



TRANSPORTATION

Building Jobs through
Transportation

FOCUS

Summer
2006

News and Information from the Rahall Transportation Institute



Roundtable Discussion Brings Region's Transportation Professionals Together

By Errin Jewell

Thirty-seven transportation professionals from the tri-state region met to take part in "A Roundtable Discussion: Public Private Partnership Opportunities in the Appalachian Region," June 5, 2006, in Huntington, W.Va.



Above: Bob Plymale and Richard Begley present "RTI's Role in Fostering Economic Development in

After the roundtable discussion began with a welcome and kickoff, presentations were given by attendees, including "FHWA's PPP Program and SEP-15," "ADHS Program and Project Innovations" and "RTI's Role in Fostering Economic Development in Appalachia." These were followed by presentations specific to each participating state's transportation issues, such as, "WV Presentation – King Coal

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Partner Schools:



ATV/MULE Training Prepares for GIS Work

By Errin Jewell

In order to better facilitate research and educational projects in areas with rugged terrain, approximately 14 members of RTI's staff completed All Terrain Vehicle (ATV) Training, which was made available through a cooperative arrangement with the Hatfield-McCoy Trail System.

The first training session took place June 22 and the second session took place June 29. Research associates, graduate research assistants and other staff traveled to the Hatfield-McCoy Trail's Waterways Trailhead,



CONTINUED PAGE 3: ATV

Summer 2006

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Plymale's Perspective The Director's Report



3Ts Alive in West Virginia Technology, Tourism, Transportation

Technology, tourism and transportation are the "3Ts" that are of extreme importance to the economic well-being of our region. In fact, Rep. Nick Rahall has stressed that the "3Ts" are the three keys to "unlocking the door to economic opportunities in southern West Virginia" and the entire Appalachian region.

RTI is fortunate to help facilitate the growth of the "3Ts" in West Virginia through our research, education, technology transfer and outreach activities such as:

- *Technology* - Many of our research projects are devoted to developing new technologies that will create stronger, longer-lasting and more cost effective ways to create roads, bridges, safety components and computer-based developments to make our lives safer and easier.
- *Tourism* - We are helping to educate individuals to plan, create and maintain recreational trails, to properly use existing recreational equipment and to facilitate the development of riverfront tourism along the Ohio River.
- *Transportation* - Building Jobs through Transportation is our vision. Without a sound transportation system, which includes infrastructure, vehicles, new developments and the people who operate it all, it is nearly impossible to fully reap the benefits of the advances in technology and tourism. In the future, we hope to play an even bigger part in expanding the "3Ts," thus making our region a better place to live, work and play.

Sincerely,
Robert H. Plymale

New 4TOPS Program Featured in *CUTC News*

RTI's recent partnership with the Pittsburgh Gateway's National Center for Bridge, Highway and Transportation Technologies, which was made possible through a generous grant from the Benedum Foundation, was featured in the April 2006 edition of *CUTC News*.

According to the article, the grant provides \$350 thousand to help develop a new transportation business incubator at RTI in addition to providing customized business acceleration services.

Richard Begley, associate director, submitted the article, which was featured in the April 2006 issue.

CUTC News is a quarterly newsletter published by the Council of University Transportation Centers, which is an organization that consists of more than sixty of the nation's leading university-based transportation research and education programs.

The article is featured on page 16 of the publication and is available online at <http://cutc.tamu.edu>.





CONTINUED PAGE 3: MARITIME



Above: Roundtable participants traveled to Mingo County, W.Va., for a field review of the Red Jacket Project.



Left: Transportation professionals came from West Virginia, Kentucky, Ohio, Virginia and Washington, D.C. to take part in the roundtable discussion.

Highway Red Jacket Section,” “KY Presentation – Designating and Engineering Waste Areas to Accommodate Future Public Uses – The US 460 Experience,” “Virginia Presentation – Coalfields Expressway and the PPTA Experience” and “Ohio Presentation – ODOT’s Experience with PPPs.” The first day ended with an open discussion and wrap-up.

