CAIT hosted the New Jersey Assembly Transportation, Public Works, and Independent Authorities Committee on July 27. This was the first of a series of seminars on the importance of infrastructure, how agencies are coping with shrinking budgets, and how research is finding innovative, economical ways to deal with the mounting demands on a stressed and aging network.

The idea for the seminar series sprung from conversations between CAIT Director Ali Maher and the committee chair, Assemblyman John Wisniewski, who asked CAIT to organize a series of “primers” that would give committee members a deeper understanding of their area of responsibility: New Jersey’s infrastructure. Assembly members got a crash course on the complexities of caring for our infrastructure and how engineers and transportation agencies make decisions on much-needed improvements. It was also, inadvertently, the perfect opportunity for CAIT to tell a few stories of its most valuable research and technology transfer contributions to New Jersey and beyond.

At a breakfast reception prior to the seminar, Rutgers Vice President Philip Furmanski and School of Engineering Dean Thomas Farris welcomed committee members, acknowledging the honor of hosting the group and offering background on the university’s ongoing commitment to transportation research.
Teaching is a value, not just an activity

Still in the early part of a new fall semester, in this issue of *Transportation Today* we are focusing on the teaching part of our triumvirate mission of research, education, and technology transfer. From grade school to professional development, CAIT is committed to spreading infrastructure knowledge to learners of all ages. In the pages of this issue, you will read about some programs that demonstrate this deep-seated tradition.

First is the story of a unique opportunity we had to share our passion for infrastructure research, offering the first of what we hope will be an ongoing series of seminars for the New Jersey Assembly transportation committee. The seed for this initiative was planted by the committee chairman, the Honorable John S. Wisniewski, who has represented the state’s 19th legislative district since 1995. John is one of the most dedicated champions of infrastructure we have ever met. When he first approached me with the idea of letting experts at CAIT give the committee members a deeper understanding that would help them care for the state’s transportation assets, I was honored and excited by the opportunity.

For some of our undergraduate students, there was no summer break. Four aspiring engineers took part in the CAIT Summer Internship, a program we have offered for many years with our partner, the New Jersey Department of Transportation. This program is mutually beneficial: The students gain valuable practical experience and the agency has a chance to develop young talent for the future transportation workforce.

Speaking of developing talent, last spring we sent two of our brightest students to Washington, DC, for the WTS Conference where they were able to network with accomplished women working in transportation and had the very special opportunity to hear from Transportation Secretary Ray LaHood.

Not forgetting our youngest citizens, CAIT’s Transportation Safety Resource Center takes an important safety program into New Jersey schools to make sure children are safe on our roadways and help them develop safe habits that will last a lifetime.

Whether it is instilling safety awareness in kindergarteners, offering research opportunities to undergraduate and graduate students, training the transportation workforce, or helping our lawmakers reach more informed decisions, at CAIT we consider teaching to be one of our core values, not just an activity we engage in.

Ali Maher, Director

Custom “Curriculum”

The instructive portion of a program focused on transportation asset management; pavement management, design, and materials; and bridge condition assessment and management.

Roads and bridges are the crucial backbone of a network that keeps New Jersey’s—and the rest of the country’s—economic engine moving. Unfortunately, with maintenance and capital projects budgets shrinking while needs for rehabilitation and system capacity grow, we must find ways to make scant transportation dollars go farther and the projects they fund last longer. And that’s where infrastructure research centers like CAIT are useful; developing new technologies, systems, and tools that help decision makers and transportation agencies to “work smarter.”

Asset Management 101

Asset management—a methodology that combines quantitative data, sound engineering, and economic analysis—is increasingly the standard used to make transportation management decisions today. Because it is broadly applicable to all types of infrastructure systems, and especially for managing roadway networks, it was a logical topic to kick off the seminar series.

CAIT Director Ali Maher opened by giving an overview of the center’s history, mission, and programs.

Maher then set the stage for the rest of the seminar by covering the basic concepts of transportation asset management and making clear the need for decision-making tools in managing New Jersey’s vast and complex transportation systems.

Asset Management Applied

Nick Vitillo, Ph.D., senior researcher with CAIT’s Pavement Resource Program (PRP), then drilled deeper into asset management, explaining how it is specifically applied in a pavement management system (PMS). Some years ago, NJDOT adopted the “right treatment, at the right time, for the right cost” approach, which is more prudent than the old.
During a tour of PRP’s asphalt pavement lab, Assembly staffers Glen Beebe (far left) and Maureen McMahon (second from left) are briefed by researcher John Henken (foreground) on PRP’s work in pavement noise testing.

