



# TRANSPORTATION

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# FOCUS

Summer  
2003

News and Information from the Rahall Transportation Institute



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### Partner Schools:



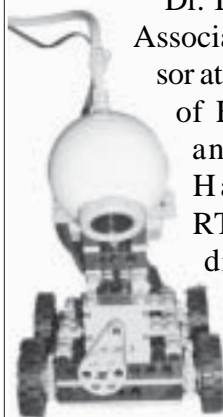
## STUDENTS EXPLORE SIMULATED 'MARS' TERRAIN THROUGH RTI, MU PROGRAM

by Brandon Totten

Instructors from Marshall University and RTI can now help local students guide LEGO astrobots, "Biff Starling" and "Sandy Moondust," through a simulation of the surface of the planet Mars located at Jenkins Hall, Huntington, W.Va.

The program will allow teachers and students to explore unknown territory through the robots' eyes similar to the way scientists will use robotic rovers to explore the surface of Mars.

Dr. Bill Carter, Associate Professor at the School of Education, and Linda Hamilton, RTI Coordinator for Pre-K-12 Outreach Intelligent Trans-



portation Systems Workshops Using LEGO Robotics, set up the Mars Rover software and constructed a diorama that simulates the South Pole of Mars. The model is based

on actual terrain in Webster Springs, W.Va.

"Anybody, anywhere in the world can log onto this program and control the rover," Carter said.

Continued on 3: ROVER

## RAHALL RECEIVES DISTINGUISHED SERVICE AWARD FROM MU ALUMNI ASSOCIATION

by Errin Jewell

Marshall University Alumni Association awarded Congressman



Left: Congressman Nick J. Rahall, II thanks the MUAA for the Distinguished Service Award.

Nick J. Rahall, II the 2003 Distinguished Service Award April 26, for his "longtime support to Marshall University," Lance West, vice president for alumni development, said.

The Distinguished Service Award is the "highest honor" the alumni association may bestow on

an individual who is not an alumnus, West said.

"This award honors the benefits the Congressman has provided to Marshall University, including the funds to establish [RTI] and other programs, which have a great impact on the individuals of this region," West said.

Continued on 3: AWARD

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## Plymale's Perspective: *The Director's Report*

# "Education: the future of Transportation and Economic Development in Appalachia"

The key to the future of development in transportation is education, and RTI has been instrumental in shaping this bright future for the Appalachian Region and its people.

Since 1998, RTI, Marshall University and partner schools Bluefield State College, Mountain State University, Southern West Virginia Community and Technical College and West Virginia University Institute of Technology have focused on educating new generations of undergraduate and graduate students. New graduate transportation programs have also been added in business administration and technology management from these institutions of higher learning.

RTI's educational goal is to provide a multi-disciplinary program of course work and experimental learning to enhance transportation and economic development in mountain regions. By increasing the educational opportunities for undergraduate and graduate students, RTI is preparing them to make a positive impact on the transportation workforce.



"The need for educated leaders in Appalachia is paramount to the economic future of the region."

At administrative headquarters, with one of our principal investigators in the classroom, in the field or while conducting independent research, exposure in both the classroom and experiential learning will produce a significant number of well-trained graduates who will become professionals in the transportation field.

RTI also focuses education efforts on students before they reach college age. RTI programs target the Early Education Center at MU, LEGO camps teach elementary and middle school students transportation concepts using LEGO robotics and Operation Lifesaver teaches children railroad safety.

The need for educated leaders in Appalachia is paramount to the economic future of the region. Today, these future leaders are students striving to realize their academic potential at RTI; tomorrow, they will be leaders in the fields of education, engineering, computer sciences and geology.

The future is ours to shape, and with the support of RTI and its partner schools, the future is now.

*Sincerely,*  
**Bob Plymale, RTI Director**



From page 1: AWARD

In 1998, RTI was established by Congressman Rahall in the Transportation Equity Act for the 21st Century through a \$12 million grant. This grant is one of the largest grant awards in the history of Marshall University and includes four other schools in southern West Virginia as partners.

