In an effort to alleviate a major traffic choke-point during rush hours, the New Hampshire Department of Transportation (NHDOT) is making significant progress with its $238 million commitment to widen Route 16 from Newington to Rochester.

The first large-scale step of the project includes the expansion of the Little Bay Bridge at the southernmost portion of Route 16. NHDOT awarded a $50.3 million contract to Cianbro Corporation for the work.

Bridging The Bay: Phase 1 Nears Milestone
by James M. Browne, Cianbro Corporation

Continued on page 4

UNH Technology Transfer Center provides training and services to municipal employees, public and private road associations, and citizens regarding new technologies and the management of roads and bridges.

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UNH T²

The UNH Technology Transfer Center (UNH T²) provides training and services to municipal employees, public and private road associations, and citizens, regarding new technologies and the management of roads and bridges. Established at UNH in 1986 by the Federal Local Technological Assistance Program (LTAP), the center is sponsored by the Federal Highway Administration, the N.H. Department of Transportation, the University of New Hampshire, and the national LTAP and TTAP Program.

Road Business is a quarterly publication. Its editorial content does not necessarily reflect the views of our sponsors. To contact or subscribe, e-mail us at t2.center@unh.edu, call 603-862-1362, or visit our website, www.t2.unh.edu.

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Letter from the Director

It is a very exciting time at T² as we focus on expanding our services and capabilities. Currently, we are evaluating each of our courses to ensure that we are teaching the best and most up-to-date practices. Now, more than ever, the center is focused on providing training that can help clients do “more for less.” Although this is a tired phrase, I want to outline some of the exciting progress at T².

We are wrapping up the development of our new course registration and credit management system. This cloud-based interface will eventually allow users to register for courses and export transcripts online. By the summer of 2012, clients will be able to pay online.

Last fall, Mike Faller (Meredith, DPW) and Senator Jeanie Forester proposed that an expedited permit process be developed for the routine maintenance of culverts. After a series of collaborative work meetings with Mr. Faller, Senator Forester, The Department of Environmental Services, The Department of Transportation, and T², a certification program for culvert maintainers and a proposed bill (SB 248) were drafted. If passed, this process would allow certified municipal and state officials to repair or replace culverts up to 48 inches in diameter without immediately filing a permit by notification. Instead, a much less time-intensive quarterly work summary would be required. These efforts were brought to a legislative hearing with Senate Bill 247 on February 7, 2012. There were several individuals who came to speak on behalf of the proposed culvert certification program through T²: Rene Pelletier, NH Department of Environmental Services; Mike Faller, Meredith Public Works; Cordell Johnson, Municipal Association; John Trottier, Londonderry Public Works; Carl Quiram, Goffstown Public Works; Craig Green, NH Department of Transportation; Margaret Watkins, NH Audobon Society; and Alan Cote, Derry Public Works. Only one person who spoke was not in favor of the bill.
The Mosaic Parcel Map Project made great strides this year, compiling information for over 94% of the parcels in the state. Currently, the Department of Revenue (DRA-Project Sponsor) is sharing the information with other state agencies, minimizing duplication at the state level.

We have also been working closely with the Federal Highway Administration (FHWA) to coordinate the Every Day Counts webinar series. These webinars are open to all, addressing innovation in transportation construction and maintenance. The next topic for the Every Day Counts Exchange is Flexibilities in Current Right-of-Way Practices and Procedures, which will broadcast on April 19, 2012.

We are very excited about our next training season; we hope to see you all soon.

Regards,

Dr. Charles Goodspeed

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Every Day Counts Exchange #3: Flexibilities in Current Right-of-Way Practices and Procedures
April 19, 2012 1:30pm-4:00pm at the NHDOT John O. Morton Building

The Right of Way (ROW) process is currently a major part of project development. By employing flexibilities already provided for in statute and FHWA regulations, crews can save a significant amount of time. This initiative will showcase opportunities for improved coordination of ROW activities with other key project development actions in preliminary design. Examples include land acquisition, relocation, utilities accommodation, and certification of ROW for a project, as well as NEPA mitigation land needs. The proposed initiative deals only with flexibilities allowed under existing regulations and statutes. Legislative changes required for additional flexibilities will need to be addressed separately.