Below, Tom Bennert (second from left) explains testing procedures in the dynamic modulus room of PRP’s asphalt lab.

practice of fixing the roads in the worst condition first. With so many variables in a complex network like New Jersey’s, determining the best course of action is almost impossible without a PMS. Vitillo used CAIT’s cooperative efforts with NJDOT to illustrate the value of these systems and how CAIT is advancing the use of PMSs in the field by helping agencies incorporate more comprehensive data and updated applications.

Another important message in Vitillo’s presentation—one that surely stuck with legislators who have their constituents in mind—is that “good roads cost less.” The American Society of Civil Engineers has proven roads in poor condition increase operating costs for vehicle owners an average of $333 per year and more than double that amount in densely populated urban areas like New Jersey. More alarming is that beat-up roads are a factor in vehicle crashes; some studies say poor road condition is a factor in as many as 30 percent of crashes.

In support of preventative care, Vitillo illustrated the benefits of moderate-to-low-cost rehabilitation by showing price differences between doing early pavement preservation (approximately $2 per square yard) and reconstruction (approximately $80 per square yard). He also made it clear that investing in roads before they need major repair extends their lifespans much longer than the same expenditure made years later.

**Modern Pavement Materials and Design**

One can’t fully appreciate what goes into PMSs without understanding a little about pavement design and materials. Tom Bennert, Ph.D., program manager for the Pavement Resource Program (PRP) and the mastermind of its asphalt pavement lab, briefed the group on pavement mix design and some recent developments in asphalt technology.

Bennert presented a mini case study from PRP’s work with open-graded friction course (OGFC) pavements. OGFC asphalt is designed with a greater percentage of air voids that allow rainwater to drain through the pavement and out to the road shoulder. These pavements have proven to greatly reduce road-surface water and splash and spray, which in turn increases visibility and decreases chance of hydroplaning—both serious safety issues. Using crash data from the CAIT-developed
Plan4Safety comprehensive crash analysis application, Bennert backed up the claim with statistics from an I-95 project PRP did with NJDOT, where crashes were reduced nearly 15.5 percent after the application of an OGFC. Another benefit of an OGFC is that water forced through it by vehicle tires gives the pavement a self-cleaning property that deters degradation and damage from freeze-thaw.

Bennert also covered CAIT’s environmental research on pavement noise reduction, warm mix asphalt (WMA), and use of recycled materials in pavements such as crumb rubber, recycled asphalt pavement (RAP) content, and using rubberized concrete in base courses.

Later in the program, Bennert led Assembly members on a tour of CAIT’s AASHTO-accredited pavement lab. Seeing firsthand pavement testing methods and technologies crystallized concepts covered in the presentations. The group was shown some specifics of asphalt mix design, noise testing equipment, and CAIT’s recently enhanced asphalt binder lab—all used to help NJDOT and contractors across the state and beyond build and maintain better roads for the driving public.

Bridges: Linking It All Together
Critical ties within the transportation network, bridges are an area of major concern.

Dr. Franklin Moon, Ph.D., Drexel University professor and affiliated researcher at CAIT, spoke on bridge inspection, maintenance, and management. As a team member on the CAIT-led FHWA Long-Term Bridge Performance (LTBP) program, Moon stressed the critical nature of keeping our bridges healthy and covered the complexities of funding for care of the nation’s bridges.

In a brief history lesson, Moon told stories of tragedy and near misses and how those events have led to changes in how we manage bridge maintenance and repair. He cleared up the sometimes misinterpreted terms of “structurally deficient” and “functionally obsolete,” and shared that New Jersey ranks very near the middle (28th) in number of structurally deficient bridges when compared to other states. Considering the excessive beating New Jersey infrastructure takes being in the heart of the busiest transportation corridor in the nation and the age of its network, Moon pointed out that the state is actually doing a respectable job with the upkeep of its bridges.

Moon also schooled the Assembly members on bridge inspection protocols and condition ratings, the elements of bridge management systems, and the concept of risk-based prioritization, which is the new trend for determining which bridges should receive attention first.

Presentation Excerpts
Full seminar presentations are available at cait.rutgers.edu/nj-assembly-july-2010-NEWS.
Baristas need not apply
CAIT interns gain career experience that counts at NJDOT

For civil engineering undergraduates at Rutgers who want more out of their summer job than just earning a few bucks or course credits, a CAIT summer internship is a whole lot more rewarding than learning the difference between a latte and cappuccino.

Offered in cooperation with the New Jersey Department of Transportation (NJDOT), this outstanding internship program gives aspiring engineers a taste of the day-to-day challenges of a career in transportation in short order.

Laine Rankin, primary coordinator for the CAIT-NJDOT internship, says the experience offers multiple opportunities for young engineers to learn more about areas they may want to pursue after graduation: “Our interns are exposed to the diversity of NJDOT where they consistently meet people willing to discuss their work and share their wealth of experience.”