Rahall also started the Center for Environmental, Geotechnical and Applied Sciences in 1993, securing all the necessary funding. The center's goal is to forge close working relationships among the business community, higher education institutions and government agencies in environmental and technology-related endeavors.

"We're proud of his accomplishments and gave this award to thank him for his hard work," West said.

*Transportation Focus* is a quarterly newsletter published by the Nick J. Rahall, II Appalachian Transportation Institute.

Managing Editor, Design and Layout: Errin Jewell

Writers and Copy Editors: Brian Dowler, Pam Hamilton, Errin Jewell, Brandon Totten

Contributors: John Ball, Richard Begley, Linda Hamilton, Robert Plymale, LeAndria Reed

Read *Transportation Focus* online at [www.marshall.edu/ati/news/ newsletter.htmlx](http://www.marshall.edu/ati/news/ newsletter.htmlx)



Above: Linda Hamilton, RTI Coordinator for Pre-K-12 Outreach Intelligent Transportation Systems Workshops Using LEGO Robotics and MU Assistant Professor of Mathematics, navigates LEGO Mars Rovers through simulated terrain in Jenkins Hall at Marshall University, one of three international Mars Rover sites.

From page 1: ROVER

Jennifer Carter, Supervisor of Secondary Clinical Experiences at Marshall University College of Education, and Wen Bo Lu, graduate assistant, maintain the station, which operates 24 hours. Marshall University is one of three global sites that are Mars stations; other stations are located at the Planetary Society in Pasadena, Calif., and Spain.

The station was created to allow future teachers to become involved in the latest in technology and science and to implement the goals and objectives of RTI, which

realizes the need for better transportation for the future.

"Students who create Mars Rovers are creating vehicles capable of exploring earthly environments such as coal mines, river bottoms, ocean floors or virtually inaccessible mountain regions," Hamilton said. "The main goal of these activities is to provide brighter kids with brighter futures."

The rover took place in conjunction with NASA's June 11 launch of a European spacecraft that is scheduled to explore Mars in 2004.





## RTI, DEP, EPA Investigate Possible Health Concern at Chauncey, W.Va.

by Brian Dowler and Errin Jewell

Three graduate research assistants and a research associate from RTI helped representatives from the Department of Environmental Protection (DEP) and the Environmental Protection Agency (EPA) locate underground objects in Chauncey, W.Va., Mar. 18 and April 22, 2003.

After several residents of the Logan County community were diagnosed with cancer, the DEP and EPA began testing the area for potential sources of contamination.

ZhaBin Sheng, Zhou Song, Heather Morehead, all graduate research assistants, and John Ball, research associate-engineering, helped the DEP and EPA locate an underground storage tank by using non-invasive technology. Electromagnetic Inductants (EMI), Ground Penetrating Radar (GPR) and Global Positioning System (GPS) equipment were used to find the underground tank. The technologies allowed the operators to locate the underground tank without digging.

“Without this technology we could have dug for a long time without finding the tank,” Heather Morehead, graduate student in environmental science said. “The technology allowed us to locate the tank with far less personnel and time than would have traditionally been required.”

Morehead took on the job as her senior project for her Master’s Degree at Marshall University. Further testing of the contents of the storage tank and water samples from the area is required to determine if they may have contributed to the high rates of cancer among Chauncey residents.



## David Lawson, Errin Jewell Welcomed to RTI Staff Spring 2003

by Brian Dowler

David Lawson and Errin Jewell were welcomed to the RTI staff in Spring 2003.

Lawson joined the ranks at RTI in April as manager of information technology with dual responsibilities at the Robert C. Byrd Institute for Advanced Flexible Manufacturing.



He began his career at Marshall University as a computer programmer, and he returned

to Marshall 17 years later after working throughout the eastern United States.

