Building Michigan’s Construction Workforce

Cooperation makes first-ever Michigan Construction Career Days a big hit

John Ryynanen,
Michigan's LTAP
Photos courtesy of Michigan Technological University

When you were in your teens, did you know about careers in Civil Engineering, Construction Management, and Surveying? Did you ever dig with a massive excavator? How about move dirt with a dozer? Ever frame a wall with an air nailer, or use a TIG welder to weld two pipes together? For the rest of their lives, over 1700 middle and high school students from 46 schools across Michigan will remember doing all this and more during the first-ever Michigan Construction Career Days (CCD) event at the Ingham County Fairgrounds. The event, held on April 15 and 16, was coordinated by Michigan’s Local Technical Assistance Program (LTAP) and the Capital Area Construction Council (CACC) with a great deal of help and support from MDOT, FHWA’s Michigan Division office, and an advisory board of eight other leaders in Michigan’s construction industry.

Michigan CCD is part of a national effort to inform young people of the many exciting career opportunities available in the construction industry. The first CCD event was held in Texas in 1999. Since then 27 states have held events and over 230,000 students have participated nationwide.

Like a Big Job Site

As bus after bus pulled into the fairgrounds, students were treated to a great view of cranes, backhoes, dozers, excavators and more. When the students stepped off the buses, each was given a hard hat (theirs to keep), and was sent off to explore careers in construction. For the next four hours, they worked side-by-side with professional equipment operators, carpenters, engineers, electricians and more.

Dan DeGraff, P.E., is the executive director and CEO of the Michigan Concrete Paving Association. He was pleased with the authenticity of the Michigan CCD event. DeGraff knows his way around a construction site; before taking his current position at MCPA, he worked for 23 years in various levels of management for several large construction companies in the U.S. “The structure of the event – the hard hats, the activities, the interaction with pros – created a real-world experience for these young people,” he said. “It was like being on a big job site.” DeGraff and his staff coordinated a concrete pour as part of an outdoor display at Michigan CCD.

Mark Skiles, a technical education instructor at Perry High school brought 36 of his students to Michigan CCD.

Terry Ream, a heavy equipment operator from the Ingham County Road Commission, helps a student use an articulating excavator.
Director’s Corner

For all sectors of the transportation industry, workforce development is a strategic priority. Establishing the transportation system for the 21st century requires building a diverse pool of talented and skilled men and women to plan, design, engineer, construct, operate, and maintain that transportation system. Modern technologies such as the Internet, global positioning systems, and many others, will have a major role in re-inventing transportation. Therefore, the technical and management problems facing the industry require a broad cross-section of individuals to develop solutions.

One benefit of the UTC program is that universities, by definition, are in the business of workforce development and therefore, the UTC’s are uniquely positioned to help develop a diverse, well-trained workforce for the transportation industry. At Michigan Tech, a number of programs are in place to attract talented students and the UTC-MiSTI is partnering with these programs to provide these students with exposure to the transportation industry and to help guide students towards careers in transportation. One such program is the Michigan College and University Partnerships (MICUP) program that encourages academically and economically disadvantaged students, as well as minority students, to continue their education beyond community college. In this issue of our newsletter, we will introduce you to one of these MICUP students who will tell you, in his own words, how this program has helped him move into a civil engineering career path. Also to help get the word out about transportation careers, MiSTI participated in Michigan’s first Construction Career Days, where over 1,700 high school students got to experience first-hand opportunities in construction and transportation. A summary of this program is also presented in this newsletter. These programs are important for planting the seed that transportation is a rewarding career choice. However, you can never plant seeds to early and to that end, we will share with you one of our more enjoyable annual events where we bring local 4th graders into our concrete laboratories to make concrete stepping stones for Mother’s Day presents, introduce them to concrete as a construction material, and we also introduce them to some advanced science applications of our environmental scanning electron microscope. Finally, we will provide you with a summary of our activities to help support the AASHTO TRAC program and Michigan’s implementation of the TRAC Pipeline. The TRAC Program integrates transportation themes into the standard high school curriculum and Michigan’s TRAC Pipeline identifies students that have gone through the program, and offers scholarships to get these students into a college and a career in transportation.

Through the activities presented in this newsletter, and others, UTC-MiSTI is serving the needs of the transportation industry by guiding students into careers in our industry. We are pleased to share some of our successes with you and look forward to your comments and feedback.

