín Vicens Sport Complex facilities in Ponce, PR.
- ∞ Safety Edge Field Demonstration:
  - Collaboration of private sector, Robles Asphalt and Betterroads Asphalt.





# Message of the Editor of Newsletter El Puente

## Highlighting Safety Edge Demonstration Project in Ponce, PR



- ∞ *One of these successful Safety Edge demonstrations was conducted in December 2011 at the parking facilities of the Pachin Vicens Auditorium in the Municipality of Ponce, P.R.*
- ∞ *...The demonstration consisted of laying down a saturated surface dry sand simulating a surface asphalt mix, operating two pavers at the same time, each one with a different safety edge technology, namely TransTech: Shoulder Wedge Maker (SWM) and Advant-Edge: Ramp Champ (RC).*
- ∞ *...The unconditional collaboration of the Federal Highway Administration (FHWA), the Puerto Rico Highway and Transportation Authority (PRHTA), the Department of Transportation and Public Works of Puerto Rico and U.S. Virgin Islands, Betterroads and Robles Asphalt Corp., related to the Every Day Counts (EDC) initiatives is greatly appreciated.*

Dr. Benjamín Colucci  
Volume 26, Number 1, 2012

# Newsletter El Puente

## Volume 24, Number 2-3, 2010

### Mejorando la Visibilidad del Marcado de Pavimento

**Nueva propuesta con reglas para mantener el nivel mínimo de retroreflectividad en el marcado del pavimento.**

El marcado del pavimento en carreteras y calles proveen a los usuarios información importante acerca de las regulaciones, advertencias o guías que no pueden ser obtenidas por el uso de otros dispositivos y suplementan otros dispositivos de control de tráfico, como semáforos, rótulos y otros marcados. La visibilidad del marcado puede limitarse por nieve, residuos y agua sobre o adyacente al marcado; mientras que la durabilidad del marcado se afecta por las características del material, el volumen de tráfico, el clima y la localización del mismo.

**Propósito de la Propuesta de Revisión del Manual de Dispositivos Uniformes para el Control del Tránsito**

Una Notificación de Propuesta de Enmiendas (NPE) fue publicada por la Administración Federal de Carreteras (FHWA, por sus siglas en inglés) el 22 de abril de 2010 en el Código de Regulaciones Federales (23 CFR 635) para añadir Estándares, Guías, Opciones e información de Apoyo con relación a mantener niveles mínimos de retroreflectividad en el marcado de pavimento en el MUTCD 2009. La revisión propuesta establece un nivel mínimo uniforme para el rendimiento del marcado de pavimento basado en la necesidad de visibilidad nocturna de los conductores, para promover la seguridad vial, mejorar la operación del tráfico, y facilitar la comodidad y conveniencia de todos los conductores, incluyendo aquellos de edad avanzada. Las revisiones propuestas serían designadas como la Primera Revisión del MUTCD 2009.

**Nuevos recursos en nuestra biblioteca:**

- AASHTO. 2010. Highway Safety Manual.
- FHWA. 2010. Traffic Monitoring: A Guidebook. Report FHWA-WFL/TD-10-002.
- FHWA. 2010. Modern Roundabouts: A Safer Choice. CD-ROM FHWA-SA-10-023.
- FHWA. 2009. Comprehensive Intersection Resource Library. CD-ROM FHWA-09-027.

El Centro de Transferencia de Tecnología de Transportación de Puerto Rico es parte de una red de 58 centros a través de los Estados Unidos que compone el Programa de Asistencia Técnica Local (LTAP) y el Programa Tribal de Asistencia Técnica (TTAP), que permite a los gobiernos locales, condados y ciudades, mejorar sus carreteras y puentes mediante el suministro de programas de capacitación, un centro de información, tecnologías nuevas y existentes, asistencia técnica personalizada y boletines informativos.



### Improving the Visibility of Pavement Markings

**Proposal for new standards for maintaining minimum retroreflectivity levels of pavement markings.**

Pavement markings on highways and streets provide to the road user important information about regulations, warning, or guidance that is not obtainable by the use of other devices, and supplement other traffic control devices, such as signs, traffic signals, and other markings. The visibility of the markings can be limited by snow, debris, and water on or adjacent to the markings and the durability of the markings is affected by the material characteristics, traffic volumes, weather, and location.