Previously, Lawson worked for the Genesis Software Corporation, Thomson/TEIR/TTCG, Legent Corporation, Hunter Associates Laboratory, Bell Atlantic, West Virginia University and the U.S. Army Corps of Engineers.

Lawson earned a Bachelor of Science in Computer Science and has completed 18 hours toward a Master of Science in Computer Science.

In May, Jewell filled the public affairs and desktop publishing specialist position. She previously served as a graduate research assistant and occupied the interim public

relations and desktop publishing position since July 2002.

Jewell earned a Bachelor of Arts in Journalism and Master of Arts in Journalism from Marshall University.

She worked as a public relations writer at

Cabell Huntington Hospital before coming to RTI. Jewell also served as a graduate assistant in University Communications and the John Deaver Drinko Academy.





## Transportation Research, Program Goals Primary Focus of Advisory Council Visit

by Brandon Totten

Members of RTI's advisory council met with representatives from RTI during a conference, 'Workshop for Appalachian Transportation and Economic Development,' March 27 and 28, 2003, at Huntington, W.Va.

The two-day event provided the advisory council the opportunity to meet and review the past year's research initiatives. The advisory council also reviewed RTI's program goals and identified potential research projects



Above: David Cartwright addresses members of the RTI Advisory Council.

that may be beneficial to the Appalachian region.

During afternoon breakout sessions, advisory council members provided feedback on research, goals that should be considered and whether

Continued on 6: ADVISORY

## RSPA Team Makes Annual Visit to RTI

by Brian Dowler

Representatives from the Research and Special Programs Administration Transportation Team made their annual visit April 8, 2003.

The team met for a briefing by Director Bob Plymale and visited facilities established at Marshall University through the RTI grant, including the Environmental Laboratory, Remote Sensing Laboratory, the GIS/Digital Laboratory and Teaching Facility and the Surface/Subsurface Imaging Laboratory.

After the tour, representatives convened at RTI headquarters for meetings with industrial partners. Afternoon sessions shifted to governmental research partnerships, and faculty and governmental partnerships.

Team members also toured RTI headquarters and observed a demonstration of the interactive video link to Davis Creek Elementary School. Lastly, RSPA members toured off-campus facilities created as a result of the RTI grant.

## Davis Creek Elementary Students "Teleoperate," Demonstrate Tech Skills for RSPA Technology Team

by Errin Jewell

Students from Davis Creek Elementary demonstrated technology skills, such as computer programming and "teleoperation" of transportation models, to the Research and Special Programs Administration Transportation Team April 8, 2003, at RTI headquarters.

After programming components of LEGO City, which contain RCX microcomputers, students lowered bridges, directed vehicles and manipulated traffic signals at RTI headquarters.

Light sensors were also programmed to measure river level, which students recorded in a graph.

Linda Hamilton, Pre-K-12 Outreach Instructor, taught the children to use the programs during weekly

visits as part of RTI's Transportation Outreach on the Web (TO<sup>2</sup>W) activities.



Top left: The "river level" is measured by a light sensor and, data is transmitted via the Internet.

Bottom left: SENSORSCITY, as seen through its web camera, is displayed in the back left area of the photograph. The REDROVER interface is present in the right foreground.





## Faculty and Student Spotlights:

James Brumfield, Ph.D. & Peter Dailey, M.A.

**Name:** James O. Brumfield, Ph.D.

**Education:** Ph.D. Geobio-physical Modeling: Union Institute and University, Cincinnati, Ohio

**Title:** Professor of Biological

Sciences and Physical Sciences, Marshall University, MUGC; RTI Principal Investigator (PI)

**Birthplace:** Huntington, W.Va.

**Contributions to RTI: Project Number:** TTP 00-11 Development of a Transportation and Economic Development Information System for the State of West Virginia (TEDIS-WV) Delivered over the Internet