Four students were selected to participate in this summer’s program: Rebecca Cohen, Joseph Wilbur, and KeeRyde Talasan—all from Rutgers School of Engineering—and Carlos Lopez from the New Jersey Institute of Technology (NJIT).

Andrew Kaplan and Ashley Machado, engineers with CAIT’s Transportation Safety Resource Center (TSRC) who serve as liaisons with NJDOT, have taken Lopez and Talasan under their wings to “learn and apply their knowledge, not copy and staple,” says Kaplan. “I specifically avoid giving my interns ‘busy work’ like coffee-running and collating. The goal of the internship is to give them a hands-on, real-world perspective on what it’s truly like to be an NJDOT engineer. I have them work under my guidance in traffic and engineering analysis reports, field visits, and ultimately improving design,” Kaplan said. Kaplan’s interns’ day-to-day activities include shadowing him on the job, and letting them take the metaphorical wheel as he supervises. Ultimately, it’s a job “preview” that encourages fresh talent to commit to the transportation field.

“We’ve got to give these interns a glimpse into the life of a professional transportation engineer. If they leave the internship feeling like they spent most of their time organizing files or surfing the web, then we haven’t done our job in strengthening the future of the industry’s workforce,” said Kaplan.

Lopez is happy he’s been able to enhance his technical knowledge—such as how to develop revisions to traffic signal plans and do crash analysis—but also strengthen the “soft skills” crucial to any career, like interacting with administrators and submitting professional input and commentary.

Cohen vouches for the value of the internship program. She reports she had an “irreplaceable experience” in the Division of Project Development, a program that initiates and implements assignments and staging for all DOT projects. “This isn’t some errand-running internship. I literally hit the ground running at NJDOT,” Cohen said. “Within my first week in the Division of Project Development, I was assigned my summer project. It involved replacing a 150-foot long, eight-by-four foot box culvert under...
Bringing together the best, preparing for the worst

Research centers, academics, and medical professionals are looking for ways to integrate technologies, systems, and programs that will help save lives in the worst of times—during a natural or man-made disaster.

Any type of emergency—a hurricane or earthquake, an infrastructure incident like the recent pipeline explosion in California, or a terrorist attack—places immediate strains on the facilities and personnel called to respond. How can we prepare and make sure the tools, materials, and human resources we need are there when we need them?

That’s the question the University Center for Disaster Preparedness and Emergency Response (UCDPER) is addressing. Led by Director Clifton R. Lacy, M.D., UCDPER is a joint initiative of the University of Medicine and Dentistry of New Jersey-Robert Wood Johnson Medical School (UMDNJ-RWJMS); Rutgers, The State University of New Jersey; and Robert Wood Johnson University Hospital (RWJUH).

One of UCDPER’s main goals is to develop and implement plans and initiatives that protect the health and well-being of the general public, vulnerable populations, and the workforce. Part of this puzzle is ensuring the safety and security of economic and physical infrastructure—and making sure that management in emergency facilities is prepared to deal with spikes in demand during times of crisis. That’s where CAIT’s Laboratory for Port Security (LPS), Information Management Group (IMG), and Structures and Advanced Materials (SAM) can help.

LPS is using its risk assessment and computer modeling expertise to evaluate supply chain activities of critical medical resources that are needed in emergency situations. Using historical data on demand patterns, LPS Director Tayfur Altink, Ph.D., and his team will create computer simulations that take into account ordering policies and quantities parameters that impact the inventories of key medications and equipment. These models will help determine inventory management strategies that effectively meet hospitals’ increased demand for medications and other resources during catastrophic events.

IMG Director Mohsen Jafari and his group will evaluate techniques to optimize patient flow during regular and emergency hospital operations, taking a logistical view of patient flow. They will focus on system-wide macro analysis of the underlying processes that constitute patient flow (e.g., check-in procedures, triage, hospital staffing, etc.) in the emergency room and surrounding operations, such as radiology and operating room scheduling. The study will use quantitative metrics to measure effectiveness and will build macro-level computer simulations of how patients “flow” through the facility under both normal and emergency situations.

Perumalsamy “Bala” Balaguru, Ph.D., a lead researcher in SAM, will evaluate protection that could be gained by using thin films to reduce blast-related fragmentation and shattering of glass panels. The pilot study will look at levels of protection provided by the films and the most effective methods to secure the film and glass to the frame that holds them.

CAIT is pleased to be part of a cooperative endeavor that brings together the best and brightest to look for ways to better deal with our worst and darkest times. More on the web at ucdper.com
Marriage of convenience ... and necessity

“Matchmakers” pair traffic experts with towns and counties to improve safety

In the current economy, tightening the transportation budget belt one more notch is difficult, especially for counties and municipalities who already have so little in reserve. That’s why CAIT has a program to make sure road safety doesn’t fall by the wayside just because locals’ funding or staff are stretched too thin.

