



EL PUENTE

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



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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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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.



Message from the Director



Greetings to our readers in this second edition of *El Puente Newsletter* for 2012. I would like to acknowledge the collaboration of Engineer Carlos Rexach, president of the Institute of Civil Engineers of Puerto Rico, to Engineer Barry L. Raeburn, Advance Infrastructure Technologies (AIT) Bridges and Engineer Cenilda Ramirez in environmental consultant of TetraTech, for their collaboration in writing articles of interest to municipalities and local transportation agencies in Puerto Rico on provisions of new laws, regulations and technologies.

We begin this issue with the article on *Accelerated Bridge Construction (ABC) Toolkit titled: A Single Design and 10,000 Bridges*. This article provides a detailed explanation of the phases that make up this innovative technology, as well as a brief demonstration of the time required for its implementation. We continue with an article prepared by AIT Bridges related to the *Next Generation of Bridges*. This article presents a new product which uses arc-shaped tubes of carbon fiber to replace deficient bridges and sewers. This technology also qualifies as Accelerated Bridge Construction (ABC) and is aligned to the *Every Day Counts (EDC)* initiative sponsored by the Federal Highway Administration (FHWA).

In our third article we make a deserved recognition to Freddie Salado and Josué D. Ortiz, emerging leaders in transportation for their achievements, accomplishments and contributions to the transportation engineering field at an early stage of their respective professional career.

In this edition, Eng. Ramírez presents the experiences and lessons learned from the firm TetraTech on innovations and new environmental regulations for transporting solid waste in the Puerto Rico highways.

Furthermore, this second edition incorporates an article entitled *Effects of the New Permits Law to the Development of Infrastructure*. In this article, Eng. Rexach presents the provisions of the New Permits Law, the various offices that make up the Integrated Permit System (SIP, by its acronym in Spanish), the role of professionals and authorized inspectors and challenges that have had the petitioners, the municipalities and administrative agencies during the transition of implementing the new law.

In our section Know your Instructor, we highlight Eng. Ismael Castillo—Bernal that has been instrumental in our seminar program since 1994. This edition ends with good news the approval by the USA Congress of the New Legislation *Moving Ahead for Progress in the 21st Century (MAP-21)*.

Finally, the electronic version of **El Puente Newsletter** is available in www.uprm.edu/prt2. You can contact us to submit technical papers aimed to transportation, municipal interest with emphasis on highway safety, workforce development and infrastructure management officials.

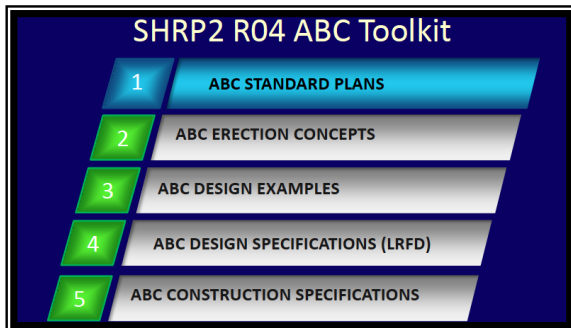
I hope that the selection of articles in this edition of **El Puente Newsletter** are of benefit to readers and other professionals in local transportation agencies in the 78 municipalities of Puerto Rico and the US Virgin Islands.

Benjamin Colucci Rios



ABC Toolkit: A Single Design and 10,000 Bridges

This project was divided in four phases beginning in 2008 and ending in 2013. Each of those phases had tasks that needed to be completed and reviewed before they were able to move forward to the next phase.



As a result of this research program, tools for rapid replacement of bridges has taken a life. These tools includes designs of ABC standards to be used as reference for the accelerated replacement and construction of bridges.

These standards have five (5) components listed below:

ABC Standard Plans

1. *Superstructures* – simple continuous spans from 40 ft. to 130 ft.
2. *Substructures*: Abutments and Wing walls
 - ◆ Semi Integral Abutments
 - ◆ Integral Abutments
 - ◆ Inline or U-type Wing walls
 - ◆ Pile Foundation and Spread Footing options
3. *Complete Piers*
 - ◆ Precast Conventional Pier
 - ◆ Precast Straddle Bent
 - ◆ Drilled Shaft and Spread Footing Options



ABC Erection Concepts

Along with the standard plans, there are drawings regarding the erection of bridge components. Whether it is using conventional cranes or erection using ABC construction technologies, this toolkit has it all covered.

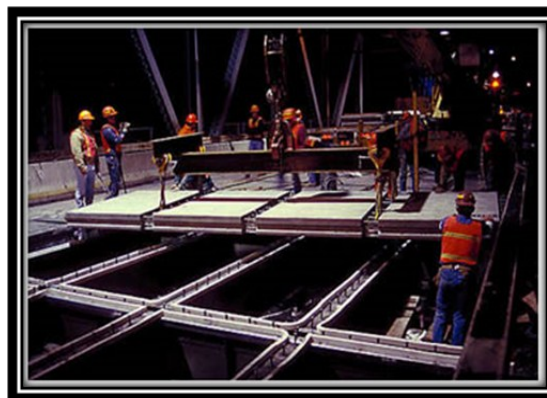
1. *Conventional Cranes* (Factors to consider):
 - ◆ Weight of Module
 - ◆ Pick Radius Crane
 - ◆ Set-Up Locations
 - ◆ Ground Access
 - ◆ Truck Access for Delivery



2. *ABC Construction Technologies* (Where access for cranes is limited):
 - ◆ Above driven carriers
 - ◆ Launched temporary bridge
 - ◆ Transverse gantry frames
 - ◆ Longitudinal gantry frames

ABC Design Specifications (LRFD)

As part of the R04 SHRP2 found some flaws in the current specifications for LRFD bridge design. Recommendations were made to address these limitations.



ABC Toolkit: A Single Design and 10,000 Bridges (Cont.)