**Purpose of the Proposed Revision to the Manual on Uniform Traffic Control Devices**

A Notice of Proposed Amendments (NPA) was published by the Federal Highway Administration (FHWA) in the Federal Register (23 CFR 635), on April 22, 2010, proposing to revise the MUTCD 2009 by adding Standards, Guidance, Options, and Support information related to minimum levels of retroreflectivity for pavement markings. The proposed revision establishes uniform minimum levels of nighttime pavement marking performance based on the visibility needs of drivers, to promote safety, enhance traffic operations, and facilitate the comfort and convenience for all drivers, including older drivers. The proposed revision described herein would be designated as Revision 1 to the 2009 Edition of the MUTCD.

*(article continues in page 4)*

**New technical resources in our library:**

- AASHTO. 2010. Highway Safety Manual.
- FHWA. 2010. Traffic Monitoring: A Guidebook. Report FHWA-WFL/TD-10-002.
- FHWA. 2010. Modern Roundabouts: A Safer Choice. CD-ROM FHWA-SA-10-023.
- FHWA. 2009. Comprehensive Intersection Resource Library. CD-ROM FHWA-09-027.

The Puerto Rico Transportation Technology Transfer Center is part of a network of 58 centers through the United States that comprises the Local Technical Assistance Program (LTAP) and the Tribal Technical Assistance Program (TTAP), which enable local governments, counties, and cities, to improve their roads and bridges by supplying them with a variety of training programs, an information clearinghouse, new and existing technology updates, personalized technical assistance, and newsletters.





# Newsletter El Puente

## Volume 25, Number 3, 2011



### EL PUENTE

Boletín del Centro de Transferencia de Tecnología en Transportación  
Recinto Universitario de Mayagüez, Universidad de Puerto Rico

Volumen 25, Número 3, 2011

[www.uprm.edu/pt2/](http://www.uprm.edu/pt2/)

**SafetyEDGE**



### EL PUENTE

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

Volume 25, Number 3, 2011

[www.uprm.edu/pt2/](http://www.uprm.edu/pt2/)

**SafetyEDGE**

#### Haciendo que CADA DIA CUENTE en el Caribe

*Esta edición es la primera de una serie dedicada a las actividades de implementación de las estrategias de EDC en Puerto Rico y las Islas Vírgenes EEUU*



CADA DIA CUENTA (CDC) es una iniciativa de la Administración Federal de Carreteras (FHWA) para ayudar a los Estados y Territorios a utilizar tecnologías y procedimientos innovadores para mejorar la seguridad de las carreteras, proteger el ambiente y acortar el tiempo de terminación de los proyectos. Para más información acerca de EDC visite la página de FHWA en la internet: <http://www.fhwa.dot.gov/everydaycounts/>.

El Centro de Transferencia de Tecnología de Transportación colabora con la Autoridad de Carreteras y Transportación como Revisor Técnico y Coordinador de Entrenamiento en nueve estrategias de EDC: 1) Mezclas Tibias de Asfalto, 2) Borde de Seguridad, 3) Tecnologías de Contróles Adaptivos de Semáforos, 4) Diseño-Construcción, 5) Elementos Prefabricados de Puentes, 6) Suelos Reforzados con Geo-sintéticos, 7) Asistencia Técnica en DIA's, 8) Flexibilidad en Servidumbres y 9) Flexibilidades en la Relocalización de Utilidades.

El Centro también colabora con el Departamento de Obras Públicas de las Islas Vírgenes EEUU como el Coordinador de Entrenamiento para de tres estrategias de EDC: 1) Mezclas Tibias de Asfalto, 2) Borde de Seguridad y 3) Flexibilidades en Servidumbres.

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- Noticias del Centro: Estudiantes de Intercambio Participan de Investigación durante el Verano P.8
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#### Making EVERY DAY COUNTS in the Caribbean

*This edition is the first in a series that focuses on the implementation activities of EVERY DAY COUNTS in Puerto Rico and the U.S. Virgin Islands.*



EVERY DAY COUNTS (EDC) is a Federal Highway Administration (FHWA) initiative to assist the States and Territories in the deployment of technologies and innovative procedures to improve the safety of our highways, protect the environment, and shorten the project delivery. Visit the FHWA EDC website for more information: <http://www.fhwa.dot.gov/everydaycounts/>.