For more information or to register for the webinar, please call Beth Hamilton at 603-862-1362
Bridging the Bay: Phase 1 Nears Milestone

continued from page 1

over Little Bay, which represents the largest structural initiative of the widening project.

To start, construction includes the addition of a four-lane bridge parallel to the existing four-lane crossing. Future work will involve the rehabilitation of the existing Little Bay Bridge, as well as widening the approaches from Newington through the Dover toll plaza. The project is expected to alleviate the substantial commuting delays at the existing Little Bay crossing.

The proposed structure is a four-lane steel bridge supported on concrete piers which will sit on drilled shafts driven into the bedrock beneath the water. The abutments will rest on battered pipe piles within a mechanically supported earth approach embankment.

The bridge will be built in two phases. The first phase of work includes the abutments, drilled shafts, and assemblence of the pier columns and superstructure of the east side of the bridge. Secondly, the western pier columns and western superstructure will be constructed.

The Little Bay site presents many unique construction challenges. The proposed four-lane structure must be built within a 100-foot corridor between the existing Route 16 crossing and the General Sullivan Bridge - a historic steel truss bridge built in 1927, only open to pedestrians because of its poor condition. In addition, during the bridge’s construction, a 200-foot navigation channel must be maintained at all times in the middle of the site for maritime traffic crossing in and out of the bay.

However, the biggest construction challenge is the water of the bay. Workers will be constructing amidst an extreme six-knot tidal current - one of the fastest tidal currents on the East Coast of North America. These well-known currents beneath the proposed bridge have attracted interest in tidal power generation for decades. The dangers of this current do not allow for conventional heavy marine construction techniques, making the logistics of the project much more challenging.

The new Little Bay crossing is not Cianbro’s first time facing the challenges of bridge work in Little Bay. In 1965, the firm built the first two-lane portion of the existing Little Bay Bridge. During that project, Cianbro quickly ruled out the use of marine equipment and opted instead to use a crane trestle shored off of the General Sullivan Bridge, the primary channel crossing at the time. The lessons learned in 1965 still prove to be valuable today.

Preliminary Work

The bridge’s construction began in September 2010 when the approaches of the General Sullivan Bridge were relocated, making room for access roads to the channel’s edge to be created. These initial projects laid the pathway to future large-scale construction in the bay. Because the new abutments would have filled the
entire space between the existing bridges, there would have been no room for construction access to the channel’s edge. This 40-foot westward shift of the General Sullivan Bridge approaches currently allows crews and equipment to easily access the channel.

The tight site conditions also required the installation of several drilled shafts within the footprint of the crane trestle, as well as the access roads. In order to protect the shaft locations from lateral loads imposed by large crawler cranes, heavy 12-foot square timber boxes were installed in the trestle approaches and backfilled with crushed stone.

While approach work was happening, crews began replacing the North approach to the General Sullivan Bridge, as well as demolishing the North abutment. To facilitate construction, the approaches had been relocated approximately 40 feet West, with much of the northern approach embankment replaced with a two-span curved bridge and approach ramp. The completed ramp was opened to pedestrian traffic in the summer of 2011.

**Into the Channel**

In October 2010, two 230-ton capacity Manitowoc 4100W Series 2 crawler cranes carefully made their way to the channel’s edge and began erecting a temporary crane trestle. Because the swift currents of the bay prevent the safe use of barge mounted equipment, this trestle is crucial to the bridge’s construction.

The assembly of this trestle provided a challenge to engineers. The trestle would have to be supported by piles driven into the very shallow, highly variable, dense glacial till that forms the bottom of the channel. Also, the trestle would have to be constructed without the use of marine equipment, and all 1,120 lineal feet would have to be completed before any work could begin on the main spans of the bridge. Lateral stability would have to be strong enough to resist the substantial tidal currents. Finally, the trestle would be responsible for supporting the enormous weight of several large cranes, each weighing over 230 tons.