ABC Design Examples

The design examples provide step-by-step guidance on the overall structural design of bridge components for ABC. The toolkit provides three design examples for pre-fabricated systems:

1. Decked Steel Girder
2. Decked Precast Pre-stressed Girder
3. Precast Pier

The design is based on the following criteria:

- ◆ AASHTO LRFD (5th edition)
- ◆ Supplemental ABC Criteria



Demonstration of the tools to ABC

The first field demonstration was held last fall in the replacement of the bridge "Keg Creek Bridge" in Pottawattamie County, Iowa

The total time to complete the reconstruction project was estimated at six (6) months and was reduced to two (2) weeks with a total cost of \$ 2.7 million.

The new bridge is 207 feet long and 47 feet wide. It also contains a number of innovative features such as: the preformed concrete floor on steel beams, concrete columns and highly resistant preformed on the boards.

The following photo gallery is a timeline of the reconstruction project from October 7th through October the 30th:



Next Generation of Bridges

Low Maintenance, Corrosion free Carbon-fiber arches raise the bar for bridge design

The *Next Generation of Bridges* are composite tubes filled with concrete that produce low maintenance, longer lasting, corrosion resistant structures.

By **BARRY L. RAEBURN**
AIT Bridges

One great challenges facing engineers are the costs associated with aging built infrastructure. Bridges pose a particular problem with costly regular maintenance requirements. Deteriorated bridges are unsafe for traffic and either become load posted due to limited structural capacity or they cannot accommodate current traffic volumes.

A new product available from AIT Bridges (www.aitbridges.com) uses carbon fiber arch tubes for replacing deficient bridges and culverts. These bridges are lightweight for installation and offer significantly lower-maintenance while providing for a 100+ year service life. This Cast-in-place (CIP) concrete construction method streamlines installation process, enhances material performance for superior long term durability creating longer-lasting bridges compared to traditional construction methods.

This technology developed over a 10-year period at The University of Maine and produced by AIT Bridges, is sometimes known as a Bridge-in-a-Backpack due to the lightweight nature of its raw materials. This construction product is highly resistant to the harsh corrosive environmental elements that causes the decay of transportation infrastructure. This product was engineered design for simplified construction and rapid replacement of small-to medium-sized bridges, culverts and overpasses. Past installations have taken as little as two weeks to complete.

Implemented into an Accelerated Bridge Construction (ABC) Program, this technology can reduce traffic congestion and help shorten lengthy construction schedules satisfying the requirements of the EDC Initiative sponsored by USDOT/FHWA.. After final engineering design is complete, manufacture and shipment

can occur in less than 30 days. The system is designed according to any load requirements including, AASHTO LRFD, ASCE 07, and any Custom load requirements for highway, rail, and pedestrian overpasses.

The bridge system was first successfully used in 2008 with the Maine Department of Transportation. Since then, bridges have been built in Maine, Massachusetts and New Hampshire, and Michigan with many active bridge design projects across the US.



Photo Source: www.aitbridges.com

How this technology works

AIT Bridges supplies a lightweight, corrosion-resistant construction technology using carbon fiber and polymers to form composite arches that serve as the main structural supports for a cast-in-place (CIP) concrete bridge. The carbon-fiber composite provides external reinforcement to protect and strengthen the concrete structure for increased durability, completely eliminating the need for steel rebar in the girders.

The structural redundancy and predictable performance of the bridge ensures long-term safety while extensive laboratory testing confirms that the technology exceeds bridge and building design code requirements.



Next Generation of Bridges (Cont.)

The bridges are custom designed according to specific site conditions. Each arch is typically a tube of 12 or 15 inches in diameter, and can be up to 75 ft in length. Arches begin as sleeves of braided glass



and carbon fibers. The fiber sleeve is inflated to form a tube, which is then bent into an arch and infused with a durable resin to stiffen it into shape. Manufacturing takes just a few hours, producing a hollow arch tube that weighs less than 250 lbs. The arches are shipped hollow, eliminating the need for heavy equipment, cranes and large crews.

Construction on site is very simple. Each hollow arch can be placed with basic equipment or hand carried. Once set in the footers, the arches are covered with composite decking material and pumped full of concrete to form the main bridge supports. The custom-designed arches act as structural reinforcement and stay-in-place formwork.

Bridge-in-a-Backpack can support a variety of designs such as highly skewed geometries and single and multiple spans up to 75 ft over roadways, railways, valleys, gullies, water crossings and other obstacles requiring a bridge. The largest structure built to date is a 55-foot wide, 54-foot span in Caribou, Maine.

Corrosion resistant

One of the major benefits of the technology is that AIT bridges are highly resistant to harsh corrosive environments. Prolonged exposure to road salts and sea spray is a major deterioration factor for bridges. Corroded steel reinforcement significantly reduces the load-carrying capacity of concrete bridges. With this design, a durable external reinforcement

encases the concrete, strengthens it, and acts as a protective shell, increasing the bridge's lifespan by keeping out harmful chemicals and moisture.

For these reasons, the American Association of State Highway and Transportation Officials' (AASHTO) Technology Implementation Group (TIG) has selected the AIT Bridge system as a "Focus Technology". AASHTO TIG selects ready to use new technologies as Focus Technology when it is capable of adding value and benefits to the nation's transportation system. The bridge system is designed according to any load requirements including, AASHTO LRFD, ASCE 07, and any Custom load requirements for highway, rail, and pedestrian overpasses.

Furthermore, AASHTO states that this technology offers advantages over traditional bridges in environmentally sensitive areas, and in locations where it isn't feasible to bring in heavy construction equipment, which also saves on shipping or installation costs. Additional benefits of this bridge system are that they can be less expensive over time with a reduced need for protective coatings, they can last longer in corrosive environments, and can produce a lower carbon footprint.