The Puerto Rico Transportation Technology Transfer Center (PR-LTAP) is assisting the Puerto Rico Highway and Transportation Authority (PR-HTA) as Technical Oversight and Training Coordinator in the following nine EDC strategies: 1) Warm-Mix Asphalt, 2) Safety Edge, 3) Adaptive Signal Control Technologies, 4) Design-Build, 5) Prefabricated Bridge Elements, 6) Geosynthetic Reinforced Soil, 7) Enhanced Technical Assistance on Stalled ES's, 8) Flexibilities in ROW, and 9) Flexibilities in Utility Relocation.

The PR-LTAP Center is also the Training Coordinator for the three EDC strategies being implemented by the US-Virgin Islands Department of Public Works: 1) Warm-Mix Asphalt, 2) Safety Edge, and 3) Flexibilities in ROW.

#### IN THIS ISSUE

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- FHWA Proposes to Change Standard Definition and Compliance Dates in the MUTCD 2009 P.2
- Implementation of the SAFETY EDGE in the Caribbean P.4
- Center News: Exchange Students Participate in Summer Research P.8
- Design Guidelines for Modern Roundabouts P.10
- Future Seminars and Conferences P.12
- Know your Trainer P.12
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El Centro de Transferencia de Tecnología de Transportación de Puerto Rico es parte de una red de 58 centros a través de los Estados Unidos que compone el Programa de Asistencia Técnica Local (LTAP) y el Programa Tribal de Asistencia Técnica (TTAP), que permite a los gobiernos locales, condados y ciudades, mejorar sus carreteras y puentes mediante el suministro de programas de capacitación, un centro de Información, tecnologías nuevas y existentes, asistencia técnica personalizada y boletines informativos.



The Puerto Rico Transportation Technology Transfer Center is part of a network of 58 centers through the United States that comprises the Local Technical Assistance Program (LTAP) and the Tribal Technical Assistance Program (TTAP), which enable local governments, counties, and cities, to improve their roads and bridges by supplying them with a variety of training programs, an information clearinghouse, new and existing technology updates, personalized technical assistance, and newsletters.





# Newsletter El Puente

## Volume 26, Number 1, 2012



### EL PUENTE

Boletín del Centro de Transferencia de Tecnología en Transportación  
Recinto Universitario de Mayagüez, Universidad de Puerto Rico

Volumen 26, Número 1, 2012



¡Alianza Exitosa!



SafetyEDGE

#### Historias Exitosas en Adiestramientos e Implantación de las Iniciativas EDC en Puerto Rico

CADA DIA CUENTA (EDC) es una iniciativa innovadora impulsada por la Administración Federal de Carreteras (FHWA) para ayudar a los Estados y Territorios a utilizar tecnologías y procedimientos innovadores para mejorar la seguridad de las carreteras, proteger el ambiente y acortar el tiempo de terminación de los proyectos.

El borde de seguridad (safety edge), suelos reforzados geosintéticamente/sistema integrado de tecnología de puentes y flexibilidades en el derecho de vía, son tres de las iniciativas innovadoras que actualmente se están implantando exitosamente en Puerto Rico y en las Islas Virgenes.

##### A. Borde de Seguridad

El Borde de Seguridad es una solución eficaz y costo-efectiva para mitigar los accidentes relacionados al borde del pavimento. Cuando se construye correctamente, dando forma al borde del pavimento a 30°, (Continúa en la página 3)

*Esta edición es la segunda de una serie dedicada a las actividades de implantación de las estrategias de EDC en Puerto Rico y en las Islas Virgenes*

El Centro de Transferencia de Tecnología de Transportación de Puerto Rico es parte de una red de 58 centros a través de los Estados Unidos que compone el Programa de Asistencia Técnica Local (ITAP) y el Programa Tribal de Asistencia Técnica (TTAP), which enable local governments, countries and cities, to improve their roads and bridges by supplying them with a variety of training programs, an information clearinghouse, new and existing technology updates, personalized technical assistance, and newsletters.



### EL PUENTE

Newsletter of the Puerto Rico Transportation Technology Transfer Center  
University of Puerto Rico, Mayagüez Campus

Volume 26, Number 1, 2012



Successful Partnership!



SafetyEDGE

#### Successful Stories in Training and Implementation of EDC Initiatives in Puerto Rico

EVERY DAY COUNTS (EDC) is an initiative of the Federal Highway Administration (FHWA) to assist states and territories to use innovative technologies and procedures to improve road safety, protect the environment and shorten the time of completion of the projects.