The second day, participants traveled to Mingo County, W.Va., for a field review of the Red Jacket Project, which is a portion of the King Coal Highway, and a presentation, “Mingo County Land Use Master Plan,” which concluded the event.

Organizations represented during the event included: RTI, West Virginia Division of Highways, Ohio Department of Transportation, Kentucky Transportation Cabinet, Virginia Department of Transportation, Appalachian Regional Commission, Federal Highway Administration (FHWA), Mingo County Redevelopment Authority, FHWA – West Virginia Division, FHWA – Ohio Division, FHWA – Kentucky Division, FHWA - Virginia Division and Pittsburgh Gateways Corporation.

CONTINUED PAGE 3: ATV/MULE

a 65-mile section of trail located in Boone County, W.Va., for the training, which was offered by the All Terrain Vehicle Safety Institute (ASI). Steve Simpkins of the Hatfield-McCoy Trails served as instructor for both training sessions. Participants learned to pre-inspect vehicles before use, stop and start vehicles, make quick turns, ride on hills or rough terrain, make emergency stops and swerve or ride over obstacles.

“RTI has a great deal of projects that require field work in rural or rugged terrain areas,” Director Bob Plymale said. “Learning to properly operate ATVs may make our work in mapping rural areas for first responders, creating new recreational trails and making safety inspections on rural railroad tracks safer, quicker and more cost-efficient.”

To ensure their safety, trainees were required to wear approved motorcycle helmets, eye protection, boots and long-sleeved clothing.



Left: Riders learned to safely drive across obstacles during ATV training.





Helmer Becomes RTI's First Trails Specialist

By Errin Jewell

Recreational trails have become one of southern West Virginia's top tourist attractions, being surpassed only by white water rafting in 2005.

In fact, since 2000, the Hatfield-McCoy Trail system, which is the largest trail system in the region, has grown from 300 miles in two counties to more than 500 miles in five counties.

"This is an economic development project," Jeff Lusk, executive director of the Hatfield-McCoy Trail said. "It is about bringing jobs and money to southern West Virginia."

The Hatfield-McCoy Trail's goal is to eventually encompass 2000 miles throughout nine southern coalfield counties, but before this expansion can occur, trails must be planned, designed, mapped and constructed, while current trails are maintained.

To help facilitate this work, Bryan Helmer became RTI's first Trails Specialist Sept. 1, 2006.

For RTI, he will work with the West Virginia State Trail Coordinator to identify and maintain a data base of agencies and organizations interested in securing contracted assistance in developing new trails and maintaining existing trails.

He will also assist in creating a website to provide information about and to promote the trail-related services provided by RTI; conduct on-site analysis of identified areas for



Above: Bryan Helmer became RTI's first Trails Specialist Sept. 1, 2006.

contracted services; establish scopes of work; and participate in the activities of the Statewide

"This is an economic development project," Jeff Lusk, executive director of the Hatfield-McCoy Trail said.

"It is about bringing jobs and money to southern West Virginia."

Trails Coalition.

His duties specifically for the Hatfield-McCoy Trails include performing mapping, layout, construction, and maintenance of trails and trailhead structures.

He will provide environmental oversight of trail related operations in concordance with West Virginia laws and regulations; use GPS to map existing trails, explore new route locations and create

links among and between existing and planned trail routes; and download, analyze and process GPS data.

In addition, Helmer will assist field work crews with trail construction and maintenance activities issues; research property ownership and identify property boundaries as needed; plan and develop new trail systems including trail designation, trail rating, alignment, and signage; create accurate maps identifying trail locations, property boundaries and resource extraction locations and anticipated duration of extraction activities.

He will also direct and supervise trail construction, trail reroutes, and single track construction.

Helmer earned a Bachelor of Science in Parks, Recreation and Conservation from Marshall University, which included Off-Highway Vehicle Management Courses instructed by Dr. Raymond Busbee.

Because he completed an internship with the Hatfield-McCoy Trails in 2004, he is familiar with the organization's operations.

As an intern, he said he gained experience in all positions within the company, and his main responsibilities at that time were trail and fleet maintenance.