The solution to these challenges is a trestle designed in 40-foot modules, each one capable of supporting the next during the erection process. The spans are supported by steel pile “bents” that consist of three 30-inch diameter pipe piles driven to refusal and a double cap beam. Double 36-inch wide flange steel beams carry the load of the crane crawler tracks, while...
a fifth 36-inch beam supports the mid-span of the decking. The deck consists of 12x12 timbers and is 30 feet in length. Curbs, rails, and conduit for power and utility lines run along the deck and provide a safe, effective work platform. In addition to the two main trestles on the North and South ends of the bridge, six finger trestles were constructed allowing access to the piers. To provide lateral stability against the tidal forces, the trestle is braced against the existing Little Bay Bridge through the finger trestle beams.

In order to begin working on the piers in the spring of 2011, the trestle was designed to streamline erection. To maintain the precise alignment needed for each pipe pile, 36-inch sleeves were fabricated and used as a pile template. This template was supported by beams cantilevered off of the proceeding span using the 230 ton weight of the 4100W crane as a counter balance. The piles were set and driven with an APE vibratory hammer and finished with a 30,000-pound drop hammer, which was selected to minimize the likelihood of pile damage in the dense, shallow till. After the main beams and decking were set, the cantilevered template beams were removed and progressed to the next span. Using this system, Cianbro was able to complete the temporary trestle by May 2010.

**Drilled Shaft Installation**

In March 2011, Weeks Marine arrived on site to install the 8.5-foot diameter drilled shafts, as well as the eight-foot diameter rock sockets to support the main piers. To install these large drilled shafts, the contractor mobilized a 230-ton capacity Manitowoc 888 crawler crane with a 141,000-pound kelly bar drilling attachment. Various oversized drilling tools were brought to the site to deal with the widely varying drilling conditions.

The drilling procedure required a 10-foot diameter temporary casing to be installed from the trestle deck elevation (Elev. 15.50) to the bottom of the channel (Elev. -5.00 to -30.00). A permanent 8.5-foot diameter casing was centered in the temporary casing and advanced to bedrock, which varied in elevation from -8.00 to -38.00. After excavating the shaft with an 8-foot diameter auger, the rock sockets were completed using various tools, including full-width core barrels as well as weighted roller bit assemblies.

After each shaft was correctly inserted and cleaned out, stainless steel rebar cages - weighing up to 35,000 pounds - were lowered in. Concrete was placed underwater in the shafts via the tremie method. During a tremie pour, concrete is deposited to the bottom of the shaft through a hopper and tremie tube. By keeping the end of the tremie tube submerged below the free surface of the rising concrete at all times, the washout of cement and fines in the water is minimal. After pouring, the shaft integrity was checked with Cross-hole Sonic Logging (CSL), a procedure which uses pre-installed steel tubes and a sonic transducer/receiver to measure the density of the concrete within the rebar cage. By August 2011, the North side shafts were completed, followed by the South side shafts four months later.

**Rising from the Channel**

In July 2011, crews began forming the North side pier columns and cross-struts for the eastern half (Phase
1) portion of the bridge. The completed drilled shafts with permanent steel casing jackets ended at elevation 14.5, where the 6.5-foot diameter pier columns began. The pier columns contained epoxy-coated rebar, which began at elevation 6.5 and overlapped the stainless rebar for another eight feet. Crews also began removing the finger trestles, which would become inaccessible after structural steel erection. While removing the finger trestle bents, it was noted that some piles had reached refusal with as little as one-foot embedment in the very dense, concrete-like till. Torch cut marks that remained on the bottom of most of the pulled piles indicated that they did not reach bedrock.

In December 2011, after completion of the northern piers and abutment, erection began on the northern Phase 1 structural steel. With the finger trestles removed, space is very limited in the erection area, and considerable planning was required to ensure safe and efficient erection of the girders and diaphragms. To ensure stability against wind loads, each span requires the assembly and hoisting of two paired girders. After the pairs are set and spliced, the remainder of the span girders and cross-bracing are being erected in single units. Cianbro structural engineers have planned the entire erection operation and designed all rigging to ensure the safety of personnel, as well as the well-being of the public traveling adjacent to the construction site.