Road managers in towns large and small struggle with budget cuts, shrinking staff, and severe competing needs. Knowing that public safety could be the ultimate loser, CAIT’s Transportation Safety Resource Center (TSRC) responded by offering support to strapped public agencies in the form of Road Safety Audits (RSAs).

An RSA is a safety performance evaluation done by an independent, multidisciplinary team on existing or future roads and intersections. In a traditional roadway safety review, human factors and issues are often not part of the safety assessment. But a team conducting an RSA estimates and identifies potential issues that could be hazardous to not only motorized traffic, but to all potential road users, including pedestrians and bicyclists. RSAs can and should be applied to any project regardless of scale; from a minor intersection to a highway mega-project.

“Dwindling budgets and bare-bones staff—plus complaints from angry citizens—fuel much of what we would term ‘reactive efforts.’ We prefer to proactively pursue a safety goal,” said TSRC program manager Sarah Weissman. “When public officials look at budget, the road safety issues they’re experiencing, and the limited resources they have to address them, they often prioritize using a ‘worst first’ approach. This strategy increases the risk of overlooking many safety problems that could have been addressed with low-cost changes,” Weissman said.

TSRC belongs to a state network of “safety partners”—including the New Jersey division of the Federal Highway Administration and New Jersey Division of Highway Traffic Safety—that serves as a “matchmaker” of sorts, pairing county and municipal requestors with safety-audit experts. TSRC engineers help determine what services or approaches best target the particular safety issues of a given project, then help set up site visits, roadway evaluations, and countermeasure recommendations.

“We do our best to ensure that the best expert in a certain field matches the needs of the agency or department requesting the audit and the particular project,” Weissman said. “For example, if we’re looking at a stretch of road in a busy downtown area that’s experiencing pedestrian incidents, we’re going to find an engineer who specializes in that. Sometimes it’s not as obvious as you might think. We want to make sure that each requestor gets exactly what they need.”

(Left to right) Ocean County principal engineer Mark Jehnke and traffic engineer Roden Lightbody examine wear and tear on a guardrail with TSRC engineers Ashley Machado and Andy Kaplan during a road safety audit in Ocean County.
Congressman Jim Oberstar, chair of the House Transportation Committee, learned about nondestructive evaluation (NDE) during field work in Minnesota with CAIT’s Infrastructure Condition Monitoring Program (ICMP) team on July 18.

The bridge over the Kettle River in Sandstone, Minnesota, is the fourth of six bridges to date that have been adopted into the Long-Term Bridge Performance (LTBP) program, a joint-effort, 20-year FHWA initiative on which CAIT is the team leader. The LTBP program is currently in its pilot phase.

This pilot bridge carries Route 123 over the Kettle River approximately 90 miles north of Minneapolis. It is an arched deck truss, built in 1948, and was selected for the LTBP pilot in order to test the program’s protocols on a large, older structure. The bridge’s historical status was another factor in its selection because it ensures the bridge will remain with the program for years to come and receive detailed maintenance from Minnesota DOT. In addition to the bridge’s exposure to wind, water, and freeze-thaw cycles, other characteristics that made it a good candidate for the pilot program were easy access under and around the bridge and nearby power and communications, all of which facilitate long-term study.

Researchers will carefully monitor the Kettle River Bridge in Minnesota along with the other LTBP pilot bridges in California, New Jersey, New York, Virginia, and Utah. The team is in the process of selecting the next pilot bridge, which they plan will be located in Florida.

The nondestructive technologies for monitoring and evaluation that Oberstar saw on his visit made such an impression that a few days after the visit he shared the experience in a July 21 hearing with the Subcommittee on Highways and Transit. The subcommittee was receiving testimony regarding the federal Highway Bridge Program (HBP) and the National Bridge Inspection Program (NBIP). It was one of several hearings being held in preparation for the reauthorization of the federal surface transportation bill. The current bill, SAFETEA-LU, expired in October 2009.

During the July 21 hearing, Oberstar recalled testimony he heard in 1987—on the 20th anniversary of the Silver Bridge collapse—in which a noted professor of bridge engineering opined that bridge inspection at that time was in the Stone Age. Referring to the current status of bridge inspection, Oberstar said, “[Here we are] 20 years later and we’re still dragging chains over bridges. We’re still in the Stone Age—that’s unacceptable.” Then, referencing a video he showed of his visit to the LTBP pilot bridge, he continued, “We have to have adequate evaluation of bridge structures and employ all the nondestructive testing technologies such as those [used by Rutgers] and protect this massive portfolio. A $98 billion backlog for repair, replacement, and reconditioning of bridges—it’s
Photographic homage to an engineering marvel

The culmination of more than nine years of planning, design, engineering, and construction, the Hoover Dam bypass bridge opened this month.