**Email:** brumfiel@marshall.edu



**Name:** Peter J Dailey, M.A.

**Education:** B.S. Mining Engineering; West Virginia University; M.A. Technology Management, Marshall

University Graduate College

**Title:** Research Associate

**Birthplace:** Peoria, Ill.; Charleston W.Va. since 1967

**Contributions to RTI:** TRP 00-05 Integrated Track Stability Measurement System (ITSAMS)

**Email:** dailey29@marshall.edu

*Faculty and Student Spotlights will highlight a faculty or staff member and a student in each issue of Transportation Focus. If you would like to be considered for the next newsletter contact Errin Jewell at (304) 696-7165 or jewell4@marshall.edu.*



## Reed Voted VP of American Society of Safety Engineers by Brian Dowler

LeAndria Reed, RTI graduate research assistant, was voted vice president of the MU chapter of the American Society of Safety Engineers (ASSE). Reed will fill the position for one semester because she is expected to graduate December 2003.



Reed earned a BS in Industrial Technology from West Virginia Institute of Technology. She attends Marshall University Graduate College and is studying to earn a Master's degree in Occupational Safety and Health. Reed is also project coordinator for RTI's Railroad and Highway Traffic Safety and Operations transportation professional development course.

Reed, as vice president of ASSE, will help coordinate guest speakers from various industries. She will also travel to area high schools to heighten awareness about ASSE and careers in safety and engineering.

"This position and the ASSE allows me to speak with the youth of our area and, hopefully, will influence some to join the safety and engineering field." Reed said. "Industry is the backbone of the American economy. The safety and health of employees is crucial to the continued growth and success of our global economy."

From page 5: ADVISORY

RTI's goals were on target.

"The council was very enthusiastic about being asked about RTI's progress; the meetings were very energetic," David Cartwright, RTI research associate in engineering and breakout session leader, said. "The input helps us sharpen our minds, improve and grow."

Advisory council members represented states from throughout the Appalachian region including: West Virginia, Ohio, Kentucky, New York and Mississippi.

Mark Burton, Mike Hicks, Tony Szwilski, Tom Jones and Mike Little, all principal investigators for RTI, presented findings from transportation research focus areas during the conference.





## Pre-K Students Display Transportation Knowledge, Raise Funds through Art



Above: A patron views a painting of cars driving on a bridge during the art auction.

by Brandon Totten

Pre-K students from Marshall University's Early Education Center expressed themselves through art while reinforcing transportation concepts learned at an RTI outreach program.

Students created canvas paintings depicting bridges, traffic signals and automobiles and contributed them to the center's first Art Show and Auction, which took place April 28 and 30, and May 2, 2003, at the Joan C. Edwards Performing Arts Center.

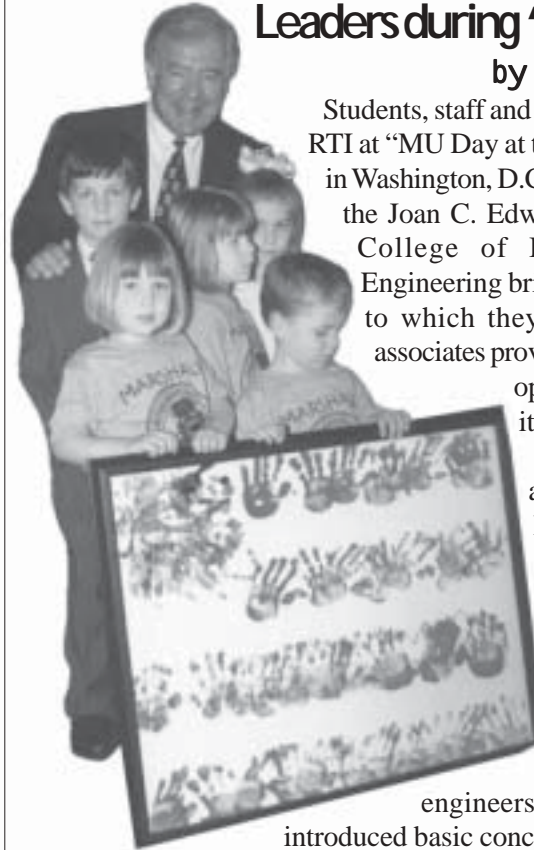
The paintings were created after RTI engineers visited the MUEEC and described types of transportation, including cars, trains, bicycles and trucks, and used hands-on learning to build bridges, roads and rail cars.