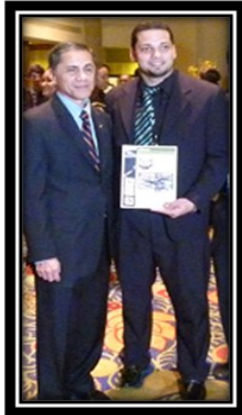
The ASCE awarded this year the Bridge-in-a-Backpack technology with the prestigious Charles Pankow Award for Innovation. Also, the American Council of Engineering Companies (ACEC) honored the bridge built in Maine with an Engineering Excellence Award.



Recognition to Emerging Leaders in Transportation

Veteran at the helm of the ITE

The Transportation Technology Transfer Center recognize Josué D. Ortiz-Varela, a distinguished student sub-graduate of the University of Puerto Rico, Mayaguez Campus (UPRM), who recently became the new President of the Student Chapter of the Institute of Transportation Engineers (ITE) for the academic year 2012-2013.



It should be noted that Ortiz-Varela is part of the extended Transportation Center family, working in a various administrative and technical tasks. Some of their collaborations, Varela Ortiz serves as Assistant Editor of **El Puente Newsletter**. Similarly, collaborated with the Federal Highway Administration (FHWA) and the Highway and Transportation Authority (ACT, for its acronym in Spanish) in the launch and implementation of the Technology Initiative "Safety Edge" in Puerto Rico.

Ortiz's selection to the presidency of the of the ITE Student Chapter is a feat only addition to the valuable contributions that this young university student has made in our campus. From 2008 to the present, Ortiz-Varela is an active member of the ITE Student Chapter and the American Society of Civil Engineers (ASCE). During the past three years, Ortiz-Varela was part of the Director Board of the ASCE UPRM Student Chapter, and in that period he was selected Captain of the Balsa Dome Competition as part of the ASCE Annual Competitions



(Southeast Region) held at the University of Auburn, Alabama. In this competition, the representation of UPRM, won a historic third place for the first time in UPRM history.

Such a feat motivated Ortiz-Varela to continue participating in the student chapter and during this academic year 2011-2012, Ortiz-Varela along with a delegation of UPRM's civil engineering students set off for the city of Tallahassee, Florida and won the "First Place Overall" in the competition, consecrating the UPRM as the Champion University of the Southeast Region of the United States, a feat that is made for only by the second (2) time in the one hundred (100) years of college history.

Moreover, during the summer of 2011 Ortiz-Varela held an internship at the University of Rhode Island (URI) as part of the Hispanic



Serving Institutions
Dwight David Eisen-

hower Transportation Fellowship Program (HSI DDETFP) sponsored by the Federal Highway Administration (FHWA). In turn, Ortiz-Varela attended to the Ninety-First



Annual Transportation Research Board (TRB) Conference of the of the National Academy of Sciences held in Washington, DC, in January 2012.

Our Center has served as a mechanism to train and motivate student leaders like Josué, as they continue their careers in the field of transportation. Undoubtedly, Josué is a natural leader with visions and goals that go beyond the standards set forth in our civil society. We recognize and are confident in their ability to lead the student chapter of ITE and achieve



Emerging Leaders in Transportation (Cont.)

great success both personal and institutional in the area of transportation.



Our sincere congratulations on such wonderful feats.

Well deserved!

With a firm step forward

One of the biggest challenges for young people is, many times, how to decide and select the profession that meets your expectations and keep evolving. In addition to being focused, should strive to obtain a solid academic preparation and face the challenges of working life ahead of this millennium.

The student Salado Freddie Martinez had a goal of completing their studies and obtain a degree of Bachelor of Science in Civil Engineering at the University of Puerto Rico, Mayaguez Campus. By 2010, decided to continue his graduate studies at the university in order to achieve a Master of Science specializing in Transportation Engineering.



Before the end of his Bachelors Degree, Salado begins to engage in the transportation making his first comparative analysis of travel time on state highways PR-66 and PR-3. Then a simulation of the intersections of the PR-2, as part of projects funded by a Public Private Partnership (APP, for its acronym in Spanish) in order to re-configure and optimize these intersections.



Upon entering the Master's Program, new doors were opened to the graduate student where he could demonstrate professional leadership. One project was the analysis of the performance measures of Highway PR-22 for a APP. After a study of *Red Light Running* at the intersection of Highway PR -2/Cll Los Vélez, where he collaborated with doctoral student Fabiola Buitrago in data collection phase of their research project. Seeing the passion of the student performance and graduation, the Transportation Center decides to offer him a job offer and as part of their work group, he had the opportunity to conduct research in the area of transportation, professional seminars and work as Editor Assistant of **El Puente Newsletter**.

Emerging Leaders in Transportation (Cont.)

By June 2011, the student is hired by Dr. Felipe Luyanda for a transportation study in the municipality of Cabo Rojo, Puerto Rico where he studied parking lots, intersections, traffic



flow, among others. Then he gets the opportunity to work directly in efforts to Every Day Counts (EDC) Initiatives, which were established by the Federal Highway Administration (FHWA). Since that time, he visited various rehabilitation and construction projects in Puerto Rico (PR) and the Virgin Islands (USVI) where he worked with the initiatives known as *Safety Edge* and *Warm Mix Asphalt* (WMA).

Entering a new phase of his career, graduate student succeeds in exposing its first technical seminar in the city of Ponce, Puerto Rico, where he presented the topic *Installation Safety Guidelines for Edge Devices* and had the opportunity to participate in the technical panel questions of the seminar.



Then, working with the WMA Initiative, the student decides to use it as his masters research topic entitled *Laboratory Analysis and Evaluation of Additives for Warm Mix Asphalt Characterizing in Puerto Rico*. As part of its improvement as a student and engineer, he had the opportunity to participate in the symposium

held in St. Thomas, Virgin Islands, where he presented the paper entitled *Laboratory Characterization of Warm Mix Asphalt Additives in Puerto Rico*.