The Mike O’Callaghan-Pat Tillman Memorial Bridge is the longest concrete arch span in North America and, soaring 870 feet above the Colorado River, its elevation matches its historic stature.

At CAIT, the majority of our efforts are trained on ways to evaluate, repair, and extend the life of older infrastructure that sorely needs our attention. We also most frequently focus on the technical processes that bring a structure like this to fruition or the mobility and traffic problems it will solve. But for this particular moment we pause to simply admire and celebrate what is undeniably one of the most beautiful and awe-inspiring feats of engineering in the world—and to bring recognition to a man who has captured this majestic wonder through his camera.

Professional photographer Jamey Stillings has been documenting construction of the bridge since 2009, capturing it in images so stunning and detailed—so dramatic—that on first glance you might swear some of them are computer generated. But they are not the work of CGI software; they are the work of an artist.

Stillings photographed the bridge often at night or twilight, rendering the emerging structure ethereal and otherworldly, like a graceful space station. Other images show workers against the sheer mass of the structure, viscerally conveying its scale. Aerial captures—taken from aircraft or peering down the cablestays of one of the towers that supported the arches during construction—are dizzying testament to the fortitude of workers (and the photographer) who labor at these heights. Perhaps what is most striking when you see Stillings’ exquisitely executed images is the range of emotions they evoke; how the juxtaposition of nature and our mark upon it can be breathtaking and beautiful, yet also provoke thoughts of man’s audacious will imposed on such a landscape.

Stillings says, “When I first encountered the bridge at Hoover Dam in March 2009, it immediately captured my imagination. Watching the bridge’s construction, especially at night, is both inspiring and magical. The photo essay [has allowed] me to meld photographic and aesthetic sensibilities with a reawakened sense of childhood curiosity and awe…. How a structure and its creation are documented greatly impacts how it is remembered in history. Construction of the bridge … is unique both for its historical importance, by its proximity to the dam, and for its technical achievement … [It] challenges us to examine the juncture of nature and technology on a scale that is both grand and human.” Stillings’ overarching goal for the Bridge at Hoover Dam photo project is “to acknowledge the collective talents and labors of those building the bridge and to place the bridge within the historical and aesthetic context of the Hoover Dam and the American West.”

Four folios of Stillings’ photos of the bridge and the Hoover Dam and their surroundings can be viewed online at bridgeathooverdam.com. Stillings plans to publish a book of the work by late 2011.
Since 2006, TSRC-assisted RSAs have enhanced safety for a substantial number and range of roadways—from city streets to rural county highways. RSAs have become so popular statewide that TSRC and the New Jersey Local Technical Assistance Program (NJ LTAP) together now have four engineers conducting or fulfilling requests for safety audits.

“Often our recommendations are low cost and prove extremely valuable in improving the overall safety of a roadway corridor. I’m hopeful government authorities embrace RSAs as a part of their roadway evaluation process,” says Andrés Roda, one of NJ LTAP’s engineers.

NJ LTAP and TSRC engineers don’t just examine blueprints, permits, and crash data from the comfort of their desks: They are out there—sometimes braving rain, sleet, or blazing heat—lending their design expertise and professional commitment in a way that demonstrates their passion for safety.

“If I just sat at a desk and reviewed a road’s geography, I might say, ‘Okay, it looks like everything’s all right here; everything’s in order,’ and wash my hands of it,” said Andy Kaplan, one of the TSRC engineers. “But when you go out and conduct a field review you see a whole different picture.”

Case in point: Kaplan conducted an RSA in Ocean County, alongside engineer Roden Lightbody, after a high number of crashes involving left-turning drivers were reported at a curved T-intersection (see aerial to the right). He did a pre-site visit review with maps and local information, all which indicated proper placement of stop signs, “curve ahead” signs, and no clear physical obstructions like buildings or trees.

“It was baffling. Looking at a map just wasn’t enough: I had to actually go there to see it from the perspective of the driver before I realized what was going on. The problem was constricted sight. Drivers were coming up the stem of the ‘T’ and had to roll almost into the intersection to look both ways before making a left turn. Why? The only thing they could see at the stop line was the back of a sign on the through road indicating a curve coming up,” Kaplan said. “So, the left-turning drivers view was obstructed by the back of the large ‘curve ahead’ arrow sign, meaning they couldn’t see cars approaching on the through road. The result? Crashes. We recommended replacing the large arrow signs with smaller signage to improve visibility, and it improved safety at this intersection,” Kaplan said.

Now an RSA “convert,” Lightbody says that the RSA visits were an easy, significant improvement over previous identification programs that took longer to gather, review, and compile crash data. “Anyone who has an opportunity to use this service should definitely begin to pursue improvements [with RSAs],” Lightbody advises.