- Larry
University’s MICUP Program...One Path to a Career in Transportation

Michigan Tech’s MICUP Program is giving community college students an opportunity to fully experience a four-year degree program, and for students like Michael Urena, see Michael’s story in this issue, an opportunity to learn more about the field of transportation.

MICUP is an acronym for Michigan College University Partnership. The program provides an opportunity for community college students to transfer to a four-year degree program where they can pursue a bachelor’s degree in Business, Computer Science, Mathematics, Science, Engineering, Psychology, Secondary Education, or Technology. The program offers academic tutoring and comprehensive advising. Students receive a competitive stipend, earn 3 credits by completing a University course, live on campus for seven weeks, and participate in an Undergraduate Research Internship.

The MICUP Program is currently available to students enrolled at Delta College, Grand Rapids Community College, Wayne County Community College and Keweenaw Bay Ojibwa Community College and encourages academically and economically disadvantaged students to continue their education beyond community college.

Michael works for the University Transportation Center, providing support in the development of a contact database, and as an assistant in the material characterization and concrete laboratory facilities.

MDOT and Michigan Tech Team Up for TRAC Pipeline

Michigan high school and middle school students have a new way of learning math and science concepts. In 2006, the Michigan Department of Transportation (MDOT) brought the AASHTO TRAC Program (American Association of State Highway Transportation Officials) (Transportation and Civil Engineering) to Michigan to support STEM (Science, Technology, Engineering and Mathematics) curriculum within the state and provide students with a hands-on transportation education program.

Currently, 75 schools in Michigan have adopted the TRAC curriculum. TRAC provides training for teachers and a transportation professional volunteer on site to address additional questions by students. The program provides a computer, electronic data collection and analysis instruments, hands-on modeling materials, and more than three dozen activities based on real-world transportation problems. This is provided at no cost to the school or teacher.

This summer, MDOT expanded the program and launched a pilot intern program, the TRAC Pipeline to offer youth with TRAC experience an opportunity to work side-by-side with MDOT professionals to gain further insight into the field of transportation. Three interns will be entering college in the fall. Michigan Tech’s UTC, through a cooperative agreement with MDOT, will offer one of these students a scholarship to continue their education at Michigan Tech towards a career in transportation. Going forward, the agreement commits the Center to providing up to five, $2,500 one-time scholarships for selected applicants.

Jan Pohl, Special Assistant to the Director and MDOT’s TRAC Program Manager, visited Michigan Tech recently to discuss the TRAC Program and Pipeline with university representatives. “We’re thrilled Michigan Tech has agreed to partner with MDOT to support this program and help address the need for an educated workforce that will sustain the future of transportation in Michigan.”
students to Michigan CCD. In an email to organizers a few days after the event, Skiles wrote, “Thanks for the great opportunity. My students said this was the best field trip they have experienced. I hope this can continue.” Skiles’ sentiment was repeated dozens of times in emails, letters, and comments from students to members of the advisory board after the event.

**Plenty of Variety, Lots of Opportunities**

All segments of the construction industry were well represented at Michigan CCD. In addition to several activities that showcased apprenticeship and training opportunities in various trades, ten different colleges and universities set up booths and conducted activities to let students know about opportunities in construction-related degree programs. The University Transportation Center for Materials in Sustainable Transportation Infrastructure (UTC-MiSTI) at Michigan Tech was a platinum sponsor and an activity provider. “We were excited to support the event as a sponsor and exhibitor,” Dr. Lawrence Sutter, director of UTC-MiSTI, said. “Addressing state and national transportation workforce needs is at the heart of the UTC program. Engaging these young people in actual construction activities is the ideal way to attract the next generation of workers.”

Other platinum sponsors included AIS Construction Equipment Corp., Capital Area Construction Council, Lansing Community College, Michigan CAT, Michigan Department of Transportation, Michigan’s Local Technical Assistance Program, Oakland Community College, and Operating Engineers Local 324.

**The Big Stuff**

Heavy equipment was the highlight of Michigan CCD. Lee Graham, training director for the Operating Engineers Local 324 (OE 324), and Pat Brown, director of safety and workforce development for the Michigan Infrastructure and Transportation Association (MITA) worked together to coordinate heavy equipment donations. Ingham and Jackson County Road Commissions were among the 24 organizations that donated equipment.