It should be mention, both Freddie and Josué, were selected by the Student Chapter of the Institute of Transportation Engineers (ITE) to represent our campus in the Annual Competition held in Daytona, Florida, called *2012 ITE Traffic Collegiate Bowl*. For that reason, the Transportation Center congratulates both students for their excellent performance in the Mayagüez Campus, for their professionalism and leadership recognized both locally and internationally.



Both students have taken advantage of the opportunities that the Transportation Center has offered, in which they have applied the concepts learned in the classroom and have proven their skills as excellent professionals and emerging leaders in transportation.

Well deserved!



State and Federal Regulations for the Transport of Solid Waste in Puerto Rico

The transportation of solid waste is an essential element that must be considered in every project. This activity should focus on safeguarding the security of all users of transportation infrastructure that is exposed to solid waste and also to meet the commonwealth and federal regulations for the protection of our environment. Why are these laws and regulations established? Which ones are the requirements? What are the benefits of compliance?



Around 1960s began to emerge a concern about communities' rapid growth and development, and its effect on Puerto Rico natural resources and the environment. The House of Representatives created a Special Commission focused on the conservation of the natural resources. The result of these studies led to the development of the Natural Resources Auxiliary Secretariat ascribed to the Public Works Department. Even though this Secretariat attended the environmental problems that confront Puerto Rico, it was imperative to formulate an environmental public policy for the island.

Based on that concern, law #9 of June 18, 1970 to create the Puerto Rico Environmental Public Policy and the Environmental Quality Board (PREQB), was signed in order to establish a public policy that encourages a desirable and convenient harmony between man and his environment, to encourage efforts to prevent or eliminate any environmental damage, and to preserve the human health.



A diversity of programs and regulations related to the protection and conservation of the environment and its natural resources such as air, water and land were developed. The PREQB's Land Pollution Control Department was established to develop and enforce regulations related to the proper and appropriate handling of hazardous and non-hazardous solid waste that is generated on the island. The first regulation developed for these purposes was settled on March 5, 1982 in the Department of State and had specific provisions for the adequate management of waste generators, transporters and disposal facilities. The maritime, air, or land transportation of solid waste, required to have a "manifiesto", while the waste is transported until it is finally disposed.

Prior to the selection and contract of a company to provide solid waste transportation services it is extremely important to verify, that the company meets all the state and federal laws and regulation's requirements For non-hazardous solid waste, the Rule 643 (Non-Hazardous Solid Waste Collection or Transportation Permit requirements) of the "Non Hazardous Solid Waste Management Regulation" to operate services of collection or non-hazardous waste transportation"



The specific requirements for the transportation of non-hazardous solid waste permit applications includes:

(1) the Public Service Commission authorization copy or evidence of having requested it, (2) an Operation Plan, (3) Emergency Management Plan, (4) Public Liability Insurance including the transportation of used oil, and (5) any other document that requested by



PREQB. The database of the Emergency Response Notification System of the Environmental Protection Agency (USEPA), shows that from 1988 to 1992 occur on average nineteen (19) transportation accidents on a daily basis which are related toxics chemical.

The USEPA under the authority of the Resource Conservation and Recovery Act (RCRA), regulates the hazardous waste transportation (40 CFR 263) in coordination with the requirements of the Hazardous Material Transportation Act (HMTA), and all laws enacted by the United States Department of Transportation (DOT). Eight (8) requirements of the mentioned regulations are:

1. Obtain an EPA identification number submitting the hazardous waste activity notification form (EPA 8700).
2. Submit copy of the specialized cargo transportation certificate issued by the Public Service Commission (CSPs) to each transport vehicle (if applicable).
3. Complete the Hazardous Waste Transportation Services Operation Permit Request application including form JCA HW-1 (Rev. Dec - 2010), as established by the I-905 of the Hazardous Solid Waste Control Regulation

4. Complete and submit the PREQB forms JCA HW-2 and JCA HW-3 (Rev. Dec - 2010).
5. Develop and submit PREQB, a detailed Operation Plan and an Emergency Management Plan that meets the requirements of the Hazardous Solid Waste Regulation. The Operation Plan shall include labeling, signage of the truck or vehicle, evidence of using suitable containers, spill management to protect the environment and human health, notification to the National Response Center, “manifiesto” handling, and at least three years record keeping procedures.
6. Evidence of compliance with Article 4, Subsection B-3, the Environmental Public Policy Law 416
7. Submit a certificate of the civil liability insurance including damage to property and people coverage.
8. Copy of the Federal Department of Transportation (DOT) hazardous materials registration certificate.



How to identify the type of material, classification, quantity, or the characteristics of the spilled material? The Department of Transportation Department of the United States, to protect human health and the environment, requires an identification plate of the type of material that is being transported, to any vehicle used to transport materials (explosives, toxic,



State and Federal Regulations for the Transport of Solid Waste in Puerto Rico (Cont.)

radioactive or inflammable) or that contains more than one hazardous material or more than 1,000 pounds of material. This plate should be placed on all four (4) sides of the transportation vehicle to identify the type and dangerousness of the material in the event of a spill. DOT has nine (9) different classifications of dangerousness, these are: explosives, gases, flammable liquids, flammable solids, oxidizing, hazardous materials, biological risk, radioactive, corrosive or other regulated materials.



If the permit request includes shipping, a copy of the U.S. Coast Guard approval letter must be included. Any other information required by the Hazardous Waste Permit, Land Pollution Control Department of land PREQB Department. If you still ask yourself... why compliance with these regulations is important?, remember that more solid waste transported, greater risk of contamination to the environment and to health... imagine taking into account the Puerto Rico high rates of car accidents.

