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Rebuilding the Life of a 1967 Mustang!

*Travis Tainter, Automotive Instructor
Chippewa Falls High School*

The automotive program at Chippewa Falls High School has recently acquired a 1967 Ford Mustang for a project car. The car was purchased using funds generated from the annual Chippewa Falls High School car show and will be a long-term, student-centered project for the newly formed Auto Club. The club will be in charge of planning, designing, and restoring the car. Once the restoration is completed, the car will be sold as a fundraiser for the auto program.

Auto Club

The Chippewa Falls High School Auto Club is open to all students grades 9-12, right now we have 20 members whom are all involved in varying capacities depending on their ability level and schedule. We started the club to give students the chance to still get some

exposure to this environment whom may not always be able to take a Tech Ed class every semester due to scheduling conflicts. This gives them a chance to see what's going on in our programs and an opportunity to get involved with whatever project we may have going on at the moment. We meet every week to go over updates on the Mustang project along with general car discussions as well. They are also working on redesigning the display case in the hallway for our automotive program and they will start planning for the car show in the next month or so.

Mustang Project

So far we have had about 20 students work on it in various capacities, which can be challenging to keep up with teaching that many students about correct restoration procedures, but they are catching on quick, plus the auto club members are the ones whom are monitor-

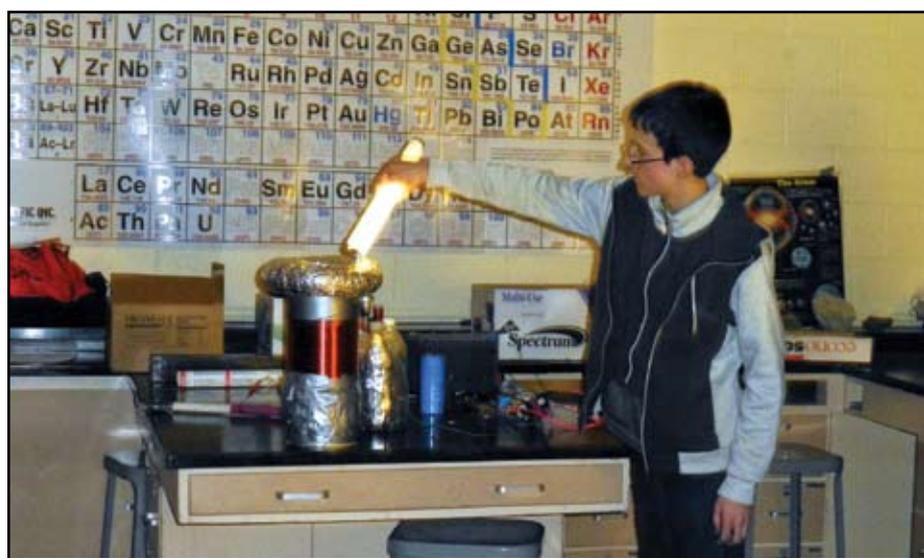


ing and giving the direction on what we need to be working on at any given time. At this time we are projecting about a 3-5 year timeline to com-

plete the car. It has definitely been in the "salt belt" for its entire life and will need an exten-

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Eighth Grade Student Teaches Others about Tesla Coils



*Audrey Buchanan
Clinton Middle School*

Eighth grade student Dakota Vaughn demonstrated the use of Tesla coils to his science class, and to his teacher, Mr. Andy Feldpausch. Dakota has been studying and learning about Tesla coils on his own for several years. A

Tesla coil can transmit wireless energy through the air, and can be used to power fluorescent light bulbs. It's safe for the human body even though it uses millions of volts because it uses a big conversion system.

The Tesla coil uses normal AC power of 120 volts and transforms it into 15,000 volts

and then the energy goes through a primary coil on the Tesla coil itself and resonates through both coils until it increases to 40,000 volts of high frequency electricity.

The reason for use of Tesla coils is because phones and other items can be charged wherever a person happens to be. It is unnecessary to plug anything into the wall. Electricity is in the air around the Tesla coil that can be harnessed but there are no efficient ways to do this at this time. It is being developed for future use. Once an efficient way is found to harness the energy, power plants can be created using this energy that can power homes with no wires. This could reduce the number of power plants needed to power an area. According to Dakota, using Tesla coils in one power plant could possibly power the country of Germany, which is similar to the size of the state of Wisconsin.