Typically, safety improvements aim to lower crash incidents and, ultimately, reduce injuries and fatalities. RSAs are an important tool in reaching that goal.

So, is it a marriage of necessity or convenience? It turns out to be both. RSAs give municipalities and counties convenient, free recommendations from experts without the expense and guesswork. But it’s a convenience that borders on necessity when you consider the injuries and fatalities RSAs can help prevent. Luckily, RSAs are readily available to every New Jersey town and county that wants to improve safety now.

To set up an RSA in your town or county, visit cait.rutgers.edu/tsrc or email Andy Kaplan at akaplan1@rutgers.edu.
The WTS conference is the gathering for women in transportation and an outstanding opportunity for young, aspiring female engineers to network with some of the most prominent women working in transportation as well as glimpse what may await them in their own careers.

CAIT selected this year’s attendees through an essay contest that was open to all graduate and undergraduate women in their junior and senior years who are interested in pursuing transportation as their profession. The contest was promoted with flyers, widely distributed emails, and direct outreach to faculty and campus groups such as the student chapter of ASCE and the Society of Women Engineers. The winners of the essay contest were civil engineering undergraduate Rebecca Cohen and Lakshmi Thara Ashok, a graduate student in industrial and systems engineering.

The theme of the WTS conference was “The Right Place @ The Right Time,” communicating the event’s purpose of bringing together the most influential policy makers and industry leaders to discuss issues that are both timely and critical to our country’s future.

Living up to that claim, the keynote was delivered by Transportation Secretary Ray LaHood. A champion for recruiting women into the transportation industry, LaHood spoke of the importance of helping women advance in these types of careers. He demonstrated his commitment to the cause with a signed, sealed, and delivered memorandum of understanding that will help to mentor and educate up-and-coming women in the industry. Other speakers included Marianne Fay of the World Bank, Representative Loretta Sanchez (D-CA), and countless other accomplished women working in the field.

Sessions over the three-day conference touched upon subjects ranging from keys of leadership to tips and tricks for putting your best face forward during interviews with the media. To Ashok, perhaps the most valuable asset of all was the dissolution of social and professional anxiety during a panel led by women entrepreneurs.

“There was a comfort level established right from the get-go. Everyone in the room was a woman, everyone in the room had a passion for transportation … We talked candidly about the realities of business ownership: that there are days in this business where we are going to be stressed out or overwhelmed with obligations, and that’s okay! I learned that it really takes being passionate, a risk-taker—and maybe a bit feisty—to make it as a businesswoman in this field. Hearing that really helped me get over my fears and inhibitions,” Ashok said. “Then, to see someone like Secretary LaHood support us with a memorandum to help women succeed in this field was really encouraging.”

In addition to conference sessions and workshops, the students had a choice of two out of four technical tours dealing with public transit, neighborhood revitalization, and multimodal transportation.
Free traffic safety lessons for NJ school kids
Safety and Traffic Education Program (STEP)

STEP activities encompass subjects like helmet use, pedestrian safety, proper road-crossing techniques, sign recognition, seatbelt safety, and the dangers of distracted driving. Each activity is tailored to small groups of 10 to 12 children and lasts about 15 minutes—a research-proven time limit in which young children can be engaged without losing interest in a given activity. Keeping the “curriculum” fun and educational is crucial in getting the messages to stick in these formative minds. Here are a few of the activities:

**BINGO (Road Sign Identification)**
A short BINGO game that requires matching traffic signs to their score cards helps kids identify and remember the look and meaning of road signs.

**Real-Life Crosswalks (Pedestrian and Crossing Safety)**
A standard crosswalk (complete with real signals and traffic lights) lights up the room as kids practice safe crossing, including pressing the pedestrian-crossing button, waiting for green lights, and proper walking speed across a roadway. Ride-in toy cars even come into the mix to reinforce the importance to look both ways before crossing the street.

**Distracted Driving Course (Distracted Driving and Safety)**
For older kids, nipping bad habits in the bud—like texting or talking on cell phones while driving—is key to eradicating the behavior as it is introduced through a repetitive, interactive approach. In this activity, kids navigate a road-like course with their full attention and then try to complete it a second time while distracted by handheld games, cell phones, and calculators. They are often surprised at the results.

**George the Monkey’s Bike Ride (Bicycle and Helmet Safety)**
Students help the famous and familiar monkey, George, choose the right nighttime clothing, put his helmet on correctly, and follow all the traffic signs when he goes out for a ride on his bike.