Graham also brought dozens of apprentices and retirees from the OE 324 training center to help the students operate equipment. “We had everyone from third-year apprentices to 84 year-old retirees helping out,” Graham said. “They had as much fun as the students. I had a hard time convincing any of them to take a break.”

A total of 36 pieces of heavy equipment, 17 of which were set up for the students to operate, filled the infield area of the race track at the north end of the fairgrounds. At the south end, 39 information and activity booths completely filled two large pole buildings. Large outdoor displays and demonstrations filled in vacant areas.

Don O’Connel, Director of Operations for OE 324, com-
Todd Pierce-Ryan, construction liaison for Habitat, was very pleased with his experience at the event. “Our participation at Michigan CCD worked out better than we had planned,” Pierce-Ryan said. “The house was framed completely by students at the event, and we got a lot of great exposure to volunteers and others. We’re definitely looking forward to doing this again.”

**Beyond Workforce Development**

CCD events are always aimed at the goal of attracting workers into the construction industry. But benefits of events often extend far beyond that goal. Habitat for Humanity of Greater Ingham County’s participation in Michigan CCD is a great example of unintended benefits. A Habitat team completely framed their first home of 2008 on a huge tarp at the fairgrounds. After the event, they disassembled the walls of the home in large sections, loaded them on a flatbed trailer and hauled them to their main office to await final assembly at the home site later this spring.

In the “back yard” of the Habitat project, a team of instructors and students from Washtenaw Community College’s (WCC) Construction Institute built a 10’ x 12’ storage building. When complete, the WCC team donated the finished building to the Habitat project. Tony Farina, an instructor at WCC, was among the group working on the storage building. “It was great to demonstrate WCC’s capabilities at a large event like Michigan CCD,” said Farina. “It was especially neat that we ended up benefiting the Habitat project.”

Iron Workers Local 325 used safety harness, tool belt, and I-beam to show students what it takes to be an Ironworker.

**What’s Next?**

Planning for another event next spring has begun. To learn more about it, or if you would like to get involved, please call LTAP at 906-487-2102, or the Capital Area Construction Council at 517-492-5575.

More information about the Construction Career Days can be found online. <http://www.MichiganCCD.org>
On May 5th and 6th, 2008, the sounds echoing down the hallways of Dillman Hall on the Michigan Technological University campus were not the typical sounds of college students discussing their latest exam scores or their weekend social plans. Instead, the halls were filled with adolescent chatter of cooties, giggles, and a guardian voice telling everyone to walk and stay in line.

On these two days, students from Mrs. Hall’s and Mrs. Lehto’s fourth grade classes at Houghton Elementary School visited campus to learn about concrete as a civil engineering infrastructure material. Dr. Lawrence Sutter, Professor and Director of the UTC-MiSTI, met with the students in the laboratory facilities where they experienced first-hand mixing of a batch of concrete that later became the base for their garden stepping stone project. Students also witnessed a compression test where a concrete test cylinder withheld forces up to 160,000 pounds before snapping right in front of them, to the surprise and delight of many of the students. Students were then able to collect samples of the broken concrete to keep as souvenirs as Dr. Sutter explained how and why the concrete failed and pointed out that the force was great enough to break many of the rocks within the concrete.

From the mixing facilities, rings of concrete were transferred by laboratory staff to a classroom where students used glitter, colored sand, marbles, rocks, seashells, and other materials to transform the simple slabs into decorative stepping stones. A young female participant placed colorful stones around the border and embedded a small chipmunk figurine emerging from the center. “I put the chipmunk in the middle because my mom likes chipmunks,” she explained. Another student decorated his stone with semi precious rock and mineral specimens. “I’m giving my stepping stone to my mom for Mother’s day. She likes all these colors,” he announced.

Dr. Sutter explains, “Concrete is the second most consumed material in the world, second only to water. We come in contact with concrete everyday, on the roads we travel, and in the buildings we go to school, work, and live in. It’s important for students to understand at an early age the impact of materials on our lives and for us to spark their curiosity and give them familiarity. If we can help them see the importance of this material and provide a positive first encounter for them, we may be opening the door for them to explore transportation, civil engineering or other professions in the cement and concrete industry down the road.”