"RTI was a critical factor in the success of this project," Clayton Burch, director for the MUEEC, said. "The visitors from the institute increased the children's knowledge about bridge design and construction."

Proceeds from the auction will fund projects and supplies for the MUEEC.

## Students, Pls Represent RTI, Meet Government Leaders during 'MU Day at the Capitol'

by Errin Jewell



Students, staff and principal investigators represented RTI at "MU Day at the Capitol," Thurs. May 22, 2003, in Washington, D.C. Graduate research assistants from the Joan C. Edwards School of Medicine and the College of Information Technology and Engineering briefly spoke about research projects to which they had contributed, and research associates provided information about educational opportunities with Marshall, RTI and its partner schools.

Caroline Ball, Katy Burton and Morgan Hicks, students at Marshall University Early Education Center, presented Congressman Nick Rahall and Senator John D. Rockefeller with paintings that featured bridges, vehicles and other transportation elements. The artwork was created after professional

engineers John Ball of RTI and Jeff Ball introduced basic concepts of bridge and traffic design to the students during National Transportation Week.

John Ball said, "MU Day at the Capitol' gave us an excellent opportunity to showcase RTI's research projects and degree programs to our government leaders."



Above: L to R Front Row: LeAndria Reed, Heather Morehead, Aime Masters, Ellie Earles and John Given. Back Row: Dan Angel, Perry Christianson and Aaron Lambert.





## FHWA Traffic Monitoring Course Hosted at MUGC by National Highway Institute, RTI



by Errin Jewell

Federal Highway Administration field office planners and transportation or planning personnel responsible for traffic counting, vehicle classification or truck weight data programs attended a two-day course cosponsored by the National Highway Institute and RTI June 10-11 at Marshall University Graduate College.

“Application of the FHWA Traffic Monitoring Guide (NHI Course 151018A)” covered the application of procedures used as published in the *FHWA’s Traffic Monitoring Guide (TMG)* and other developments in traffic monitoring.

Course objectives were to: describe the purpose and appropriate use of the TMG procedures; use the TMG procedures for obtaining data for Federal and State programs; and apply the data obtained to answer specific questions on Federal and State issues regarding traffic monitoring.

Course instructors were: David Jones, WIM Specialist and U.S. Truck Weight Study Program Administrator, FHWA, Washington, D.C.; Frederick P. Orloski, Transportation Specialist, Office of Highway Policy Information, FHWA, Washington, D.C.; and Jeff Patten, Transportation Specialist for the Traffic Monitoring Group, Office of Highway Policy Information, FHWA, Washington, D.C.



## Course Integrates Image Geo-technical, Mapbases with GIS/GPS Technology, Survey Data by Brandon Totten

RTI, Marshall Community and Technical College and the Marshall University Department of Science will sponsor “Survey and Image Mapbase Integration with GIS,” which will focus on integrating multiple types of aerial and satellite imagery into a Geographic Information System (GIS) July 8.

GIS technology, along with imagery, can provide a more realistic image of the Earth’s surface, and can incorporate spatial and statistical solutions to complex transportation problems.

Participants interested in the class must register by July 1. The cost is \$199, which covers workshop materials and a box lunch.

For more information contact Barbara Roberts, program coordinator, at (304) 696-7103 or robertsb@marshall.edu.



Above: Subsurface and surface features super-imposed on top of aerial imagery.