"I learned planning, assessing and trail layout, working with Troy Dominic and John Fekete, director of Trail Planning and Development for the Hatfield-McCoy Trails."





Robertson Represents RTI as New Member of Maritime Transportation System National Advisory Council

By Errin Jewell

On August 16, 2006, RTI was invited to become a new member of the Maritime Transportation System National Advisory Council, (MTSNAC). Dana Robertson, director of the National Maritime Enhancement Institute at RTI, will serve a three-year membership term on the council; Robert Plymale, director, will serve as alternate.

Thirty senior level representatives from transportation-related organizations comprise the Maritime Transportation System National Advisory Council, which was established by the United States Secretary of Transportation to advise the Secretary on matters relating to the Marine Transportation system-waterways, ports and their intermodal connections. Since the MTSNAC's first meeting in May 2000, its Council has addressed a number of challenging issues including port security, freight system capacity and congestion in and around the Nation's port communities.

U.S. Rep. Nick J. Rahall, II, said, "This is a proud day for RTI and Marshall University. Once again, we see RTI recognized as a leader in the transportation

"...Once again, we see RTI recognized as a leader in the transportation industry. Invitation to the Maritime Transportation System National Advisory Council will give RTI the opportunity to directly advise the Secretary of Transportation in issues impacting our maritime transportation..."

U.S. Rep. Nick J. Rahall, II



Above: NMEI Director Robertson

industry. Invitation to the Maritime Transportation System National Advisory Council will give RTI the opportunity to directly advise the Secretary of Transportation in issues impacting our maritime transportation. This will only benefit Marshall, Huntington and southern West Virginia."

Plymale said the invitation will allow RTI "to contribute to solving some of the toughest, most demanding issues facing our Nation's ports - both coastal and inland. Robertson's knowledge of the challenges facing our Nation's inland waterways will be invaluable. His presence on the council will ensure our Nation's nine Maritime Enhancement Institutes and inland ports have a voice on critical inland transportation issues."

Robertson will represent RTI at the next MTSNAC meeting this fall.

RTI Hosts Traffic Analysis Workshop and Peer Exchange

By Errin Jewell

RTI hosted a Traffic Analysis Workshop and Peer Exchange Feb. 28 and March 1, 2006, at its Huntington Headquarters. The purpose of this workshop was to give an overview of traffic analysis tools that are available to the highway community, spanning from planning to traffic operations. In addition, the peer exchange activities provided an opportunity for participants to discuss local projects and issues. Material from the FHWA Traffic Analysis Toolbox was presented and local traffic analysis projects were discussed. The class was open to 25 participants, who were also provided an opportunity to exchange information and discuss experiences and questions.

Grant Zammit, FHWA Resource Center, Operations Technical Service Team, was the instructor/facilitator. Cathy Satterfield, FHWA WV Division, Traffic Safety Engineer, was the local coordinator.



WVDOT Employees Complete Level 3 GIS Training

By Errin Jewell

RTI recently finished Level 3 Geographic Information Systems (GIS) Training with West Virginia Department of Transportation Employees.

The course was instructed by research associates Chandra Inglis-Smith and Sanghong Yoo, who were assisted by graduate research assistants Maria Simental, Brandi Yalniz and Staci Denovchik.

The Level 3 course is an advance course preceded by Level 1 and 2 training.

Diana Long, transportation workforce development coordinator, said Level 3 is a “capstone experience, where participants are put into a situation where they have to find specific data, decide a strategy and produce a report. They had to apply the knowledge to a specific set of data, more than just demonstrate step by step skills.”

Long said Level 3 simulated skills they use on the job. “They will use their skills to produce accurate maps and reports to communicate to other agencies and the public. The layering of information enables alternatives and scenarios to be generated quickly and accurately. This results in best case solutions for transportation problems at a much quicker rate and more comprehensive planning and monitoring.”

Individuals who complete the courses received a certificate of 1 CEU issued by Marshall Community and Technical College.



Above: A Level 3 GIS Training course student from the WVDOT applies knowledge learned during the three courses in a hands-on exercise.

Below: Skills learned in the GIS training courses will be used to produce accurate maps and reports to communicate with clients and the public.





