



USDOT Tier 1 University Transportation Center Final Report

NURail 2012-MTU-E01

**Summer Youth Program in Rail and Intermodal Transportation**

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## **DISCLAIMER**

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### TECHNICAL SUMMARY

NURail Project 2012-MTU-E01

Final Report Feb 22, 2016

#### **Title**

Summer Youth Program in Rail and Intermodal Transportation

#### **Introduction**

For the past five years, Michigan Technological University has been running a Summer Youth Program (SYP) in Rail and Intermodal Transportation. The program has seen continuous growth along with a diverse group of students, grades 9-11. The structure of the program consists of classwork, tours, and hands on activities. Students have been loved the program, "From what I have learned in the program, I am now interested in a future career with the industry."

The mission statement of the program is "a collaboration to attract a new generation." The Summer Youth Program at Michigan Tech has been a joint venture with the University of Wisconsin – Superior since 2010, and the program has seen continued growth. The growth has been especially strong in years since 2013 when NURail funding picked up half of the student cost, increasing the scholarship level to 100%. Industry funding by our gracious supporters has provided half of the cost since the beginning of the program.

#### **Description of Activities**

Over the five program days the students learn in a variety of formats, but most of the program time is devoted to the industry field trips and hands on activities. Some of the core topics covered during the program include:

- Introduction to Rail Transportation
- Track Structure
- High Speed Rail
- Supply Chain and Logistics Management
- Rail Operations
- Track Safety
- Maglev systems
- Urban Transit

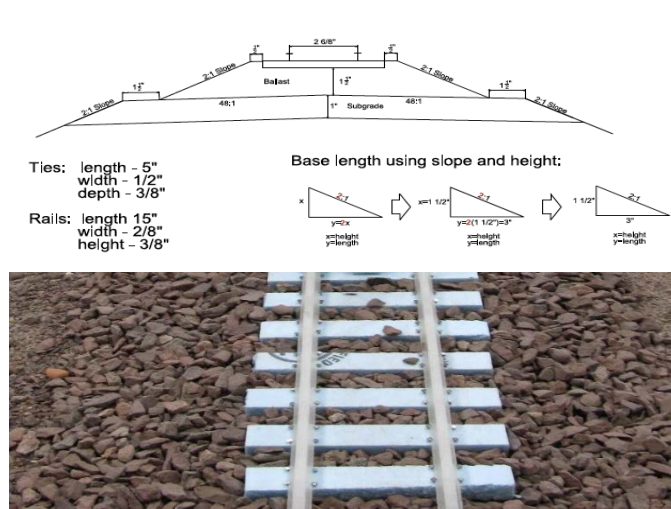


Figure 1 - Track Calculation and finished construction

Hands- on activities include designing and constructing a scale model track section, as seen in Figure 3, operating a locomotive and train consist in a PC simulator, and designing and racing maglev cars on a simple track layout.

Thanks to our industry support, students have awesome opportunities to go on multiple field visits to see the industry first hand. Industry professionals and their companies take time out of their work day to showcase the industry to the students. Many students rank the field visits as the highlight of their week. With the diversity of the visits and the excellent knowledge

and passion communicated to the students by industry professionals, it is easy to understand why. For example, Table 1 shows what the 2014 program featured.

Monday	LS&I Railroad – Tour car shop, terminal area, and related mine activities
Tuesday	Travel to Superior, WI
Wednesday	BNSF Railyard – Dispatch, yard activities, car shop Halvor Lines – Trucking dispatch and control, truck simulator, truck cab
Thursday	CN Taconite Dock, rail interface with Great Lakes shipping Lake Superior Railroad Museum and North Shore Scenic Railroad Return to Houghton, MI
Friday	Lake Linden and Torch Lake Railroad

The LS&I visit on Monday morning got the field trips started, and included a quick tour of the mine facilities the railroad supports. The four hour bus trip to Superior WI, sucked up half of the day on Tuesday, but we reclaimed some of that time by teaching a session on signals and rail safety on the bus! The tour of BNSF facilities in Superior gave the students another look at rail operations on a much larger scale. The visit with Halvor lines is a perennial favorite, driving a truck through a tornado in the simulator is always fun!