Phase 1 steel erection will be completed in the spring of 2012. The erection of the 200-foot main channel span is being constructed off-site and will be shipped to the bay site on barges. Once on site, four hydraulic strand jacks will lift the 200,000-pound span into place, minimizing obstruction of the navigation channel. The Phase 1 deck will be completed during the summer of 2012. After completion of Phase 1, Cianbro crews will return to the channel to complete the Phase 2 piers, remove the temporary trestle, and complete the new Little Bay Bridge by 2015.

Once finished, the new Little Bay Bridge will rehabilitate the existing Rte. 16 bridge, which is nearly half a century old, as well as provide New Hampshire commuters relief from a notorious traffic bottleneck. This new bridge is designed to provide nearly a century of service to New Hampshire, thanks to the skills and dedication of the entire project team.

Article was submitted by James Browne, EIT, Construction Structures Engineer, Cianbro Corporation. Photos by Dan Musselwhite, Surveyor, Cianbro Corporation.

Two 4100W Series 2 cranes hoist the first four girders in two pre-assembled pairs weighing up to 91,000lbs each.
Mosaic Parcel Map Project Update

by Dave Salzer, University of New Hampshire Technology Transfer Center

The project team continues to reach new milestones with Phase II of the Municipal Data Collection of the mosaic parcel map layer. As of February 2, the project team has collected data from 201 municipalities, accounting for 90% of parcels in the state. Another 20 municipalities have committed to participating, bringing the total number in the initiative to 221. It is anticipated that the final mosaic data set will be finished in March 2012. Data is currently being distributed back to municipalities via a data sharing pool which is being piloted with 20 municipalities. It is estimated that the statewide municipal sharing pool will begin in the summer of 2012.

To learn more about the project or to find out how you can be involved, email Dave Salzer at dsalzer@unh.edu.

New Hampshire Roads Scholars

The Technology Transfer Center will be releasing the 2012 Roads Scholar Directory in March. To request a copy, please contact Beth Hamilton at 603-862-1362.

Master Roads Scholar is the fourth and highest achieving level of the UNH T² Center Roads Scholar Training Program. To be a Master Roads Scholar, the participant must have completed 100 training hours, including the requirements for Roads Scholar Level II. The third achievement level of the program is becoming a Senior Roads Scholar. Senior Roads Scholars have completed 75 hours of training including the requirements for Roads Scholar Level II. Roads Scholar Level II requires 50 hours total, including 25 hours in technical training, 5 hours of supervisory training, 5 hours of tort/liability or safety, and 5 hours dedicated to environmental training. The first achievement level is Roads Scholar Level I. To achieve Level I, participants must complete 25 hours of training. We congratulate all those who have reached new achievement levels and encourage further training in the future.

Have a question about what level you have achieved or what workshops you have taken? Contact Beth Hamilton at 603-862-1362 or e-mail t².center@unh.edu to request information regarding your Roads Scholar transcript.
increases the soil confinement, thus increasing the vertical stiffness and bearing capacity of the soil. Today, GRS is commonly used in retaining wall construction. A relatively new technology, however, is the incorporation of GRS into bridge abutments and approaches, resulting in a jointless interface between the bridge and the approach. This is known as a GRS Integrated Bridge System (IBS). By integrating the bridge approach with the superstructure of the bridge, the “bump at the bridge” problem caused by differential settlement between bridge abutments and approach roadways virtually disappears. GRS-IBS is a viable technique for many small bridge construction projects.