Partner School's Intelligent Ground Vehicle Places 5th in International Competition

A team of nine undergraduate students from Bluefield State University (BSU), one of RTI's partner schools in southern West Virginia, competed in the 14th Annual Intelligent Ground Vehicle Competition (IGVC) June 10-12, 2006.

The IGVC competition is a multidisciplinary, theory-based, hands-on, team implemented, outcome assessed, product realization-based competition. It offers a design experience that is at the very cutting edge of engineering education.

BLUEFIELD STATE COLLEGE



Center for Applied Research & Technology



The team designed, constructed and tested the autonomous intelligent vehicle, "Anassa II," which placed fifth in the competition. The team, which was coached by Dr. Robert Riggins, professor of the electrical engineering technology, received two credit hours for their work on Anassa II. The international competition took place at the Selfridge Air National Guard Base in Harrison Township, Michigan. Approximately 31 higher education institutions from at least four countries entered intelligent ground vehicles in the competition.

Because of the success of Anassa I, which the team created and entered in the 2005 competition, Anassa II was created from the previous robot's platform, but was outfitted with completely new software and sensor architecture. In creating Anassa II, the in-depth knowledge from previous IGVC robots, along with related autonomous ground robotic vehicle research, was joined together with the new talent and ideas of upcoming students to produce another innovative design project. The team's aim was to create an autonomous ground robotic vehicle that is more intelligent than any of the previous vehicles at BSU with ever-increasing human thought characteristics.

According to the IGVC, the technologies involved in the competition come from a wide range of disciplines and are those of great current interest in both industry and engineering education.

After researching the needs and design specifications for the new robot, students used Computer-Aided Design (CAD) and Solid Edge Modeling software to create computer simulations of the structure, as well as computer simulations that mimicked robot's sensor data. Next Anassa II's mechanical design was configured and the team built the frame and chassis, drive system, body, electrical design, power system and sensors.

A variety of sensing devices was then incorporated into the robot design and include: a CSI Wireless DGPS receiver and antennas to give latitude, longitude, velocity, and heading; a Sick Laser Measurement System that sweeps 180 degrees for object avoidance that can reach as far as 80 meters; a digital camcorder used to detect boundary lines; a digital compass that gives the actual heading of the vehicle along with the DGPS heading; encoders that are attached to the motor shafts and used to determine distance traveled and the direction of travel; a Gyro that mainly provides a backup source for Navigation Challenge to stabilize the heading; and a laptop computer that contains the Autonomous and Navigation Challenge programs written in a combination of Visual Basic, MATLAB, and C++.

Anassa II is also being used for BSU's Center for Applied Research and Technology's research involving industrial mining safety and power utility maintenance, as well as for a test platform for other upcoming challenges.



6th Geohazards Technical Forum Takes Place in Lexington, Ky.

By Errin Jewell

Transportation professionals gathered in Lexington, Ky., August 2-3, 2006, to attend the 6th Annual Technical Forum, Geohazards in Transportation in the Appalachian Region.



Above: Szwilski welcomes participants to the technical forum.

The event was hosted by the University of Kentucky and the Kentucky Geological Society (KGS) and was sponsored by RTI and Marshall University's Center for Environmental, Geotechnical and Applied Sciences (CEGAS). Additional participants came from organizations including the United States Geological Society, Ohio Department of Transportation, Tennessee Department of Transportation, United States Army Corps of Engineers and Federal



Above: Participants listen attentively to a geohazards session.

Highway Administration.

After Dr. Tony Szwilski, RTI principal investigator and Appalachian Coalition Chair, welcomed participants, John Beech chaired the opening session, "Mapping Utilizing GIS and GPS." Other sessions during the first day were "Geotechnical Databases," "Water Issues," "Landslides: Prediction, Prevention and Remediation" and "Seismic Issues and Assessment." Day two began with concurrent sessions "Rock Reinforcement and Anchoring" and "Risk and Reliability Assessment," continued with "Site Characterization: Over Karst and AML" and ended with closing remarks.

Individuals were also eligible for Professional Development Hours.