A spill with the potential to polluting the air, the water, the soil or even worst ... causing an adverse effect on the human life, can occur as a consequence of a solid waste transportation vehicle accident. If the vehicle that transports the solid waste does not



contain proper labeling, then the content or material characteristics will be unknown, and therefore the best management practices to prevent any kind of pollution and protect the human health will not be applied.

Protect your Life... Take Care of the Environment, promote Environmental Protection Laws compliance!!



Collaborators:

Cenilda Ramirez-Santana, MS in Chemical Engineering, PM. (Tt), Larissa Rivera, BS in Environmental Engineering (Tt), Evelyn Zapata, EIT Civil Engineer (Tt), and Javier Salgado-Trabal, MP,REM (Aqua Clean Ships Caribe Inc.)



USVI Every Day Counts (EDC) Symposium

During the period of May 16-18, 2012 a Research to Practice Symposium on the Implementation of EDC Initiatives in the Virgin Islands was conducted at the facilities of the University of the Virgin Islands (UVI). In this symposium, 19 local, national and international experts were invited and participated in different topics associated with three (3) EDC Initiatives, namely Safety Edge, Warm-Mix Asphalt (WMA) and Flexibility in Right of Way (ROW).



Among the speakers that represented the local, state and federal government included John P. de Jongh, Jr., Governor of the USVI; Darryl A. Smalls, Commissioner of the Department of Public Works, USVI; Eng. Carlos C. Machado, Assistant Division Administrator of the Federal Highway Administration (FHWA); representatives from the Secretary of Transportation and Public Works of the Commonwealth of Puerto Rico. Dr. Ray Brown, Director Emeritus of the National Center for Asphalt Technology (NCAT) was the keynote speaker at the Symposium with an outstanding presentation entitled *Facilitating Research Implementation*. Dr. Brown exchanged with the audience his practical perspective of the present and future in implementing research results in a practical and cost effective matter.

During the two days, over 70 participants benefited from the symposium in the latest technologies associated with these initiatives, success stories, lessons learned and practical guidelines to assist USVI Department of Public Works Officials in the implementation of these initiatives in the ex-

isting and proposed highway network. The speakers representing the public and private sector as well as the academia have prepared outstanding technical presentations associated with all these innovative initiatives that will have a long lasting technical value.



This Symposium demonstrated the importance of implementing these three EDC Initiatives to assist transportation agencies in their mission in providing safe and smooth roads, while at the same time accelerating project delivery and protecting the environment.



The next generation of EDC Initiatives most continue their commitment to innovation, imagination, invention and ingenuity, to achieve the goal to promote safety, infrastructure management, workforce development and excellence in transportation.



Decade of Action for Road Safety 2011-2020

Benjamín Colucci

Decade of Action for Road Safety in Puerto Rico Campaign Spokesperson

The Puerto Rico Transportation Technology Transfer Center within the Department of Civil Engineering and Surveying, at the University of Puerto Rico, Mayagüez Campus (UPRM) in its commitment to education and awareness to road safety, conducted a series of activities including:

- ◆ Alliance's campaign Awareness Week in Highway Construction Zones
- ◆ Alliance and local activities as part of the First Anniversary celebrations of the Decade of Action for Road Safety



- ◆ Drafting of the technical paper entitled "Innovative Programs for Awareness Road Safety in Puerto Rico"
- ◆ Presentations in Puerto Rico and Colombia on the impact of these initiatives at local and international

The significant features of these activities are summarized below.

National Awareness Week in Highway Construction Zones

The Puerto Rico Transportation Technology Transfer Center (PR-TTTC) joined the National Awareness Week in Highway

Construction Zones, held from 23 to 27 April 2012, holding a press conference with the slogan Do not Go "Esmandao" in Highway Construction Zones! Intelligently Drive to Arrive Alive at your destination.



In the press conference attended among others MAPFRE Foundation, MADD, Foundation Luis A. Señeriz, the Student Chapter of the Institute of Transportation Engineers (ITE), the Commission for Traffic Safety (CST, by its acronym in Spanish), the Federal Highway Administration (FHWA), the Puerto Rico Police Department, the radio broadcast WABA La Grande, the Mayaguez Movement for

the Development of the West, and the FIESTA Program from the UPRM.



Decade of Action for Road Safety 2011-2020 (Cont.)

In the press conference were presented statistical data related to crashes and fatalities in construction zones, corrective measures and other initiatives that promote road safety. These agencies and entities reiterated their commitment to continue working on campaigns to sensitize the public to put their bit by helping to reduce road deaths.

First Anniversary Celebration of the Decade of Action for Road Safety

On Monday May 7, 2012 activities started alluding to the *First Anniversary of the Decade of Action for Road Safety: 2011-2020*. The first commemoration began with the *lighting on the north side of the Capitol*



in yellow in recognition of relatives and victims



of road accidents.

On the lightning,

the Senate of Puerto Rico reiterated its commitment to road safety by adopting the motion # 6757, which "recognize the importance and value of this type of initiative, so it joins the efforts to achieve and the conclusion reached the goal of assuring all Puerto Rican roads free of accidents and fatalities." The Commission for Traffic Safety (CST, by its acronym in Spanish),



FHWA, PRDOT, PR-TTTC, and other nonprofit organizations participated in this solemn event.