Dakota learned about Tesla coils through the years by doing online research and speaking with science teachers. The research stemmed from some research Dakota did on Thomas Edison, who was connected to Nikola

Wireless Electricity? How the Tesla Coil Works

Among his numerous innovations, Nikola Tesla dreamed of creating a way to supply power to the world without stringing wires across the globe. He came close to accomplishing this when his "mad scientist" experiments with electricity led to his creation of the Tesla coil.

The first system that could wirelessly transmit electricity, the Tesla coil was a truly revolutionary invention. Early radio antennas and telegraphy used the invention, but variations of the coil can also do things that are just plain cool — like shoot lightning bolts, send electric currents through the body and create electron winds.

Tesla developed the coil in 1891, before conventional iron-core transformers were used to power things like lighting systems and telephone circuits. These conventional transformers can't withstand the high frequency and high voltage that the looser coils in Tesla's invention can tolerate. The concept behind the coil is actually fairly simple and makes use of electromagnetic force and resonance. Employing copper wire and glass bottles, an amateur electrician can build a Tesla coil that can produce a quarter of a million volts.

Continued on Page 5

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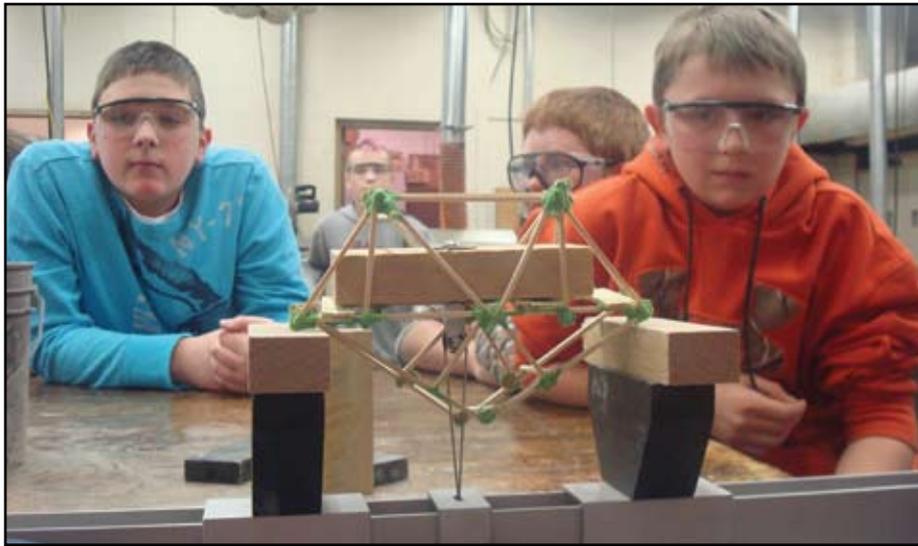
www.lssu.edu/redefine



You Tube



Transportation in Technology Education



Michael Homan, Technology Education
Shawano Community Middle School

Transportation is a large part of our lives; most of us travel every day in one form or another. It was this reason that I choose to teach a unit with my transportation class on bridges. Bridges are major parts of Wisconsin's transportation infrastructure. In our town alone we have five bridges that many of our students travel every day. Bridges can help us understand how tension and compression forces work to keep loads off of the ground. To begin our unit we

watch some educational video's about the creation of bridges, and how they have evolved into many bridges that we use today. We then discuss different parts of bridges from the anchorage in the ground to the pillars and supports that hold the roadways up. After the students review different shapes and how they support a load we begin our first bridge project. This project involves using a limited amount of materials to build a bridge to support a full can of soda as far away from the base board as possible. Students receive the following materials. 2 thumb

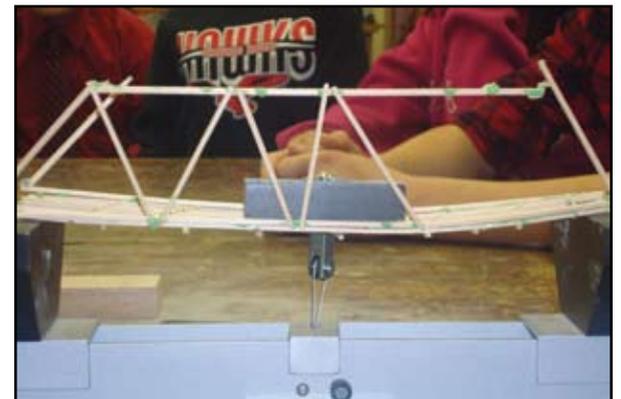
tacks, 1 file folder, 12 inches of masking tape, 1 5 x 3.5 inch base board, and 1 ounce of wood glue. 1 inch of the base board must be clamped into a vise for the final test. Students are split into cooperative learning groups no bigger than three and allowed to work together. The first step to the project is planning; each group must submit a written plan that details their design for the bridge. After they submit their designs they can begin to build it. Students are required to use only materials provided, they must also label on the bridge where the forces of tension and compression act. The winning group of this project was able to support the soda can 28 inches away from the base board. This project is a great way to lead into our next project where students use precut wood sticks to build more bridges.