As a part of the Federal Highway Administration’s (FHWA) Every Day Counts Initiative, the main benefits of GRS-IBS include time and cost savings. Since cast-in-place (CIP) concrete is not used, the concrete’s cure time (which must be accounted for in most bridge construction projects) is not a part of the construction timeline or budget. Concrete abutments and footings are now being replaced with geosynthetic reinforced soil, providing necessary strength and stiffness to support the bridge superstructure. The GRS abutments are protected with modular facing blocks, providing an aesthetic façade as well as being the more time and budget-conscious choice. These construction materials allow GRS-IBS structures to easily be built with common construction equipment and conventional labor practices. No skilled labor or specialized equipment is necessary for these projects. Also, a simpler construction method generally leads to fewer accidents and increased personnel safety.

Another benefit of GRS-IBS is the smooth transition from the approach roadway to the bridge structure. Sometimes, on structures that were not built with the GRS-IBS method, transitions from the roadway to the bridge can be bumpy and jarring. In extreme cases, a bridge bump may be bigger than a typical speed bump. For snow plows, the damage caused by bumps of this size can be tremendous. In turn, the plows may cause significant damage to the roadways. Without these bumps, drivers see increased comfort and the bridge owner tends to see decreased maintenance costs. GRS-IBS decreases the differential settlement between the approach roadway and the bridge substructure by integrating the two, making for seamless transitions. The increased durability of the transition adds to the initial project cost savings throughout the lifespan of the bridge. GRS-IBS is not only more comfortable for drivers, but more cost-effective for both the roadways and bridge owners.

An added bonus to GRS-IBS is the smaller construction footprint. A smaller construction footprint means that a project has a low environmental impact. Considering this slew of significant benefits, it is clear that GRS-IBS is a sustainable, practical, and effective construction option for small bridge projects.

**Design Considerations**

As previously stated, the construction of GRS consists of alternating layers of compacted granular fill and geosynthetic reinforcement on top of a reinforced soil foundation. GRS-IBS construction follows a simple three step process:
1. Lay down a row of facing blocks
2. Compact a layer of granular fill material behind the facing blocks
3. Place layer of geosynthetic reinforcement, repeat

The geosynthetic reinforcement is frictionally connected to the face wall blocking, allowing for a highly adaptable design system. The facing blocks should be between eight and twelve inches to allow for composite behavior. The closer the reinforcement spacing is, the better the composite action between the soil and the reinforcement. Contrary to what logical reasoning would suggest, the strength of the geosynthetic fabric does not play a significant role in GRS deformations. GRS deformation is mostly controlled by reinforcement spacing and the level of soil compaction. It is generally accepted that any spacing less than or equal to twelve inches provides sufficient strength and stiffness for a bridge abutment. The top three or four courses of facing blocks should be pinned and grouted. The approach is integrated into the bridge system by constructing layers of GRS directly behind the beams. This also allows for a jointless pavement design.

There should be a Bearing Bed Reinforcement Zone directly under the beam bearing seats in order to accommodate for the increased load on the soil due to the bridge. Generally speaking, the length of the bearing bed reinforcement should be double the beam setback length. The bearing bed reinforcement spacing ought to be at least half the normal reinforcement spacing. The depth of the bearing bed is determined based on internal stability design for required reinforcement strength. GRS-IBS designs should be made following the Geosynthetic Reinforced Soil Integrated Bridge System Interim Implementation Guide, which is distributed by the FHWA.

There are limitations on the height of the abutment face as well as the allowable bearing stress. The design method proposed by the FHWA's Geosynthetic Reinforced Soil Integrated Bridge System Interim Implementation Guide is limited to GRS Structures with
a vertical (or near-vertical) face wall that does not exceed 30 feet. The bearing stress on the GRS abutment is limited to 4000 psf. Also, it is recommended that spans be limited to approximately 140 feet. Longer spans may be permissible in the future, but the demands of longer spans on the GRS-IBS abutments are not fully understood at this time.

Concluding Remarks

Currently, there are 44 bridges in the United States with GRS abutments, 27 of which are GRS-IBS. With the inclusion of GRS-IBS in the *Every Day Counts* Initiative, the popularity of the technique is expected to increase significantly in the near future. For more information on GRS-IBS, visit the *Every Day Counts* page on the FHWA website (http://www.fhwa.dot.gov/everydaycounts) and look for GRS-IBS. Also, refer to the Geosynthetic Reinforced Soil Integrated Bridge System Synthesis Report (FHWA) as well as the Geosynthetic Reinforced Soil Integrated Bridge System Interim Implementation Guide (FHWA).