Safety Edge, Geosynthetic Reinforced Soil - Integrated Bridge System Technology and Flexibilities in the Right of Way are three of the innovative initiatives currently being successfully implemented in Puerto Rico and the US Virgin Islands.

##### A. Safety Edge

The Safety Edge is an effective and cost-effective solution to mitigate pavement edge-related crashes. When constructed correctly, sloping the edge of the pavement to thirty degrees (30°) can eliminate the problem (Continued on page 3)

*This edition is the second in a series that focus on the implementation activities of EVERY DAY COUNTS (EDC) in Puerto Rico and the U.S. Virgin Islands.*

The Puerto Rico Transportation Technology Transfer Center is part of a network of 58 centers through the United States that comprises the Local Technical Assistance Program (LTAP) and the Tribal Technical Assistance Program (TTAP), which enable local governments, countries and cities, to improve their roads and bridges by supplying them with a variety of training programs, an information clearinghouse, new and existing technology updates, personalized technical assistance, and newsletters.



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## Volume 26, Number 2, 2012



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#### Herramientas ABC: Un Solo Diseño y 10,000 Puentes

La Construcción Acelerada de Puentes (ABC, por sus siglas en inglés), es una forma de construir puentes en la que se utilizan métodos innovadores de planificación, diseño, materiales y construcción. Estos métodos nuevos de construcción se utilizan de una manera segura y costo efectiva. A su vez, reducen el tiempo total de construcción y ayuda a disminuir los impactos al tráfico contribuyendo a la seguridad de todos los usuarios.

El Programa Estratégico de Investigación en Carreteras (SHRP por sus siglas en inglés) desarrolló el SHRP 2 R04, en el que su objetivo es crear estándares de diseño, construcción y reusar sistemas completos de puentes que atiendan las necesidades apremiantes de reemplazo. A la misma vez, intenta integrar de una manera eficiente los equipos modernos para la construcción.

*Esta edición es la tercera de una serie dedicada a las actividades de implementación de las estrategias de EDC en Puerto Rico y en las Islas Virgenes*


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#### ABC Toolkit: A Single Design and 10,000 Bridges

Accelerated Construction Technology Bridges (ABC) is a way to build bridges that uses innovative approaches to planning, design, materials and construction. These new methods of construction are used in a safe and cost effective. In turn, reduce overall construction time and helps reduce traffic impacts to contributing to the safety of all users.


The Strategic Highway Research (SHRP) developed the SHRP 2 R04, which aims to create standards for design, construction and reuse complete systems of bridges that meet pressing needs replacement. At the same time, attempts to integrate efficiently modern equipment for construction.

*This edition is the third of a series that focus on the implementation activities of EVERY DAY COUNTS (EDC) in Puerto Rico and the U.S. Virgin Islands.*

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Volumen 26, Número 3, 2012





**MAP-21:**  
**Millonario Estimulo Economico para Puerto Rico**


El Presidente Barack Obama, aprobó el pasado 6 de julio de 2012, la ley P.L. 112-141, titulada "Moviéndonos hacia el Progreso en el Siglo 21" (MAP-21, por sus siglas en inglés). Esta ley provee nuevos programas y fondos para estimular los sistemas de transportación, mejorar la infraestructura, crear empleos y fortalecer el crecimiento económico de la nación. MAP-21 re-autoriza el programa de asistencia federal para carreteras a nivel de la Oficina de Presupuesto del Congreso de los Estados Unidos. Esta aprobación consolida el número de programas federales de noventa (90) a menos de treinta (30), enfocándose en los proyectos de mayor importancia y relevancia nacional.


*(Continúa en la página 43)*

*Esta edición es la tercera de una serie dedicada a las actividades de implementación de las estrategias de EDC en Puerto Rico y en las Islas Virgenes*

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### EL PUENTE

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Volume 26, Number 3, 2012





**MAP-21:**  
**A Millionaire Economical Stimulus for Puerto Rico**


President Barack Obama, on July 6, 2012 approved the law P.L. 112-141, entitled *Moving Ahead for Progress on the 21st Century* (MAP-21). This law provides new programs and funds to stimulate transportation systems, improve infrastructure, generate employment and strength our socio-economic development of Puerto Rico. MAP-21 reauthorizes the federal assistance for roads program to the level of the Congressional Budget Office of the United States. This approval consolidates the number of federal programs (90) within thirty (30), focusing on major projects and national relevance.