sions that detail how their bridge will be built. After the bridges are completed we put them into a bridge tester that loads them to the point of failure. When we are finished with the bridge we discuss as a class how our designs could improve. This unit shows students that bridges are more than just a way to get across a gap. It shows students that design, planning, and maintenance are all important to a bridge. Students will gain understanding of all the forces acting on a bridge and hopefully think more about them the next time they cross one.

www.shawanoschools.com/schools/middle

Balsa Bridges

These bridges are made out of balsa wood, and get tested to see how much weight they can support before failure. Students learn the importance of forces acting on the bridge, including how triangles and substructures help support the bridge. Students are required to draw design plans with dimen-



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Aviation in Wisconsin

Aviation is a cornerstone in Wisconsin's economy, its business climate and the lives of its citizens. Planes are used to spot illegal activity in our state forests, helicopters provide transport for medical patients and their caregivers, and our many airports allow business professionals quick travel to and from important meetings. There are many areas of employment and jobs supported by the aviation industry. For more detailed information on the career fields please check out the Aviation Careers section of our website.

Aviation Websites of Interest

- Air Traffic Management Glossary of Terms
- A variety of online activities from the Smithsonian Air and Space Museum demonstrate the principles of aviation and spaceflight.
- An interactive website from Boeing shows an assortment of aircraft with information about each one and features people who have made a difference in aviation. This site also has an interactive page on how things from birds to gliders fly.

Maritime Careers

Many options to check out!

Wisconsin Ports

Links to some ports of interest

Live webcams

Maritime Websites of Interest

- A History Collection — This website is a collection of history and memorabilia surrounding Marine and Ship Captains and Sailors who dedicated their lives to Great Lakes Shipping and Transport.
- Wisconsin's Great Lakes Shipwrecks, Wisconsin Historical Society
- Great Lakes Maritime History Project
- The Lighthouses of Wisconsin
- Weather Buoys — Weather is a factor for maritime travel anywhere, but it's extremely important on the Great Lakes. NOAA has deployed weather buoys in the lakes to provide up to the minute weather conditions.
- Ships currently docking or leaving — This site has a list of ships currently docking or leaving the Port of Duluth/Superior and if you click on the ships'

name there are pictures as well as history of the vessels.

- The Great River Road — This website was made just for kids who want to learn more about the Wisconsin Great River Road and the Mississippi River

Highways/Roadways

As of January 2010, the Wisconsin Department of Transportation reported that we had:

- 11,800 miles of state and interstate highways
- 103,000 miles of county highways, town and municipal streets
- 13,700 local and state bridges
- 111 lightly traveled rural roads designated as part of the Rustic Road System
- 59 billion vehicle miles of travel (VMT) on Wisconsin roads each year
- More than 4 million licensed drivers and nearly 5.5 million registered vehicles

With all of the cars, trucks, tractor-trailers, vans, motorcycles, buses and everything else that travels on our paved surfaces, Wisconsin's highways and roadways play a very important part in the state's economy and its resident's lives.

Proud Tradition: Antigo Offerings in Transportation Programs



Antigo High School has a proud tradition of offering a wide variety of courses that are available to our students in the CTE area. Our Transportation pathway is one of very high interest. Throughout the year we have roughly 200 students we are able to serve through this program. The strength of these courses is due to our direct ties and partnerships to local businesses and industry, technical colleges, and the passion and dedication shown by the instructors. The course options for our students in the Transportation pathway are: Transportation and Engineering, Automotive Service Fundamentals, Automotive Technician I and II, and High Performance Small Engines I and II.