References


T² NH State Legislative Updates

*by Beth Hamilton, UNH T²*

This is the first edition of a summary of current and recent New Hampshire House and Senate Bills that may affect you, your organization, town or city, or operations. At any given time, there are many Bills that could potentially affect the way you and your organization may operate. The Technology Transfer Center would encourage you to be aware by checking www.gencourt.state.nh.us frequently for upcoming Bills. A section of Road Business will be devoted to highlighting some of the Bills that could be important to the readers. If you have any suggestions, please feel free to email e.hamilton@unh.edu or call Beth Hamilton at 603-862-1362 so we can include the most up-to-date information.

• Senate Bill 247 is relative to creating a certification program for municipal culvert installers. It would authorize the Department of Environmental Services to develop the certification program in conjunction with the Technology Transfer Center.

• House Bill 1716 is relative to the State’s 10-year Transportation Improvement Program.

• Senate Bill 386 is relative to authorizing the State Treasurer to issue bonds for highway construction.

• Senate Bill 265 is relative to the definition of stormwater to change to “water from precipitation that results in runoff, snowmelt runoff, and surface runoff and drainage, together with debris, chemicals, sediment, or other substances that may be carried along with the water.”

These Bills could particularly affect you and your organization. Please take the time to visit www.gencourt.state.nh.us to view these Bills and more. Please be sure to contact your local representatives to voice your opinion on the matters at hand.
As someone who is active with the American Public Works Association (APWA) national, I was not the least bit surprised when I got a call from the president, George Crombie, asking me to get involved in a project. I had no idea, however, that the project would forever change my outlook on life and the perception with which I view the world. In 2011, under George’s leadership, APWA began a new initiative called Global Solutions. The goal of Global Solutions is to provide an international exchange forum promoting leading edge best practices in public works worldwide. Global Solutions also strives to provide outreach to educate and share knowledge with underdeveloped countries. George was asking me to take part in a Global Solutions Fact Finding trip to Haiti to see if there was anything that APWA could do to assist the country that is still ravaged by the earthquake that hit the Port-au-Prince area in January 2010.

I had heard that Haiti was an extremely poor nation. I also knew that the conditions were bad before the earthquake and could not imagine what I would find after the earthquake. Haiti is located about 60 miles east of Cuba, just off the Florida coast. It is about the size of Maryland and is home to about 9.9 million inhabitants. Four out of five Haitians live in poverty, more than half in abject poverty; the per capital GDP is just over 700 US dollars per year. In Haiti, unemployment exceeds 80%, the adult illiteracy rate is 56%, and the life expectancy of a Haitian male is only 59 years old. To say the least – conditions are bad.

Haiti has many problems. It has been a bed of political instability since it gained its independence from France in 1803. From 1843 to 1915, Haiti experienced twenty-two changes in government. What few natural resources Haiti had have been depleted. The island nation has been largely depleted of forest to make charcoal to cook with. As you look down the valley you can see the haze of the charcoal smoke at all times of day. There is virtually no infrastructure to speak of, and the remnants of the earthquake are seen everywhere you look. The graft and corruption are obvious impediments to progress. The extreme spread between the “haves” (Bourgeois) and the “have nots” is immense.

As you travel around Port-au-Prince as a public works official, you get to see first-hand how our profession improves the quality of life for our residents. In the morning, sewage flows down the ditch lines within feet of the fruit and vegetables that people are selling in the sidewalk markets that are everywhere. Because the sidewalks are crammed with people and wares trying to scrape out enough money to survive, pedestrians are forced to walk in the streets. Traffic control is non-existent. The driver with the biggest vehicle and loudest horn has the right of way through the traffic that at times is five lanes of traffic vying for the two lanes that are actually available, all the while dodging pedestrians, motorcycles, and bicycles. Chaos cannot begin to describe what it is like. Layer that with the presence of trash, smog, and dust everywhere and you have a picture of what life without public works would be like.