The event of greatest importance and impact took place on Friday, May 11, 2012 in Escambrón Beach Club. On this solemn activity, which had the theme *not a single fatal victim of road crashes*, 10 mothers were recognized which have been victims of fatal accidents on the roads. For this event we have the presence of the First Lady of the Government of Puerto Rico, Att. Lucé Vela, who gave each mother a recognition on the occasion of First Anniversary of the Decade of Action for Road Safety 2011-2020 with the following message, "*Mother example and model to overcome the tragedy of losing loved ones in accidents public roads in the country. His testimony is empowering to emulate.*"



The mothers recognized in this solemn event were:

<i>Aracelis Alicea</i>	<i>Nereida Nieves</i>
<i>María Bacó</i>	<i>Gloria Quiñonez</i>
<i>Nilda Claudio</i>	<i>Dafne Ramírez</i>
<i>Caridad del Carmen</i>	<i>Yvonne M. Santiago</i>
<i>Aida Geigel Lores</i>	<i>Yahaira Vázquez</i>

The House of Representatives of Puerto Rico approved the motion 6995, joining the commemoration of the First Anniversary of the Decade of Action for Road Safety: 2011-2020, to support and strengthen all mothers representative. The motion was presented by the Honorable Lydia R. Men-



Decade of Action for Road Safety 2011-2020 (Cont.)

dez Silva. The TSA worked with the CTTT in organizing this solemn event.

A very emotional and touching was when Dr. Jorge Rivera Santos, Rector of the University of Puerto Rico, Mayaguez Campus, interviewed victims and perpetrators of fatal accidents on public roads in Puerto Rico. The engineer was interviewed Marla Figueroa victimizing character due to his conviction for the death of three (3) people because of driving under the influence of alcoholic beverages on a state highway in the Municipality of Aguadilla.



Mr. Luis Salazar, was interviewed as a victim because he had a car accident that changed his life forever when he suffered brain trauma as consequence of not using the seat belt on a State Highway in the Municipality of San Juan. Ms. María Bacó, spoke on behalf of mothers, where she exposed her testimony of having lost her husband and two (2) of his daughters, from 17 and 14 years old in a car accident caused by a drunk driver in May 1997 in a State Highway in the Municipality of Mayagüez.



Article "Innovative Programs for Awareness Road Safety in Puerto Rico"

This article was prepared with the collaboration of Iraida Meléndez, Sonia C. Señeriz and Roberto Silva Delgado, three passionate professionals in the education and awareness of road safety.

Iraida Meléndez, Vice-President Quality,

Social Responsibility and Corporate Relations MAPFRE, was responsible for the drafting of the section on Villa Segura: MAPFRE's Foundation Rolling Park on Road Safety. This trailer park gives children from 8 to 12 years of public and private schools of our island the opportunity to learn while traveling through the city. This initiative will help prevent and reduce crashes on public roads in the country.



Mr. Roberto Silva Delgado, Director of Public Works of the Municipality of Guaynabo, was in charge of coordinating the preparation of the area, outline the perimeter to install the trailer park and all the support team of the Municipal Police, and Recreation and Sports Department, Recycling and Ornament, Department of Families, Environmental Control and the Press Office.



Educational Parks for Traffic Safety (PESET, by its acronym in Spanish), located in the municipalities of Caguas and Arecibo, are intended for students ages 7 through 10 to familiarize them with the traffic laws of Puerto Rico.

Sonia C. Señeriz, Founder and President of the *Foundation Luis A. Señeriz* (FLAS), was in charge of the *Mothers Against Drunk Drivers* (MADD) and the *Red Promise Campaign*. More significantly, the achievements made through FLAS established following the death of

Decade of Action for Road Safety 2011-2020 (Cont.)

his son by a driver under the influence of alcohol.

This program is dedicated to promoting awareness among the community about the health risk in drinking and driving motor vehicles, along with promoting legislation aimed to file this social evil and help the victims of traffic crashes.

This article also presented, trends in pedestrian crashes on public roads in the decade of 2000-2010, based on data provided by the Commission for Traffic Safety (CST, by its acronym in Spanish).

Of these programs, many are focused on the social aspects of the public awareness, reduce fatalities and commitment to the safety of drivers and pedestrians on public roads in Puerto Rico. However, we must do more.

During nights and weekends, periods are most critical week in traffic collisions and therefore we must concentrate our efforts to sensitize the public to file the use of alcohol while driving and sharing the road with pedestrians, including other.

This article also describes campaigns by the Administration of Automobile Accident Compensation (ACAA, by its acronym in Spanish) as is the campaign *NO texting while driving*. It also describes initiatives of the Institute of Transportation Engineers (ITE) as is the initiative *Moving Toward Zero Deaths* and identify ten basic strategies to promote this goal of zero deaths, which includes adopting a road safety culture .

Finally, it describes the ten (10) most relevant aspects that motivate the Decade of Action for Road Safety 2011-2020 Campaign, promoted by the United Nations. Globally, this campaign is supported by data from the World Health Organization and an alarming 1.3 million fatalities per year.

The Transfer Center appreciates the generous collaboration of all persons, agencies and organizations that have collaborated in various activities associated with the First Anniversary of the Decade of Action for Road Safety. United we make a difference and save lives on our roads.



Effects of the New Law of Permits and the Development of Infrastructure

'CARLOS M. REXACH SOTO

President of the Institute of Civil Engineers of
Puerto Rico

The construction of the infrastructure of Puerto Rico, like any other project, must comply with all regulatory processes of endorsements and permits. Prior to the approval of Law 161, compliance with the regulatory process was comprehensive and required permits sometimes consumed multiple years to complete. The consultation process required multiple regulatory agencies in addition to the Regulations and Permits Administration (ARPE, by its acronym in Spanish), including environmental protection agencies, security and infrastructure.



Following this problem, the government of Puerto Rico approved Act 161 on December 1, 2009, known as the Law for Reforming the Permit Process Puerto Rico, or the New Law Permits. With this law, the government seeks to reduce the considerable delays that existed in the process for obtaining permits and endorsements related construction and land use.