Youth discovery events, like this fourth grade experience, are made possible with support from the University Transportation Center for Materials in Sustainable Transportation Infrastructure, the Great Lakes Cement Promotion Association, and the Michigan Tech Concrete Initiative.
My name is Michael Ureña, I’m from the Dominican Republic. I came to the United States in 2000, when I was twelve years old. The reason my family moved to United States was to learn the English language. We believe this would create a better future by opening new doors and having the skill of being bilingual. I think it is really important for Americans to realize that people from different countries who do not speak the same language must use English in order to communicate. Sometimes this is taken for granted: It is really hard for Americans to imagine themselves in that situation, since they get to speak English anywhere they go.

Despite the challenges of learning English, I graduated early from East Kentwood High School which is in Grand Rapids, Michigan. After that I started going to Grand Rapids Community College, because I was confused between two majors and also it was closer to family. After consulting my counselor in the Community College I got involved in the “MICUP program” (Michigan College University Partnership). This program is made specifically for minority students, but anyone can participate without any ethnicity restriction. The MICUP program will give the student the opportunity of taking a free course during the summer. It will also provide free daily meals and a free university dorm for seven weeks. This is all done just to give the student the feeling of living outside of home and also to acknowledge university life.

This program educates anyone who has the ambition to become educated it will open new doors, create connections, and provide many kinds of experience. Anybody who gets engaged in this program will not regret the experience, because everyone involved is a professional who supports and guides students as much as they can.

This program gave me the advantage to live for free in a university dorm, in this case at Michigan Tech. When I came to the program during the summer I had the opportunity to take a free course which got me ahead in my studies. The course I took was my last English class required for becoming an engineer. This course developed my writing and communication skills to the next level. I was also able to do an Internship with a professor within my major. The Internship did not just give me the experience, but it helped me conclude that I wanted to become a professional in Civil Engineering.

After MICUP I realized that I wanted to come back and finish my degree in civil engineering. I started doing research about the school and I ended up applying. Later on I finally got a letter saying I was accepted. This made me happy and also took my maturity to the test, because I was going to be living by myself. I finally transferred to MTU in the summer of 2007. Now I have been here reaching for one of my long term goals: Graduation. As I anticipate graduation, I evaluate what I’ve learned about engineering, language, and life.

I learned a lot about engineering, but I also realized that being bilingual is an advantage to companies because many times they are global. While I knew bilingualism would benefit me someday, I wasn’t as aware of its market value until I began interviewing for internships and jobs. Consequently, I’ve discovered that bilingualism is a personal advantage in job searches, but it means something more than that. It means understanding people’s ideologies about various aspects of life. Therefore, my bilingualism expands my worldview even beyond the two cultures I’m most familiar with.

“La inspiración de ser profesional no solo se trata de la inteligencia individual; tambien se trata de el deseo espiritual que llavamos dentro de el corazon. y esto nos hace progresar para poder representar no solo nuestra cultura, pero aquellos que no tiene esta oportunidad.”
**About University Transportation Centers**

The University Transportation Centers (UTC) program, initiated in 1987 under the Surface Transportation and Uniform Relocation Assistance Act, authorized the establishment and operation of transportation centers in each of the 10 standard federal regions. The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) reauthorized the UTCs for an additional six years and added four national centers and six University Research institutes (URI). The mission of the 14 UTCs was to advance U.S. expertise and technology transfer. The six URIs each had a specific transportation research and development mandate.

In 1998 the Transportation Equity Act for the 21st Century (TEA-21) reauthorized the UTC Program for an additional six years and increased the total number of Centers to 33. In addition to the ten regional Centers, which were to be selected competitively, TEA-21 created 23 other Centers at institutions named in the Act. TEA-21 established education as one of the primary objectives of a University Transportation Center and institutionalized the use of strategic planning in university grant management.

The Safe, Accountable, Flexible, Efficient Transportation Equity Act, enacted on August 10, 2005, authorized up to $76.7 million per year from Federal FY2005-2009 funds for grants to establish and operate up to 60 University Transportation Centers (UTCs) throughout the United States. Twenty of these centers were competitively selected during 2006, and forty centers are located at institutions named in the legislation.

The UTC program is managed by the Research and Innovative Technology Administration, U.S. Department of Transportation.