Operation Lifesaver Distributes Information at the State Fair of W.Va.

By Errin Jewell

Several RTI employees volunteered to present rail safety information on behalf of Operation Lifesaver (OL) at the State Fair of West Virginia, in Fairlea, August 11-20, 2006.

John Ball, Kimberley Baker-Huff, Errin Jewell, Kate Jordan and LeAndria Reed assisted in distributing railroad safety brochures, information sheets, engineer hats and a video presentation throughout the event.

According to the State Fair of West Virginia's website, approximately 210,000 fair goers attended the event. This number includes fair employees, volunteers and attendees, but does not include children under five years old who are admitted free.





Hamilton Receives NASA Grant for LEGO NXT

By Kate Jordan

During the summer, Linda Hamilton, Marshall University math instructor and Rahall Transportation Institute Coordinator of K-12 Outreach Intelligent Transportation Systems Workshops, always finds herself busy working with hundreds of local students on LEGO activities at MU's campus, community centers, libraries and camps throughout West Virginia.

While Hamilton's LEGO camps are always a huge success with students on summer vacation, the more impressive endeavor Hamilton has recently embarked upon is her approval for a grant from the NASA West Virginia Space Grant Consortium. The WVSGC has a mission to "develop a statewide infrastructure that will enhance the state's competitiveness in aerospace research, education, and industrial activities. Specifically, the Consortium aims to capture, channel, and enhance the interests and activities of current and potential scientists and engineers in its member institutions." By awarding Hamilton the grant, which she originally applied for to cover costs for the new LEGO NXT robots, WVSGC is supporting their mission by enabling students to become familiar with technology, science and engineering.

The new LEGO NXT robots will be used for outreach activities in cooperation with NASA Explorer



schools in Mt. View and Tucker Valley, as well as tri-state area schools. Hamilton is also one of the NXT pilot educators for Carnegie Mellon's curriculum in Robotics Engineering. This year's FIRST LEGO League teams will also be using the new NXT robots in preparation for the FLL tournament that will be themed on nanotechnology. For students age 9-11 interested in FLL, Hamilton will be having team meetings September through December at Marshall's Morrow Library. Marshall University students, teachers and others interested in nanotechnology are welcome to assist. For more information on FLL and meeting times please visit www.marshall.edu/lego.



**NASA West Virginia
Space Grant
Consortium**





Bike Rodeo and Car Seat Clinic Teaches Safety

By Erin Jewell

With the recent additions to statewide and local car safety seat requirements and helmet laws, many parents and children need an opportunity to make sure the equipment they use is safe and up to date.

To meet this need, the Transportation Safety and Injury Prevention program, which was created by St. Mary's Medical Center and the Rahall Transportation Institute, hosted a free bike rodeo and car seat clinic June 11, 2006 at Ritter Park in Huntington, W. Va.

West Virginia state law requires that infants, toddlers and young children up to eight years of age and 4'9" inches tall use safety or booster seats. During the car seat safety clinic, parents brought their vehicles and safety or boosters seats for safety inspections. TIPS workers helped determine if the seats were the correct size and properly installed, as well as if the children were correctly secured in the seats.

The bike rodeo was targeted at students who ride non-motorized vehicles including bicycles and tricycles. According to the National Highway Traffic Safety Administration (NHTSA), one child out of seven will receive head injuries as the result of a bicycle crash, and biking is the cause for more visits to the emergency room among children ages 5 to 15 than any other sport. Because the NHTSA also estimates helmets can prevent 75 percent of bicycle fatalities among children, the bike rodeo consisted of bike or trike inspections, helmet fittings and an obstacle course. Students who passed all of the inspections and completed the course receive bicycle "licenses."

In addition, a 911 simulator informed children how to call for assistance in case of an emergency, and local fire department workers were on hand to teach fire safety.