With the enactment of Law 161, ARPE is removed and three new agencies are created: Office of Management Permit (OGPe, by its acronym in Spanish), Office of General Inspector General Permit (OIGPe, by its acronym in Spanish) who look after the proper legal compliance processes, and the Permits and Review Land Use Board (JRPULT, by its acronym



in Spanish) who have the power to revise or reject revisions to final determinations of the OGPe or Autonomous Municipalities. These three agencies are part of the Integrated Permit System (SIP, by its acronym in Spanish)



which is a virtual structure for the purpose of expediting the work done in each of its components.

The OGPe issued final determinations on applications for permits and applications. It also issues certificates that were previously evaluated and issued or denied by many other government agencies concerned. As such the government seeks to limit the number of agencies consulted and requests made by the petitioner.



Using a digital filing program (www.sip.pr.gov), the BEPGs has been able to use a platform that streamlines the application process for services. This system, although difficult for some beginners, with staff providing services to the petitioners with a "Live Chat" or by phone.

Similar to previous legislation, Law 161 includes regulatory periods for the OGPe to evaluate each case requested. Unlike the previous system with ARPE, an agency outside of the OGPe, known as OIGPe, in

charge for ensuring full regulatory compliance of these periods. Speaking of regulations, if OGPe does not issue a final determination within the required time, the application is considered favorable.

Law 161 also requires infrastructure agencies to appoint a representative that serves as liaison with OGPe. This representative is responsible for getting the required information to the appropriate agency and make to recommendations when the agency takes more than the allowed time to do so. Infrastructure agencies that must comply with this requirement include:

- ◆ Department of Transportation and Public Works (DTPW)
- ◆ Highway and Transportation Authority (HTA)
- ◆ Aqueduct and Sewer Authority (PRASA)
- ◆ Electric Power Authority (PREPA)
- ◆ Telecommunications Regulatory Board of Puerto Rico



Law 161 created the figures known as Professional and Authorized Inspectors. In both cases, it involves private individuals assuming responsibilities previously provided only to specific government agencies.

Once certified by OIGPe, Licensed Professionals (PA) are authorized to issue permits on ministerial cases. That is, decisions that do not involve subjective judgment on how you conduct or plan an activity or action. In addition to this, the PA may perform the duties of the Inspectors Authorized for Fire Prevention and Environmental Health permits.



In the case of Authorized Inspectors, these are authorized by the OIGPe to issue certificates or documents required for construction, land development, use permits and business operations in Puerto Rico. The different specific functions are approved by the Authorized Inspector Administrative Orders.

The creation of the Professional and Authorized Inspectors tends to speed up the process of obtaining permits and licenses, as it limits the time allowed to these professionals to evaluate each case to a maximum 5-calendar days. However, the use of Professional and Authorized Inspectors does not necessarily speed up the process for infrastructure projects since these projects are not ministerial.



Despite the progress made with implementing the Permit Reform Puerto Rico, there are still obstacles that limit the desired goals. Many of the services requested relate to municipalities that are autonomous. These municipalities have agreements with the state to have offices and permits are not required to comply with those requirements after the signing of agreements, such as Act 161. The list includes the Autonomous Municipalities Aguadilla, Bayamon, Cabo Rojo, Carolina, Caguas, Cidra, Guaynabo, Humacao, Ponce, San Juan, Sabana Grande and Mayaguez. These municipalities account for most of the developments and construction projects so that limits the benefits of the Permit Reform.



Effects of the New Law Permitting Infrastructure Development (Cont.)

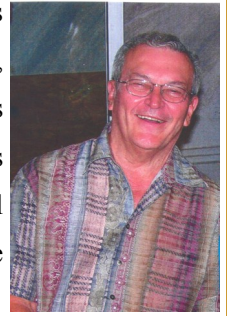
On the other hand, Act 161 authorized the transfer of staff from agencies such as the Environmental Quality Board (JCA, by its acronym in Spanish), among others, the Department of Environmental Compliance Assessment (DECA, by its acronym in Spanish) of the OGPe and thus to control the evaluation time. Unfortunately this personnel transfer has not been made, and in some cases, the time allowed for the evaluation of environmental documents exceeds the time specified in the Act 161.



Generally speaking, the planning of highway infrastructure projects is delayed because of the coordination process with infrastructure agencies that share the highway right of way. This process should have been enhanced with the new permit system. Unfortunately, the process has not been put up to the expected speed because the infrastructure agencies that work independent of the OGPe do not always observe the review periods set out in Act 161.

Know Your Instructor: Eng. Ismael Castillo

Eng. Ismael Castillo was born in San Sebastian, Puerto Rico. He was president of the 1956 Class from the Narciso Rabell Cabrero High School, where he graduated with honors.



He earned his Bachelor Degree in Industrial Engineering in 1961, at the College of Agriculture and Mechanical Arts (CAAM) of Mayagüez. He earned a Masters in Industrial Management from the Interamerican University—Metropolitan Campus.

Eng. Castillo began his collaboration with the Center in October 1994, offering his services as instructor in trainings on Effective Supervision, Effective Time Management, Change Management, Team Building, Effective Presentations, among others. The vision of Gisela Gonzalez, Program Manager, was to train highway transportation executives in those matters so that they will be better prepared in the managerial skills associated with their responsibilities within the highway, transportation or municipal agency. He worked at Eli Lilly in Carolina and Abbott Laboratories in Barceloneta. He also collaborated with the Economic Development Administration of the Puerto Rico Government and the Office of Labor Affairs within the Office of the Governor, offering seminars to government agencies staff. He has offered part time courses at the Interamerican University, Arecibo Campus.

Eng. Castillo is "at the cannon footprint" offering training and consulting services.

MAP-21 Update: Congress Passes Transportation Bill

The Congress of the United States passed the legislation *Moving Ahead for Progress in the 21st Century (MAP-21)*. This legislation maintains current funding for federal highway projects through 2014, as well as low interest rates on student loans for one (1) year and extends for five (5) years the National Flood Insurance Program (NFIP).