*(Continued in page 3)*

*This edition is the third of a series that focus on the implementation activities of EVERY DAY COUNTS (EDC) in Puerto Rico and the U.S. Virgin Islands.*

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# Safety Edge

# Safety Edge Demonstration





# Safety Edge Training, Partnerships and Implementation in PR: A Success Story



**Betterroads Asphalt**

**Robles Asphalt**



# Implementation of Safety Edge in Puerto Rico and USVI



## Implementation of Safety Edge in Puerto Rico and USVI

- Submitted to Mark Sandifer, FHWA, Technology Deployment
- It specified the use and installation protocols for TransTech Shoulder Wedge Maker and Advant-Edge Ramp Champ in the implementation process of safety edge technology



### Implementation of Safety Edge in Puerto Rico and USVI

Eng. Freddie Salado (Graduate Research Assistance, UPRM)

Leilany Benejam (Undergraduate Research Assistance, Purdue University)

Benjamin Colucci, PhD, PE, PTOE, JD (Faculty Research Advisor, UPRM)

Juan C. Rivera, MSCE, PE (Safety Engineer, Puerto Rico Highway and Transportation Authority)



# Safety Edge Specifications



- ∞ *January 5, 2012: FHWA issued the “Safety Edge<sup>SM</sup> Design and Construction Guide”. This guide provides standards, guides, and specifications for the use of this technology in the design and construction of all pavement projects in the United States and Puerto Rico.*
- ∞ *January 6, 2012: FHWA issued the “Guide Specification for Safety Edge<sup>SM</sup>”. This document is intended to be used by the PRHTA in the implementation of Safety Edge<sup>SM</sup>.*





## 2. Traffic Incident Management (TIM)



- ☞ Traffic incidents, including crashes, disabled vehicles and debris on the road, create unsafe situations
- ☞ Put motorists, and responders' lives at risk
- ☞ And account for approximately **25%** of all traffic delays.



21<sup>ST</sup> CENTURY SOLUTIONS

### SHRP2 TRAFFIC INCIDENT MANAGEMENT RESPONDER TRAINING



## 2. TIM (Cont.)



- ∞ For each minute that a freeway travel lane is blocked during peak use, an estimated 4 minutes of delay result after the incident is cleared
- ∞ This estimate accounts for 4.2 billion hours per year in delays
- ∞ Additionally, the U.S. Department of Transportation Strategic Plan Fiscal Year (FY) 2010 – FY2015 reports that Americans burn more than 2.8 billion gallons of gasoline every year while stuck in incident-related traffic.





## 2. TIM (Cont.)



- ∞ The TIM training for first responders promotes:
  - A shared understanding of the requirements for safe, quick clearance at traffic incident scenes;
  - Prompt, reliable and open communications
  - And motorist and responder safeguards
- ∞ Governors, transportation leaders and incident response agencies across the country can **save lives**, time and money by promoting the **full-scale deployment** of the innovative TIM training program.



## 2. TIM (Cont.)



- ∞ TIM training program focuses on a response effort that protects motorists and responders while minimizing the impact on traffic flow.
- ∞ TIM efforts includes
  - Detecting, verifying and responding to incidents
  - Clearing the incident scene
  - Restoring traffic flow.





## 2. TIM (Cont.)



### Benefits

#### ∞ Saving Lives

- Better training leads to faster incident response and clearance
- This means fewer secondary crashes result from the original incident and less exposure to moving traffic while the incident is resolved.

#### ∞ Saving Money

- In Atlanta, improved incident clearance practices reduced secondary crashes by 69% in 12 months, saving lives and more than \$1 million.

#### ∞ Saving Time

- Well-trained responders can cut clearance time in half, decreasing delays caused by incident-related congestion.
- Train-the-trainer courses help responders learn more quickly.



## 2. TIM (Cont.)



### In Puerto Rico

#### ∞ Second TIM Workshop

- Held in march at the CIAPR in Hato Rey, San Juan
  - In collaboration with Metric Engineering of Puerto Rico, Department of Transportation and Public Works, Puerto Rico Highway and Transportation Authority and PR-LTAP
- ∞ Puerto Rico had 88 certified trainers who themselves have trained over 1,250 professionals from the emergency rapid response services



# 2. TIM (Cont.)



## In Puerto Rico (Cont.)





# 2. TIM (Cont.)



## In Puerto Rico (Cont.)



### An Awesome Experience!

#### 2nd Traffic Incident Management (TIM) Workshop

"Congratulations to our TIM Workshop Trainers for a work well done!"