Staff and Student Spotlight:

Dibesh Shrestha

Birthplace: Chitwan, Nepal
Title: Graduate Research Assistant

Education: MS in Information Systems from Marshall University and BS in Computer Science from WVU Tech



Projects with RTI: process lidar data using Flip7 to extract rail track, flight path and laser points; lidar point data interpolation to use in web-based GIS system; digitization of railtrack data

Sang H. Yoo

Birthplace: Gechang, South Korea

Title: Research Associate - GIS

Education: BS in Inorganic Material Engineering from Kyungsang National University. MS in Environmental Engineering & MS in Physical Science from Marshall University.



Projects with RTI: Phase III of Appalachian Development Highway System Geographic Information System Project; GIS Training for the West Virginia DOT





OL Hosts 6th Year of Rail Camp

By Kate Jordan,
Operation Lifesaver Summer Rail Camp
Counselor

Sunday June 25, kicked off the 2006 West Virginia Operation Lifesaver summer rail camp that took place in Petersburg, W.Va. Operation Lifesaver is a non-profit safety education organization that works to reduce and eliminate the number of fatalities and injuries at highway-rail grade crossings and railroad rights-of-way throughout the state.

Attending this year's camp were approximately 30 students, both boys and girls, age 7-17, who made their way to the eastern panhandle for a week of learning about careers in the railway industry and hands-on experience with locomotives. Several RTI employees, John Ball, LeAndria Reed and I, served as camp counselors.

Sunday evening, students hit the sack early to prepare for what would turn out to be a very busy week. With a 7 a.m. wake-up call and 8 a.m. breakfast on Monday, students looked forward to a scenic train ride through the Potomac River Valley that would take place later in the afternoon. In between games of dodge ball and kick-ball, students took some classes from train enthusiast Anthony Cole on railway safety. Students were also offered the opportunity to speak and interact with various railway employees who offered them up-to-date information on pursuing careers in the railway industry. Following Monday's activities, the rest of the week was jam



packed with events to keep the students on their toes, from a game of mud volleyball to driving a real locomotive, which was an early favorite activity, students didn't have much time to get bored.

By the time Wednesday rolled around, rain clouds from earlier in the week were pushed aside



by sunshine and campers boarded individual motor cars for a trip down the track from Petersburg to Romney, another nearby city.

Wednesday also brought a break from peanut butter and jelly as campers were served a catered meal, visited by their parents, and a very special visit from OL's Sly Fox.

Thursday, in the tradition of saving the best for last, everyone boarded the big red bus to a trip to Seneca Caverns, where campers were given a tour of the caves and did some sifting for precious gems. Later that evening, all of the campers, grown-ups included, participated in a hand car race down the track, which made for a great end to a great week.

Special thanks goes to John Perry, West Virginia Operation Lifesaver State Coordinator who acted as this year's camp director, Roger Lipscomb,

Operation Lifesaver chairman, and family, and RTI for their continued support and sponsorship of rail camp. Other thanks to the numerous men and women



who volunteered their time to assist as counselors and extra help along with a huge thanks to the men and women of the railway industry who helped to educate rail camp students throughout the week.





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Contributors: Barbara Roberts, Diana Long, LeAndria Reed, Dana Robertson

Read *Transportation Focus* online at www.marshall.edu/ati/news/newsletter.htmlx.

Upcoming Events

Conferences

Oct. 14, 2006

Coal Mitigation: Prospects for Environmental and Economic Benefits, A Symposium at Marshall University, Huntington, W.Va.

Technology Transfer Activities

Oct. 16-17, 2006

Appraisal for Federal-Aid Highway Programs, Charleston, W.Va.

Oct. 18, 2006

Appraisal for Federal-Aid Highway Review, Charleston, W.Va.

Oct. 31-Nov. 1-2, 2006

Urban Drainage Design, Charleston, W.Va.

Nov. 15-16, 2006

Two-Day PASS Course, Raleigh County Community Action, Beckley, W.Va.

Feb. 6-7, 2007

Principles of Writing Highway Construction, Charleston, W.Va.

K-12 Outreach Activities

Dec. 2, 2006

FIRST LEGO League Local Event, Morrow Library Room 100,

Marshall University, Huntington, W.Va.

Register online at www.marshall.edu/rti or call Sandra Jones at (304) 696-7098.

 Nick J. Rahall, II
Appalachian Transportation Institute

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