**Eggy’s Fast Ride (Seatbelt Safety)**
In studies on seatbelt use, researchers found that children educated about seatbelt safety increased their usage by about 25 percent. In “Eggy’s Fast Ride,” Mr. Eggy the egg drives at highway speed in a toy car to Six Flags® amusement park—once without a seatbelt and once with a seatbelt. Through this activity, kids recognize the importance of seatbelts when a buckled-in Mr. Eggy walks away from a crash in one piece.

**Game of Driving (Traffic and Sign Safety)**
Kids learn the appearances, colors, and meanings of more than 15 different road signs while playing a life-size board game.

To schedule STEP at your school, please contact Janet Hansen at the Transportation Safety Resource Center by emailing jchansen@rutgers.edu.
One of the technical tours showcased the collaboration of public transportation systems and revenues servicing Ronald Reagan and Dulles Airports. It was the technical tour “Bringing High Occupancy Toll (HOT) Lanes to the Capital Beltway” that really struck a chord with Cohen, who visited the construction site of the future multimodal system that will service Tysons Corner and surrounding communities. The $2 billion project she personally toured showed the young engineering hopeful the brilliance of design and planning that goes into huge multimodal projects—and how they build upon lessons from the past. She learned that the project “also replaces $240 million of aging infrastructure.” Another welcome insight she gained on the tour was that engineering, economics, and charity coalesce with these types of projects—a goal she may personally pursue in the future. “The project supports small and disadvantaged businesses,” Cohen said, “As a result of the work, $330 million will go to small, woman- and minority-owned businesses.”

Said Cohen of her time at the WTS conference, “I learned so much from my experience there. I developed insight on engineering now and in the future, and the conference increased my knowledge and interest in transportation engineering. It made me feel confident in myself and my chosen career path.”

Bethany Allinder joined the New Jersey Local Technical Assistance Program (NJ LTAP) at CAIT in July 2010 as program coordinator and registrar. She has a diverse background in marketing and business development, having worked in educational and mass-market publishing and pharmaceutical contract research. Bethany holds a B.A. in English and creative writing from The College of New Jersey. She will primarily serve as registrar and point-of-contact for numerous training classes offered by NJ LTAP throughout the year. She will also be responsible for maintaining NJ LTAP’s event management system and supporting its online presence at CAIT. In her spare time, Bethany serves as outreach/publicity chair for the International Association for the Study of Popular Romance, an association dedicated to fostering and promoting scholarly exploration of all genres, styles, and media of popular romance.

Michael Boxer recently joined CAIT’s Pavement Resource Program (PRP) as a research project assistant. Michael graduated from Rutgers with a B.S. in civil engineering in 2008. During his undergraduate studies at Rutgers, Michael worked in the materials lab on Busch Campus. He then traveled to the University of São Paulo in Brazil and the University of Porto in Portugal to present his research on permeability of concrete. After graduation, Michael worked for a small engineering firm for a year before joining CAIT.

Christopher Ericson earned his bachelor’s and master’s degrees in civil and environmental engineering at Rutgers. He is the recipient of numerous transportation awards and scholarships for his research in flexible pavement technology. Chris is continuing his research as he pursues his graduate studies on flexible pavements at CAIT’s Pavement Resource Program in the Rutgers Asphalt Pavement Laboratory. In his free time, Chris teaches sailing, races sailboats in the New York Harbor, and delivers sailboats as a freelancer.

Tara Khodabandehlooie joined CAIT full time in June 2010. Tara worked at the center part time last year, providing administrative support to faculty and staff and helping coordinate the center’s daily business and financial activities. In her new role as administrative assistant, she will be working primarily on Automated Nondestructive Evaluation and Rehabilitation System (ANDERS) for Bride Decks, a $17.9 million project funded by the National Institute of Standards and Technology (NIST). Her role with ANDERS will be to build a sound administrative presence for the project. Tara also continues to support a wide range of daily operations for CAIT and its various programs.

Elizabeth Ann Wilson was named a CAIT fellow in June 2010. She is a first-year graduate student at Rutgers in the Department of Civil and Environmental Engineering. Elizabeth completed her undergraduate work in statistics and mathematics at Barnard College of Columbia University in New York. As a CAIT fellow, she will be responsible for developing data analyses and synthesis tools for air quality engineering and enhancing knowledge and interpretation of air pollution concentration patterns and source strength. Elizabeth will conduct her research under the guidance of Dr. Monica Mazurek.
kudos

Dr. Thomas Bennert, program manager for CAIT’s Pavement Resource Program (PRP), co-authored articles in two prominent national publications recently.

“New Jersey Open Graded Thin Overlay Utilizes Rubber,” the cover story in the fall 2010 issue of *Pavement Preservation Journal*, recounts a NJDOT project on I-78, on which Bennert and PRP provided asphalt rubber mix data and long-term performance prediction mix testing. The article was co-authored with Robert Sauber and Robert Blight, both from NJDOT.