The government officials that we met with are in a hopeless situation. There are absolutely no resources to work with. Many countries have pledged support to help Haiti. However, few are sending the money until control is gained over the corruption. Even the Haitian public works officials cannot get donated equipment through the ports. Land ownership is questionable,
making the generation of revenue through taxation difficult. Even if land ownership could be sorted out, few would have the resources to actually pay their taxes. Many squatters just build a house wherever they find an open spot and illegally tie into the electrical system, making power distribution very unreliable.

Those of you that know me know how I constantly strive to put public works on a level playing field with police and fire in emergency response. That being said, however, one of the things that I took away from Haiti was this: until there is a police presence that can establish law and order, it will be very difficult for public works to do its job. We came across a job where public works was trying to repave an intersection. The sidewalk vendors were still there, people and cars were moving through the hot asphalt at the same time the rollers were trying to compact it in place. It was chaos. I asked why they didn’t close the road to get the job done right and the reply was, “The people would just revolt if we did that.”

On a positive note, the Haitians that I did come into contact with were very warm and welcoming. It was unsettling for me to think that I probably had more cash in my pocket then the people that were taking care of me would make in a month. We attended a church service while we were there that will change my life forever. I could not understand a word of the sermon but what did affect me was the strength, character, pride, and community that was evident within the walls of the church. Everyone in the church was nicely dressed, clean, and smiling. If you had not experienced the conditions outside the church firsthand, you would have no idea that these folks struggled on a daily basis just to provide basic necessities to survive.

APWA is currently working on a white paper reviewing our recommendations from our trip. No solution will be easy, but we did come up with a few ways that we could definitely help. I will keep you posted as the APWA International Affairs Committee and Board of Directors weigh our recommendations.
New Hampshire Public Works Mutual Aid

With record storms, flooding, and most recently Hurricane Irene and the October Noreaster, the need for mutual aid is ever increasing. In times of crisis, a mutual aid agreement allows neighboring communities to provide assistance in the form of labor and equipment to help each other through the disaster. Mutual aid is a FEMA-approved contract and will make the assisting municipality eligible for federal reimbursement.

Mutual Aid is available for only $25 per year and the benefits are innumerable. For more information, visit the T² website at www.t2.unh.edu/ma or contact Beth Hamilton at 603-862-1362.

Retroreflectometer Loan Program

NH LTAP has three retroreflectometers available to rent to NH municipalities. The retroreflectometers are able to accurately measure the retroreflectivity of road signs from a distance. Use one to meet the MUTCD Retroreflectivity Standards by loaning one today!

The fee for the equipment loan is $25, and municipalities may keep the retroreflectometer for up to six weeks (additional time may be requested).

For more information
www.t2.unh.edu/retroreflectometer
t2.center@unh.edu
603-862-2826

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Crossword Puzzle

Be the first to complete this crossword and fax it (603-862-0620) to win a FREE T² workshop!

NAME

AFFILIATION

E-MAIL

PHONE

ACROSS
2. Hatians make ____ ____ US dollars a year. (2 words)
3. The Little Bay Bridge will relieve New Hampshire commuters from ____ traffic.
6. This type of concrete is not used in GRS bridge construction.
7. The number of bridges in the United States that have GRS abutments.
8. This also allows for ____ pavement design.
9. Public Works inability to function in Haiti is due to lack of ____ presence.
11. The assembly of this ____ provided a challenge to engineers.
12. What is the name of the firm who will be working on the Little Bay Bridge for the second time?

DOWN
1. This is an ancient technology still used today. (3 words)
4. How many more municipalities have committed to participating in the Mosaic Parcel Map?
5. What is the biggest challenge of the Little Bay Bridge? (2 words)
10. The country that the American Public Works Association went to for an international exchange.
## Spring 2012 Training Calendar

More dates to be announced soon!

Check out our website for the most up-to-date calendar

www.t2.unh.edu/training-calendar

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