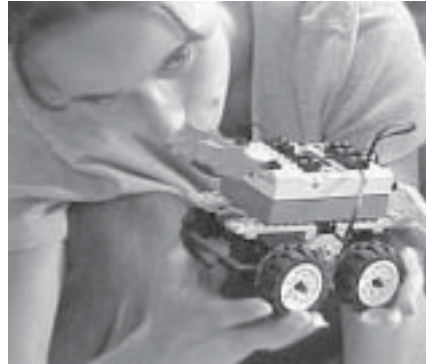
## Tri-State Schools Observe National Transportation Week, Month with TO<sup>2</sup>W

by Errin Jewell

The Transportation Outreach on Wheels (TO<sup>2</sup>W) team guided area students in constructing and operating intelligent vehicles and model cities May 11-17, 2003, in recognition of National Transportation Week.

Linda Hamilton, Pre-K-12 Outreach Instructor, visited West Virginia schools including West Middle School in Huntington, May 13 and 15, and Big Creek High School in War and the Larry J. Harless Community Center in Gilbert, May 14.

Hamilton said, "The students built intelligent model cities and vehicles from LEGO Robotics kits and complete ten challenges. The vehicles



and city components, which include traffic signals, bridges and gates, contain RCX microcomputers that are programmed by the students. They'll create programs to repair the bridge, deliver goods through the city and operate an environmentally-safe

windmill for energy and other real-life scenarios." Damon Ward, Nathan Estel and James Greene, graduate education majors from Marshall University, presented LEGO Cities and Transportation kits to Milton Elementary May 16.

Other schools, including Barbourville Middle School, Davis Creek Elementary, Highlawn Elementary and Martha Elementary in Cabell County and Chesapeake Elementary in Ohio, participated in similar activities during May as part of National Transportation Month.

"The purpose of the TO<sup>2</sup>W visits during National Transportation Week is to focus on transportation career awareness to students at an early age," RTI Program Coordinator Barbara Roberts said. "National Transportation Week and Month provide opportunities to create a greater awareness about the importance of transportation while making youth aware of transportation-related careers."



Above: Graduate research assistant Juan Bueno helps a student at Chesapeake Elementary in Ohio operate an intelligent vehicle

Above: A Big Creek High School student examines a vehicle that contains an RCX microcomputer.

Right: Research Associate David Cartwright assembles an intelligent LEGO city with students at West Middle School in Huntington, W.Va..





## We welcome your questions and input!

RTI wants your input on future research topics and activities including:

- Intermodal Transportation
- Transportation Professional Development Courses
- Transportation and Economic Development
- College Degree Programs or Courses

To submit your feedback, please call us at (304) 696-7098 or click the "Contact Us" link at [www.marshall.edu/rti](http://www.marshall.edu/rti).

## Upcoming Events:

### Conferences

#### August 7, 2003

Geohazards in Transportation in the Appalachian Region; University of Kentucky, Lexington, Ky.

### Transportation Seminar Series

#### September 9-10, 2003

Railroad and Highway Traffic Safety and Operations Seminar; Cincinnati, OH

### Transportation Professional Development Courses

#### July 8, 2003

Survey and Image Mapbase Integration with GIS; MU, Huntington, W.Va.

#### August 5-6, 2003

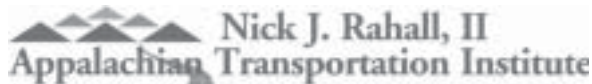
Geotechnical and Foundation Engineering: Module 5 - Rock Slopes (NHI Course 132035A); University of Kentucky, Lexington, Ky.

### Pre-K-12 Outreach

#### August 7-17, 2003

Educational Programs, Tech Transfer Activities and LEGO Robotics Demonstrations at the West Virginia State Fair; Lewisburg, W.Va.

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



at Marshall University  
One John Marshall Drive  
Huntington, WV 25755-2195-80  
1-800-284-9853  
[www.marshall.edu/rti](http://www.marshall.edu/rti)

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