“From Hot to Warm,” an in-depth look at warm mix asphalt (WMA) that Bennert wrote with Matthew Corrigan (FHWA) and Dave Newcomb (NAPA), was a feature article in the July/August issue of FHWA’s *Public Roads*. WMA processes and products use various mechanical and chemical means to either reduce binder viscosity at lower temperatures or reduce the shear resistance of the mixture at construction temperatures while maintaining or improving pavement performance. Relative to hot mix asphalt (HMA), the immediate benefit of producing WMA is its lower energy consumption. HMA requires high heat to enable the asphalt binder to become fluid enough to coat the aggregate completely, have workability during laying and compaction, and retain durability during traffic exposure. With WMA’s lower production temperature comes the additional benefit of reduced emissions from burning less fossil fuels as well as decreased fumes and odors at the plant and paving sites.

CAIT earned two Graphic Design USA (GDUSA) American Graphic Design Awards, an annual national competition that is open to firms and inhouse departments—including multinational corporations and top-level marketing and advertising agencies—producing communications for all sectors of business, industry, and nonprofits. The competition draws more than 8,000 annual entries. Approximately 15 percent are selected.

CAIT won awards in the category of special programs packages for the Rutgers Annual Asphalt Paving Conference materials and in the category of environmental graphics for rebranding of the CAIT building lobby (picture above). Communications director Allison Thomas said, “We have such a small operation here, it’s always a bit of a surprise when we win, but on these two projects I was doubly pleased because the budgets were so tight. It’s especially gratifying to know our work measures up against private-sector giants—with giant budgets—like AT&T or Blue Cross.” The winning entries will be published in the *GDUSA Design Annual* in November/December 2010.

announcements

**Sustainable Consumer Products Survey**

Are you aware of the environmental footprint of the products you purchase and use? Does this influence what you buy? Please help us by participating in a survey examining consumers’ attitudes and levels of concern about sustainable consumption and production. Information gathered will help us evaluate consumers’ willingness to pay higher prices for products with less environmental impact and work toward sustainable manufacturing and consumerism. Go to [cait.rutgers.edu/img/consumer-survey](cait.rutgers.edu/img/consumer-survey) to learn more and participate.
events

LTBP at ASSHTO Research Committee Meeting

The Long-Term Bridge Performance (LTBP) program was one of 17 exhibitors in this year’s American Association of State Highway and Transportation Officials (AASHTO) Standing Committee on Research (SCOR) and it’s Research Advisory Committee’s (RAC) national meeting, July 26 to 29 in Kansas City, Missouri.

Focusing on the success of the pilot study field investigation in which seven bridges across the United States were selected for testing and monitoring, the LTBP program engaged more than 150 transportation professionals including national research leaders from TRB attending the meeting.

Hosted by Region 3—Kansas and Missouri—the annual meeting is an opportunity for members of the AASHTO/RAC and its Transportation Research Board’s (TRB) state representatives to discuss current research and planning efforts and determine effective solutions for addressing transportation needs, both locally and nationally.

This was the first year that the AASHTO/RAC included an exhibit session as part of the weeklong meeting.

6th Annual Traffic Safety Forum

The 6th Annual Safety Forum, organized by CAIT’s Transportation Safety Resource Center (TSRC), was held on October 20 at Rutgers Livingston Campus Student Center in Piscataway, New Jersey. More than 200 safety professionals attended. This year’s theme was transportation psychology. The conference was capped off with a keynote address from Tom Vanderbilt, best-selling author of Traffic. A copy of the full agenda is available at cait.rutgers.edu/tsrc/forum. An article on the latest science of transportation psychology and a recap of forum activities is planned for the next issue of Transportation Today.

12th Annual NJDOT Research Showcase

The 12th Annual NJDOT Research Showcase, sponsored by the NJDOT Research Bureau and organized by CAIT’s New Jersey Local Technical Assistance Program (NJ LTAP), was held October 21 at Mercer County Community College in West Windsor, New Jersey. This annual event gives NJDOT customers a chance to learn about the broad scope of ongoing research initiatives, technology transfer activities, and academic research being conducted by university research partners and their associates, as well as provides an understanding of the benefits of transportation research funded by the NJDOT Research Bureau. This year, the keynote speaker was Peter Appel, administrator for the Research and Innovative Technology Administration (RITA) of USDOT, who had also spent the previous day at CAIT for a briefing on the center’s programs and research efforts.

Visit CAIT at the Transportation Research Board 90th Annual Meeting

January 23–27, 2011
Washington, DC

Booth 1317

Marriott Wardman Park Hotel
Hall C South

Watch our website, cait.rutgers.edu, for announcements about sessions and other CAIT activities at TRB.