Jeff Bruce H. Varner  
BHVarner & Assoc.



Grady Carrick, PhD  
FHWA

On March 8th and 9th the second Training-the-trainer workshop on Traffic Incident Management was celebrated at the headquarters of the College of Engineers and Surveyors of Puerto Rico (CIAPR, by its Spanish acronym) in Hato Rey. This workshop is part of the National Rapid Response of Traffic Incidents of the United States Federal Highway Administration (FHWA). In Puerto Rico, this workshop is administered in collaboration with Memic Engineering of Puerto Rico, the Department of Transportation and Public Works (DTPW), the Puerto Rico Highway and Transportation Authority (PRHTA) and the Puerto Rico Local Technical Assistance Program (PR-LTAP).

In early 2016, Puerto Rico had 89 certified trainers who themselves have trained 1,257 professionals from the emergency rapid response services of the Island. Through these workshops participants have learned the best strategies to avoid the occurrence of a second incident at the emergency response site. In addition, they had a group discussion about potential solutions for the quick and safe clearance of the site by means of teamwork and by applying the protocols learned as part of the workshop. All of this workshop was done using model scenes by using a set of plans and miniature drawings,

combined with a field activity in which the participant is trained to identify the main parts and components of a firefighting truck with their proper location, as well as the signs and safety cones applicable in a typical incident.

The main trainers of the workshop were Chief Bruce H. Varner from BH Varner & Associates, and Dr. Grady Carrick, from the FHWA. Joining them were Eng. Felipe Luyanda-Aranda from Memic Engineering, Eng. Josue Cruz from the Intelligent Transportation Systems program of PRHTA, Eng. Andrés Alvarez from the Puerto Rico FHWA division and Dr. Benjamin Colucci from PR-LTAP.



#### TIM Workshop Collaborators 2016

#### TIM Benefits

##### Save Lives

- Safer and more effective response techniques at the incident scene
- Reduce exposure of emergency response personnel reduces injury and fatality levels

##### Save Money

- Less secondary crashes
- Reduced insurance claims
- Less impact of traffic to emergency vehicles
- Savings for emergency response agencies

##### Save Time

- Faster clearance time of incidents reduces traffic delays





# 3. Smarter Work Zones



**Smarter Work Zones effort focuses on two strategies:**

1. Coordination of roadway construction projects to reduce work zone impacts
2. Using technology applications to dynamically manage traffic in the work zone environment





# 3. Smarter Work Zones (Cont.)



- Effective traffic management during construction is necessary to:



- These operational and safety benefits can be significant, especially in **high-impact areas** such as metropolitan regions and corridors and during special events



# 3. Smarter Work Zones (Cont.)



## Road Project Coordination

- ∞ Involves coordination within a single project and/or among multiple projects within a corridor, network, or region, and possibly across agency jurisdictions, to:
  - Minimize work zone impacts
  - Produce time and cost savings
  
- ∞ This internal and external agency road project coordination results in:
  - Reduced numbers of street cuts
  - Earlier identification of project impacts
  - Greater ability to reduce and manage traffic disruptions from road work
  - Cost savings
  - Better quality road surfaces
  - More satisfied customers.



# 3. Smarter Work Zones (Cont.)



## Technology Applications

### Queue Management

- Can alert drivers to a line of vehicles ahead caused by a work zone so they can slow down safely.

### Speed Management

- Variable speed limit (VSL) dynamically manage work zone traffic based on real-time conditions such as congestion and weather
- Combining VSL with automated enforcement can increase driver compliance with displayed speed limits

- Both queue and speed management use a range of technologies for detection, including Bluetooth® sensors and probe vehicles.





# 3. Smarter Work Zones (Cont.)



## Current State of the Practice

- ∞ Road project coordination is being used successfully from coast to coast in metropolitan areas and along interstate corridors.
- ∞ According to FHWA's Work Zone Management Program Web-based compendium of resources, VSLs or advisories have been used on at least 30 interstate corridors in 14 states.
- ∞ In addition, at least 10 states, including Michigan, Minnesota, Oregon and Washington, have mature queue management systems that generate accurate and dependable results.