Figure 2 - An SYP participant operates the Halvor Lines truck simulator



Figure 3 - SYP students at the Lake Superior Railroad Museum

The CN taconite dock in Duluth demonstrates the connections required to move iron ore from the mine to a ship by rail. The North Shore Museum stop, shown in Figure 5, gave the students a chance to relax, unwind, and explore the history of the rail industry.

Upon completion of the program, students received a certificate to commemorate the week of fun-filled learning, hands on activities, and industry tours to go with memories of an awesome week!

## Outcomes/Results

The 87 students that have participated in the program have come from a vast geographic background, covering 17 states (Figure 1). Nearly 20% of the participants have come from minority populations, and over 12% have been female students. In 2014 and 2015, travel expenses for minority students from Springfield, IL have been sponsored by Hanson Professional Services, in addition to the normal full scholarship.

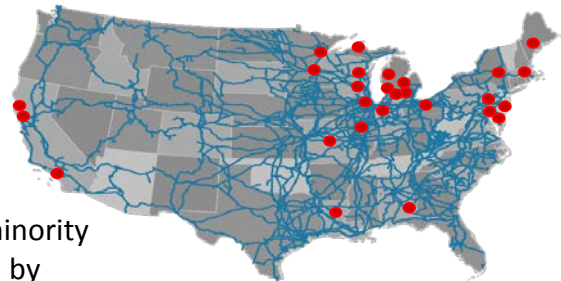


Figure 4 - Geographic background of students

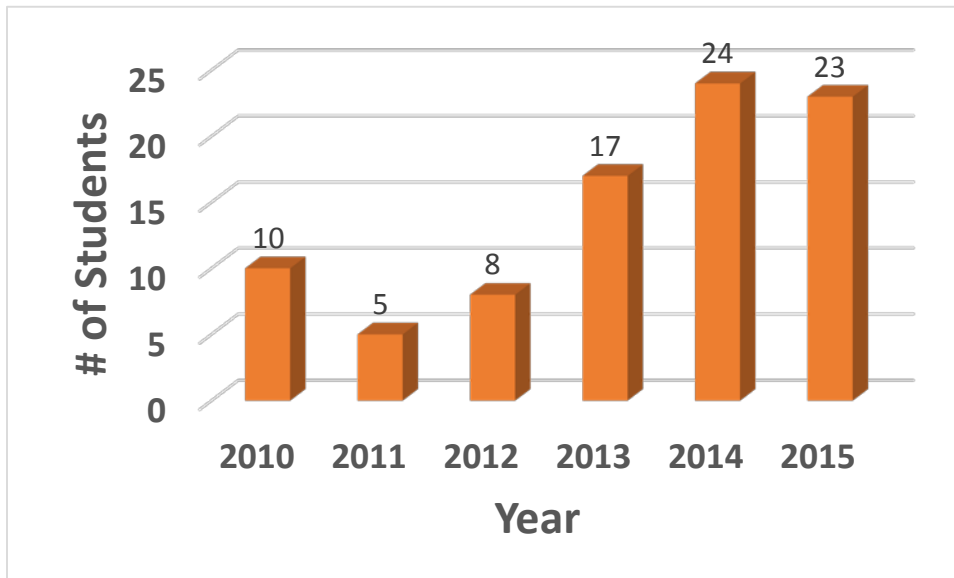


Figure 5 - Students by year

## Recommendations

Planning for the summer of 2016 is underway. Available funding will limit the scholarship to 50% of costs, which may limit program access for underprivileged students. Format will remain much the same, although we will have to consider transportation options carefully, due to the funding limitations.

## Contacts

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