With this approval, a budget of approximately \$ 120 billion is allowed to spend for transportation projects through 2014. This legislation ends a streak without long-term approvals for transportation projects.



In 2005, President George W. Bush approved a budget of \$ 244 billion dollars for a period of four (4) years. That approval was the last time the government adopted a multi-annual budget for transportation programs.

During our next edition of the El Puente Newsletter we will offer more details on the approval of MAP-21, its benefits and impacts on the transportation industry.

Adapted from the publication *Congress passes highway funds, student loan extends lower rate*, accessed through: www.thehill.com.



New Resources at Our Library

*Guidelines for the Selection
of W-Beam Terminals*

Publication Number:
FHWA-SA-06-19

Prepared by:
U.S. Department de Transportation
Federal Highway Administration
(FHWA)

*Flagging in the Work Zone:
Safety in Your Hands*

Publication Number:
FHWA-WFL/TD-005-002

Prepared by:
Oregon Department of Transportation
(ODOT), Federal Highway Administra-
tion (FHWA) and Oregon Transportation
Technology Transfer Center

*Highway Safety Manual (HSM)
1st Edition, 2010*

Prepared by:
American Association of State Highway
and Transportation Officials (AASHTO)

**8th Anniversary "Through the Lens":
Transportation Design
& Construction in Images**

Published by:
American Road & Transportation
Builders Association (ARTBA)



Future Seminars, Conferences, Symposiums and Webinars

A. Puerto Rico and USVI

Basic Concepts of Statistics Applied to Transportation

Presenter: Eng. Victor Uribe

Date: July 10, 2012

Place: Mayagüez, PR

Time: 8:30am-4:30pm

Basic Concepts of Statistics Applied to Transportation

Presenter: Eng. Victor Uribe

Date: July 12, 2012

Place: San Juan, PR

Time: 8:30am-4:30pm

Tort Liability for Improper Signing and Pavement Marking

Presenter: Dr. Benjamín Colucci

Date: July, 2012

Time: 8:30am-4:30pm

EDC Exchange-Adaptive Signal Control Technology

Date: August 16, 2012

Time: 2:00am-4:00pm

Parking Studies Applied to Municipal Facilities

Presenter: Dr. Felipe Luyanda

Date: August 17, 2012

Time: 8:30am-4:30pm

Road Safety 365

Presenter: Dr. Alberto M. Figueroa Medina & Dr. Benjamín Colucci

Dates: August 24 & 31, 2012

Time: 8:30am-4:30pm

Introduction to Traffic Calming Techniques

Presenter: Dr. Fabiola Buitrago

Dates: August 30, 2012

Time: 8:30am-4:30pm

Place: Mayagüez, PR

Introduction to Traffic Calming Techniques

Presenter: Dr. Fabiola Buitrago

Dates: September 6, 2012

Time: 8:30am-4:30pm

Place: San Juan, PR

Evaluation and Maintenance of Flexible Pavements

Presenter: Dr. Benjamín Colucci, Eng. Freddie Salado & Eng. Davis Chacón

Dates: August, 2012

Time: 8:30am-4:30pm

Strategies for Sustainable Development and Transportation

Presenter: Dr. Alberto M. Figueroa Medina, Dr. Francisco Maldonado & Eng. Davis Chacón

Dates: September 14, 2012

Time: 8:30am-4:30pm

For more information regarding our seminar program in Puerto Rico and USVI and how to register please contact Ms. Grisel Villarubia or at grisel.villarubia1@upr.edu or Ms. Irmali Franco (irmali.franco1@upr.edu) at (787) 834-6385 or visit our website at www.uprm.edu/prt2.

B. Other Conferences and Summits of Interests

2012 Pavement Performance Prediction Symposium: July 12, 2012; Laramie, WY

OAS Engineering for the Americas Encounter: July 23-27, 2012; Panamá City, PA

2012 National LTAP/TTAP Conference: July 30, 2012-August 2, 2012; Grapevine, TX

ITE 2012 Annual Meeting and Exhibit: August 12-15, 2012; Atlanta, GA

AASHTO/AGC/ARTBA Meeting: August 19-22, 2012; Teton Village, WY

International Public Works Congress & Exposition: August 26-29, 2012; Anaheim, CA

ARTBA National Convention: September 11-14, 2012; Memphis, TN



Sign your pledge today!

DECADE OF ACTION
FOR ROAD SAFETY 2011-2020

COMMITTED TO SAVING LIVES TODAY



Puerto Rico Transportation Technology
Transfer Center
<http://prt2.uprm.edu>



Traffic Safety Commission
www.comisionparalaseguridadeneltransito.com



Administration of Automobile Accident
Compensation
<http://www.acaa.gobierno.pr>



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I, , pledge to place my sand grain to save the lives of my people on our highways.

I pledge to:

- 1. No texting with cellphone while driving a motor vehicle
- 2. Pass the key if I am under the influence of alcohol
- 3. No distractions while driving a motor vehicle
- 4. I will share the road with pedestrians, cyclists and motorcyclists
- 5. I will always buckle my safety belt
- 6. I will always buckle my children with safety belt
- 7. I will require my vehicle occupants to always buckle the safety belt
- 8. I will comply with the speed limits
- 9. I will use the protective safety devices while riding on a motorcycle
- 10. I will use the protective safety devices while riding on a bicycle
- 11. I will use the protective safety devices while driving on a motor vehicle
- 12. I will obey the traffic laws applicable to pedestrians
- 13. I will obey the traffic laws applicable to drivers
- 14. I will obey the traffic laws applicable to vehicle occupants

Email:

City:

State:

Leave your footprint, upload your photo and be part of the history of moving towards a safety culture.

Photo of you:

All fields are required, except your photo.



Together,
We Can Save
millions of lives

www.decadeofaction.org



¡Granito a granito y caminando
unidos lo lograremos!





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NEWSLETTER**

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