Our programs start off with students completing transportation engineering projects such as egg crash and mouse trap powered cars where topics of mechanical advantage, gear ratios, applied mathematics, and simple machines are stressed. We also introduce the students to using DVOM while completing DC electrical circuits at an introductory level. As the students' progress through our programs they can begin to take the Automotive and Small Engine courses.

In the Automotive area we begin by breaking down our vehicles into the different systems. We focus on using differentiated instructional methods such as lecture, readings, research projects, videos, group/team work, and most importantly hands on labs. In our High Performance Small Engines I course each student is expected to understand 2 stroke, 4 stroke, diesel, and rotary engines. Students individually disassemble, recondition, and reassemble a 4 stroke engine. We focus on precision measuring, applied math, and the principals behind each of the types of engines. Our high level courses, Automotive Technician II and High Performance Small Engines II, focus on running the program like a working business. Customers come in; the students interview the customers working on

questioning and communication skills, verify the complaint, trouble shoot the problem, order parts, perform the repair, verify the complaint and finally explain to the customer what the problem was and what they had to do to fix it. The students are using the same technology that is being used in industry. The students work based on flat rate and complete repair orders and estimates for the customers. These can be intimidating at first but it is a crucial step in becoming a successful future employee. It is also a great way to incorporate practical math and communication skills to our programs. In the lab we have done everything from changing windshield wipers to engines to differentials. The students also have the option to participate in our Youth Apprenticeship program where they work side by side with our local technicians in the industry they plan to pursue.

How do we get students in our seats being an elective area? Students like racing, high performance applications, and new technologies. Our community and industry is very supportive and believes in the importance of the life skills the students obtain from these CTE courses. We have brought in a number of items in to peak students interests from IMCA modified dirt cars, winged sprint cars, pulling tractors, military Humvee, great lakes fishing boats, to touring a local business where they build the pro Red Bull off road trucks. The students we have now are so ingrained with technology that the automotive and transportation industries are a perfect fit as they are continually changing at a scary pace. We like talking about the past, present, and looking into the future. Not long ago we our vehicles didn't even come with seatbelts, now we have accident avoidance what's next? Who is going to come up with what's next? The students we have in our seats right now.

So how do we develop our curriculum to meet the demand and provide the industry or

our technical colleges a highly skilled future employee or student? A number of resources are used to guide my curriculum such as NATEF Standards and tasks, transportation skill competitions, local higher education requirements, the CTE state and national standards, and finally the need of local business and industries. The strength of these programs really comes from the ties of local businesses and technical colleges. These ties have brought equipment/vehicle donations, updated technology training for myself and colleagues, and finally and most importantly high levels of rigor to my program. The rigor comes in part from the local technical college allowing a minimum of one Dual Credit offering in each of our 9 CTE areas. This is a huge selling point of our program to administration, parents, and the community as well as a great opportunity for our students. We are working with a higher education institution to develop "Tech Academies" for the 2015-2016 school year where in each of our 9 CTE areas have ties with our core areas and our students will graduate high school with a semester worth of transferable dual credit courses at no cost to the students. This will provide scheduling and work flexibility as they continue their education at a tech or university.

It is important to prepare these students for the world after high school. We work on



college applications, resume writing, and complete scholarship applications as part of our course work. It is a great feeling when students come to class beaming with their college acceptance letters, or talk about the new job they landed, or to be up on stage during the scholarship and awards ceremony handing students college scholarships they have earned. These are just a few of the reasons we as educators do what we do.

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Rebuilding the Life of a 1967 Mustang Continued from Page 1



sive amount of sheet metal replacement. At this time we are working on repairing the rocker panel areas, rebuilding the front frame rails and welding in new floor pans. In conjunction with the sheet metal repairs we have decided to perform a fastback conversion on it as well but will not start that process for a few months yet.

Not only are we performing restoration to it we are also planning on turning it into a "resto-mod" as well. The current plan is to install an entire drivetrain, i.e., fuel injected 5.0, 5spd manual, etc., out of a 90s Mustang GT.

The automotive program will also be working with the Art Department to have students draw and design the final look of the car along with working together with other programs in the Technology Education Department as well, such as Welding, Metal Fabrication, Electronics, and Graphics to name a few.

In addition to the multi-department student project, the automotive program has been

getting support from local businesses.

Other well-known businesses in the industry have committed to providing some of the replacement sheet-metal parts needed for the project along with some of structural steel to convert the coupe to a fastback.