# Major Activities Associated with EDC



- ∞ EDC Exchange, webinars, workshops, symposium and seminars in Puerto Rico and USVI
- ∞ EDC Technical Oversight in PR and USVI Implementation Plan
- ∞ Incorporating EDC articles in bilingual Newsletter- "*El Puente*"





# Conclusions



1. The EDC implementation plan in Puerto Rico is progressing positively as expected.
2. FHWA Exchange Program and related webinars have provided a healthy transition in the implementation of EDC in Puerto Rico.
3. The exchange of knowledge and experience gained by undergraduate and graduate students from UPRM and Purdue University has motivated them to continue their professional career in transportation, does increasing the workforce in this discipline.





# Conclusions (cont.)



4. The private sector has been pro-active in collaborating with the implementation of EDC in Puerto Rico.
5. The key for success of EDC implementation in this 1<sup>st</sup> Phase has been effective communications between PRHTA , FHWA, PR-LTAP, administrative agencies and the private sector officials.





# Lessons Learned



- ∞ The importance of identifying the best resources and training tool for a particular EDC initiative and audience.
- ∞ A motivated and actively participating audience is crucial
- ∞ Quality and excellence is our trademarks, in seminars, workshops, symposiums, task force.
- ∞ Consistency, Practice what you preach!





# Available EDC tools published by FHWA



FHWA News | Accelerating Innovation | Every Day Counts

Find an Innovation | Apply for a Grant | Get Engaged | Every Day Counts | STIC Network

## Every Day Counts



### NEW VIDEO Restoring the Skagit River Bridge

Decision when that bridge got knocked down left you in Washington State? Join the history of how the Washington State DOT and FHWA worked together to quickly restore service to the area and award two Every Day Counts Innovation awards.

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### What is EDC?

Every Day Counts (EDC) is a state-based model to identify and rapidly deploy proven and undervalued innovations to shorten the project delivery process, enhance roadway safety, reduce congestion and improve environmental sustainability. [Read more.](#)

EDC-3 Innovations (2015-2016)

EDC-2 Innovations (2013-2014)

EDC-1 Innovations (2011-2012)

### Featured

**U.S. DOT Announces \$2.47 Billion for Innovative Projects**  
The Federal Highway Administration (FHWA) announced funding for projects that will speed deployment of innovative road and bridge work in NE, PA, and WA. [Read more.](#)

The January/February innovator is here



## EDC News

**February 27, 2015**  
Illinois Transportation Conference Features EDC

**February 20, 2015**  
Traffic Incident Management Training gains Momentum

**February 13, 2016**  
Florida Focuses on Local Agency Program  
[More EDC News](#)

### Events

**Sequential Flashing Warning Light System**  
ASSTIC Innovation Initiative webinar, February 19, 2015, 2:30 to 4 pm ET

**Road Diets: Improving Safety for All Road Users**  
Tuesday, March 3, 2015, 1:00 to 2:30 pm ET

**EDC Exchange**  
series of web based presentations with in-person group participation

**Innovation Webinar Series**

### Stay Connected

Sign up to receive EDC News and Innovator newsletters.

First Name

Last Name

Work

PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION, CENTER FOR ACCELERATING INNOVATION

U.S. Department of Transportation  
Federal Highway Administration

# EDC News

Keeping You Informed About the Every Day Counts Initiative

### Innovation of the Month:

## Geosynthetic Reinforced Soil-Integrated Bridge System

Geosynthetic reinforced soil-integrated bridge system technology, an Every Day Counts innovation, is helping transportation agencies build durable, low-cost structures with readily available equipment and materials.

For its first GRS-IBS project, the Delaware Department of Transportation chose the replacement of the two-lane Chesapeake City Road Bridge in New Castle County that was nearing the end of its service life. One reason the agency selected GRS-IBS for the 2013 project was the need to complete it quickly to minimize road closure time and use of a detour route. Geotechnical and hydraulic evaluations also indicated GRS-IBS was feasible for the site.

Crews built the GRS abutments with local materials and topped them with a precast concrete superstructure. The bridge was equipped with an instrumentation system designed by the University of Delaware to monitor its long-term performance.

Transportation professionals got an up-close look at GRS-IBS construction during a 2013 Delaware DOT showcase featuring the bridge. They visited the construction site after attending a workshop on the design, construction and monitoring plans for the bridge. The Delaware DOT built a second GRS-IBS project in 2014 and plans to use GRS-IBS for applicable bridge replacement projects in the future.



February 27, 2015

### Upcoming Events

**Road Diets: Improving Safety for All Road Users**, FHWA Webinar, March 3, 2015, 1 to 2:30 p.m. ET. [Register here.](#)

**Best Practices in Programmatic Agreements**, Every Day Counts Webinar, March 17, 2015, 2:30 to 4 p.m. ET. Registration begins first week of March. [Details here.](#)

**Road Diets**, Every Day Counts Exchange, April 9, 2015, 2 to 4 p.m. ET. Contact the EDC coordinator at your local [FHWA division office](#) for details on how to participate.

### About EDC

**Every Day Counts**, a state-based initiative of the Federal Highway Administration's Center for Accelerating Innovation, works with state, local and private sector partners to encourage the adoption of proven technologies and innovations to shorten and enhance project delivery.





# Available EDC tools published by FHWA



## INNOVATOR

Accelerating Innovation for the American Driving Experience

### FHWA Launches New Round of Every Day Counts Innovations

**What's New?**

**EDC2!**

The Federal Highway Administration has rolled out a new set of innovative strategies and processes under its Every Day Counts program that help address the key need to get highway projects funded and open to the public.

For the first time ever, FHWA will work with complete state agencies and the design and construction industries to deploy the 23 innovations, which range from contractor management techniques to paving machinery that uses GPS technology to build high-quality engineering assets.

Every Day Counts, which began in 2010, is achieving significant results on the first round of technologies for delivery projects. Every state transportation agency has applied one or more of the technologies, and many are now widely used. More than 40 states, for example, have used the Safety Edge™, a paving technique that sears the roadway edge to allow drivers who drift off the road to drive safely.

To promote EDC2, FHWA has formed teams of experts in 20 state highway departments across the country to help leading technologists and innovators.

Through state agreements, also part of the first round of Every Day Counts, we've set streamlined approval and delivery requirements for EDC2. Some of the newly developed agreements will be applied in additional months or expanded to include regions. The agreements will be co-creating to increase the efficiency and effectiveness of the highway development process while maintaining appropriate consultation of the environment.

FHWA has developed a three-pronged strategy to help local public agencies navigate the complexities of the Federal-Aid Highway Program. These strategies for locally administered Federal-Aid projects include confidence and qualification-based programs, industry delivery orders to quantify contractor contacts and stakeholder commitments. Using these strategies can reduce the amount of research states need to present and make it easier for local agencies to follow federal regulations and guidelines.

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## INNOVATOR

Accelerating Innovation for the American Driving Experience

### Technology to Local Level

With FHWA's help, state agencies are working with local agencies to help them understand and use federal funding more effectively.

The delivery team and FHWA's Every Day Counts program are working together to help local agencies understand and use federal funding more effectively.

The Center for Accelerating Innovation is helping states and localities understand and use federal funding more effectively.

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  - Adaptive Signal Control Technology Makes Inroads
  - Virginia Finds Success in Rapid Personnel Report
  - FHWA's Make a Difference in Minnesota Bridge Project
  - Four Techniques Advance Innovation Deployment
  - Calendar



# Additional Information regarding EDC Projects in Puerto Rico and USVI



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## Welcome to the Puerto Rico Transportation Technology Transfer Center Website

**Para Español Pulse Aquí**

### Welcome to the Puerto Rico Transportation Technology Transfer Center

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In order to promote research and development in transportation related activities in Puerto Rico and the United States/Virgin Islands, the Puerto Rico Transportation Technology Transfer Center was created on April 1, 1995 in the Department of Civil Engineering and Surveying of the University of Puerto Rico, Mayagüez Campus.

The Center is one of 68 centers throughout the United States under the Local Technical Assistance Program (LTAP). The Puerto Rico Transportation Technology Transfer Center provides training, research, and technical assistance to local officials in the 67 municipalities, the Puerto Rico Department of Transportation and Public Works and the Virgin Islands Department of Public Works.

This website serves as a communication tool with our stakeholders to present information about the activities, services, and programs developed to improve transportation activities by transferring the latest technology, research, and developments to public officials.

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# Thank you for the opportunity!