The Chi Hi Auto Club is interested in hearing from anybody who would like to help with donations and or could offer any type of support for the project. For more information please contact Mr. Tainter at 715-726-2406 Ext.1313 or email taintetf@chipfalls.org.

Chippewa Falls High School Car Show Information

The Chippewa Falls High School Car Show was started in 2011 by myself and a small group of students as a fundraiser for our auto program. Not only were we looking at it from a fundraising standpoint but also it was a way to show the com-

1967 Ford Mustang Production Stats

- ▶ Standard Convertible: **38,751 units**
- ▶ Luxury Convertible: **4,848 units**
- ▶ Convertible w/Bench Seats: **1,209 units**
- ▶ Standard Coupe: **325,853 units**
- ▶ Luxury Coupe: **22,228 units**
- ▶ Coupe w/Bench Seats: **21,397 units**
- ▶ Standard Fastback: **53,651 units**
- ▶ Luxury Fastback: **17,391 units**
- ▶ *Total Production: 472,121 units*

Retail Prices:

- \$2,898** — Standard Convertible
- \$2,461** — Standard Coupe
- \$2,692** — Standard Fastback

What Makes it a 1967

Of note, 1967 was the last year that F-O-R-D block lettering appeared across the front edge of classic Mustangs. This feature would not return until 1974. It would also be the last Mustang to feature the 289 Hi-Po Engine. These tidbits of information might come in handy when working to distinguish a 1967 Ford Mustang from a 1968. Upon first glance, the two model years closely resemble each other.

In all, the 1967 Ford Mustang was considered by most an improvement over previous model years. It was more powerful, it featured an improved suspension system, and it had an aggressive appearance.

From: mustangs.about.com/od/modelyear-profiles/a/1967-profile.htm

munity our automotive program as well.

We have students who volunteer to help organize and work at the event which range from selling concessions, registering cars, selling raffle tickets, cleaning up, etc. It has steadily been growing from our first year in which we had a few cars and a handful of sponsors to last year in which we had 25 sponsors and 40 cars in attendance. It is free for spectators and invited to contact us to enter a car-all years, makes, models, condition, etc., are welcome to attend. Our car show this year is scheduled for Saturday May 16th 2015.

Auto Program Information

Our automotive program has a full service lab, meaning we have all of the necessary tools and equipment much like any repair facility has. My work experience stems from the automotive industry so I understand and realize along with the school district also not only the importance but also the need for these types of programs. We work on many various projects throughout the school year which range from basic maintenance and minor repairs all the way up to engine and transmission replacements.

We have 4 courses students can take in our Automotive Program; the first one is called "Power To Go" and is open to students in grades 9-12. In that class students learn about the practical knowledge of an internal combustion engine, construction, operation, troubleshooting, inspection, service, rebuilding and repair as it relates to portable power sources (e.g. lawnmowers, snow blowers, roto-tillers, etc.) The student is required to recondition a single cylinder four-cycle engine (student supplied) ranging from 3 to 20 horsepower. Once they successfully complete those requirements they can then bring in other types of small engines such as ATV's, snowmobiles, motorcycles, etc.

As long as the student gets a C or better in Power To Go and they are either a Junior or Senior they are then eligible to take Automotive Technology. This class is 2 hours a day for a semester and they get the basics of autom-

tive repair which include, routine maintenance, trouble shooting, repair procedures, career's, etc. The course is approximately 60% theory, and 40% required related lab activities that they complete throughout the semester.

The next course in this sequence is Advanced Automotive Technology in which as long as they get at least a C in Auto Tech and are also a Junior or Senior they are eligible to take it. This course is also 2 hours a day for a semester and is designed to allow the student to improve both knowledge and skills required of today's automotive technicians. Advanced diagnostics and repair procedures are explored along with on-the-job type training such as found in a modern auto repair facility. The student is graded by completing required lab activities, independent repairs, and classroom assignments. The class is approximately 60% lab and 40% theory.

We also have a standalone course called Car Care that does not have any prerequisites other than they have to be a Junior or Senior to take it. Car Care meets one hour a day for a semester and is designed for those who want to learn more about vehicle ownership and the basics of maintaining a car. Students learn about purchasing a vehicle, insurance, financing, interior/exterior care, maintenance schedules, etc. Students also learn the basic fundamentals of the engine, powertrain, and chassis. This class is approximately 30% lab and 70% theory.

One of the unique things about our Automotive Program is we are the only high school that has a Transcribed Credit option available with a technical college. If a student successfully completes our series of automotive courses they get credit for certain classes within the Automotive Program. This helps the student save time and money upon entering a college, it is essentially our version of an AP type class that the college system has.

Tesla Coils Continued from Page 1



Tesla, the inventor of the Tesla coil. Once Dakota learned a little bit about the Tesla coil, it sparked his interest to learn more. Dakota built his first Tesla coil when he was only 10 years old. He scavenged parts from old television sets. The biggest part needed is called the flyback transformer, which is a part of a television. It makes the high voltages that power the primary and secondary

coils. Dakota actually has three different versions of the Tesla coil. He showed one to the class, he has one powered by a AA battery, and a third one that he is currently building that does not require using a flyback transformer. It will be completely made from silicon, and is known as a solid state Tesla coil. This design runs from an oscillating circuit that monitors feedback from the secondary coil of the Tesla coil and creates the correct resonating frequencies to make wireless energy more efficient.

Dakota plans to continue to increase his knowledge and experimenting and building of Tesla coils. When he graduates from high school in four years he plans to go into the field of engineering.

www.clinton.k12.wi.us

cfsd.chippfalls.k12.wi.us

Wisconsin's County Trunk Highway System: One of the Nation's Best



A long proud history:

The roots of the County Trunk Highway (CTH) system stemmed from state highway laws enacted in 1907. Under these laws, towns were given the opportunity to make an appropriation for road improvements and receive a match from county government. Under this system, the county was responsible for selecting the system of highways on which improvements would be made and electing a highway commissioner to carry out the improvements. Initially, only 20 counties participated in the improvement program, but the early changes created significant improvements in earlier road conditions and set the stage for the development of future advancement in Wisconsin's highways.

Later in 1917, the state legislature directed the State Highway Commission to establish a State Trunk Highway (STH) system with the goal of connecting every county seat and city with a population of 5,000 or more. In order to develop this new system, desirable routes were proposed, mapped, surveyed and analyzed. Public hearings were held and discussion ensued regarding issues such as populations served, the alignment and grades of existing routes, and the supply of local deposits of minerals and aggregates that would be used in construction. As a result, an entire 5,000-mile system was developed and that was the public's first introduction to the (STH) system.

The first county highways were independent of the state's Trunk Highway System and lacked the state's legislative approval. By 1924, every county in Wisconsin had set up its own county highway system, with the state authorizing county highways for the first time in 1925. Since that time, County Trunk Highways have become the system of highways under complete jurisdiction of the county and maintained solely at the county level. At the local level county boards and or highway committees were responsible for laying out the system. Any CTH systems laid out prior to legislative approval became recognized as part of the official CTH system. Each county board was responsible for conferring with neighboring counties to ensure continuity and continuous lines of travel. Currently in Wisconsin, every county maintains its own CTH system.

Labeling our County Highways:

Wisconsin Counties use letters as route designations for their county roads. Routes may be labeled with a single letter (CTH-Z), double letter (CTH-ZZ) or triple letter (CTH-ZZZ). While the designation of some county highways may cross into two or more counties, any individual letter will appear many times in different parts of the state.

County Highways are typically labeled

sequentially, though there is leeway to have the letter designation stand for the initials of a road, geographical feature, or in honor of a person. Today, there are occurrences where some imagination has gone into the designation of county highways. For example, the County Trunk Highway, which runs along the county line between Kenosha and Racine county is CTH-KR, the former US-12/US-18 in Madison running along Broadway is CTH-BW (for BroadWay), and CTH-LO (formerly STH-99 until January 1999) was named in honor of former Waukesha County Board Chairman Lloyd Owens.

Route designations may or may not be repeated within a single county, mostly depending on the size and population of the county. Designations also may or may not continue over a county line. Usually the letter designation remains the same when the route is a former Wisconsin State Highway that has undergone a "jurisdictional transfer" and has been turned over to the county.

Funding:

Funding of the CTH system is provided through county levy dollars, generated through property tax and sales tax assessments at the county level. In addition, the State of Wisconsin provides General Transportation Aids (GTA) to assist local units of with their transportation costs. GTA is the share of funds provided to local government generated primarily through vehicle registration fees and gasoline tax collections. Payments are divided among municipalities based on either a percentage of eligible highway-related expenditures or a per-mile payment, whichever results in a higher payment. Counties receive GTA payments based on a share of eligible highway-related expenditures and are not eligible for a per-mile payment.

Importance of the County Trunk Highway System on Commerce:

We all know that Wisconsin's rural and urban economy is dependent on a vibrant and well-funded CTH system. The CTH system is critical in bringing products to and from market and for citizens traveling to work in both rural and urban areas. This system is also the backbone of Wisconsin's billion-dollar agricultural industry. Most agricultural operators depend on the CTH system whether their operation is located on a town road, county highway, or on a state highway. With the changing face of Wisconsin's agricultural industry, more heavy equipment is being used on Wisconsin's county highways in both urban and rural counties. Thus the need for increased CTH funding is rapidly rising. The use of

additional heavy equipment also generates increased wear and tear on the CTH system, which has become a safety issue in many areas of the state.

The CTH system is an important for many reasons. Hopefully, this column has given you an appreciation of the history, uses, funding mechanisms and importance of the system.

Looking to the Future, Thoughts on Wisconsin's Segregated Transportation Fund:

According to the Wisconsin Department of Transportation (WisDOT), Wisconsin could face a \$600 to \$700 million shortfall in its Segregated Transportation Fund in the 2015-17 state biennial budget.

- New transportation revenue sources are necessary to shore up the declining potency of the state's gas tax and vehicle registration fee.
- New revenue sources applicable to the segregated transportation fund would free up general fund dollars for other state programs and reduce the state's level of debt service.
- New revenue sources will minimize the practice of employing one-time measures, such as bonding or general fund transfers, to support Wisconsin's transportation programs.



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Mission of UW-Superior's Transportation and Logistics Management Major

"Develop exceptional leaders through the integration of a Liberal Arts and Business foundation with a Transportation and Logistics Management curriculum and internship."



Efficient movement of products within a factory or around the world plays a vital role in a nation's economy. The U.S. Bureau of Labor Statistics estimates that transportation-related fields are growing by nearly 56,000 jobs a year. In response to industry need, the University of Wisconsin-Superior offers a

Bachelor of Science Degree in Transportation and Logistics Management.

This program was designed with the aid of business educators and industry leaders, and it is the first of its kind in Wisconsin. Students majoring in this program enjoy the benefits of UW-Superior's personal attention to students

and its quality business programs, as well as Superior's role as a Midwest transportation hub.

Student Assist

The Transportation and Logistics Center has student assist funding available to hire T&L Students for research projects. Students work under the direction of a faculty member who is engaged in research in the area of Transportation or Logistics. Students will also help set up forums, conduct surveys, assist in writing articles, make presentations, mentor other students and support other activities of the research center. The students are paid on an hourly basis and can work up to 20 hours per week when circumstances permit. All students who are employed by the Transportation and Logistics Research Center are selected on merit without regard to race, nationality or gender in accordance with University of Wisconsin-Superior guidelines. Transportation and Logistics Management Majors are given preference in hiring. The grade point average of the student is reviewed and hours of work will be subject to continued quality academic performance.

Scholarships

Information on the following Scholarship Programs can be accessed at the site below:

Website: www.uwsuper.edu/acaddept/dbe/trans/students/t-lm-scholarships.cfm

Undergraduate Scholarship List:

All T&L Majors

- Twin Cities Roundtable of CSCMP Scholarship
- Dwight David Eisenhower Transportation Fellowship Program
- The L.L. Waters Scholarship Program
- Transportation & Logistics Founders Scholarship
- Dr. Emmett Davidson Transportation & Logistics Management Scholarship

- Transportation Clubs International Scholarships
- SOLE - Annual Logistics Scholarships
- Delta Nu Alpha Foundation Scholarship
- Material Handling Education Foundation Scholarship Program
- Alumni Association Scholarships

Rail Study

- Canadian National Railroad Studies Scholarships

Highway Study

- Truckload Carriers Association - Scholarships

Aviation Study

- Scholarship for Students Enrolled in Aviation Management Curriculum
- Wisconsin Airport Management Association Scholarship
- Aviation Education Scholarships and Grants

Woman T&L Majors

- Women's Transportation Seminar Scholarships
- League of Railway Industry Women (LRIW) Scholarship Program

Income, background eligible

- The Ronald E. McNair Post-Baccalaureate Achievement Program

Other Scholarship Opportunities

- Minnesota Power Foundation Scholarship
- Midwest Global Trade Association

Also check the Recent Winners page to read about recently awarded scholarships.

Website: www.uwsuper.edu/acaddept/dbe/trans/students/recent-winners.cfm

Information found on the UW-Superior Transportation and Logistics Research Center page may not be current. Therefore, students are encouraged to visit the related organizations' websites to obtain current information on scholarship.

Transportation and Logistics Management Major

The efficient flow of people and materials in the global and domestic economy plays a vital role in today's business environment. Understanding transportation, logistics, and supply chain management is key to being competitive in the global marketplace.

Program Highlights:

- Highly successful placement program
- Starting salary from \$35,000 to \$60,000
- Nationally accredited program
- Internationally focused program
- Dynamic 6- to 15-week internship
- Extensive scholarship opportunities
- Student research positions available

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Kaukauna High School Continues to Develop New Transportation Curriculum



At a time when auto shop classes are harder to find across the state Kaukauna High School continues to develop new curriculum for their long running Transportation Program. Dan VanBoxtel teaches course work that is articulated with a local higher education institution for credit. Students have 10 to 12 cars in the lab for extensive service and repair learning skills that they can transfer to on the job opportunities. Beginning students take a class

called Consumer Auto which prepares them for basic car care. For some students this is a great way to be familiar with maintain their own vehicle while for others it offers the first step toward transportation careers. The Advanced Auto is done as a block schedule which allows more time to learn the equipment. The shop has a unit room used for small engines, and has a new tire balancer, tire change machine, diagnostic equipment, brake lathe and charg-

ing system test unit. The upgrades at the local high education institution allowed Kaukauna High School to receive nearly new SUN diagnostic equipment and three new fully loaded roller cabinets of tools. Code scanners and computerized vehicle info systems are part of the everyday learning experience for students. They work on their own vehicle, as well as staff and family autos. The school also has a 4X4 pickup and a passenger van that were donated by Ford as teaching tools.

Once a student acquires some basic skills the local dealers are anxious to hire them as part time employees. Two local companies have long partnered with Kaukauna High School in the Youth Apprenticeship program. The mechanic who now trains others at one of the companies was a Kaukauna co-op just a few years ago. The owner of one of the business and his service manager are both co-op grads of the Kaukauna High School system. Two other students are currently working for large farm equipment dealers in Kaukauna.

Mr. VanBoxtel and fellow instructor Nels Lawrence work with a team of students in the after school Engineering Club to build and compete in Supermileage (gas economy) and Electrathon (all electric efficient vehicles). These vehicles are another way for students to develop a project that requires them to fabricate

the chassis, design steering and brake systems and build a complete safe working vehicle for the competition. Some of the graduates of this activity are now engineers and one former leader of the group is an on the road mechanic for Penske.

For 2015–16 a new Outdoor Power and Energy class will prepare students for careers working with the many powered machines other than road vehicle including recreational equipment. This program not only meets a need but fits the career path offered by the Monster Garage. The New Green Academy track at Kaukauna High School which is aimed at 2016–17 will include students learning Engineering and Sustainable Architecture with transportation efficiency as a key part of the mix in the Power and Energy class in the automotive area. Students will look at hybrid, electric and alternative fuel vehicles as part of the class.

Kaukauna Area School District continues to provide students an opportunity in transportation and does so by keeping up with the technology required to operate and service modern vehicles.

www.kaukauna.k12.wi.us

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Highway Construction Industry Opportunities

When thinking about a career, most are not aware of the remarkable opportunities that working in the highway construction industry can offer. Building bridges over rivers, operating heavy equipment, providing the infrastructure for the future; where else can you earn and learn and see your results at the same time? To this day, I am still proud to drive over a road that I had a part in the construction of.

There is such an array of avenues for this industry. The Wisconsin DWD – Bureau of Apprenticeship's website hosts an assortment of descriptions and links of available apprenticeships in the trades. Aside from the trades (such as carpenter, laborer, cement finisher and operating engineer, to name a few), there are other positions like quality control, project management and supervisory positions.



The benefits of highway construction include not only a good living with benefits, but also the ability to advance

and grow in an industry that is sustainable and less likely to fluctuate during bad times.

Payne & Dolan Inc. is a fast paced and progressive highway construction company that thrives on growth, ingenuity, technology and hard-working individuals. While not a typical 9–5 job, it offers its employees a chance to work in a variety of careers. Primary functions consist of asphalt paving, grading and milling but are backed by asphalt and aggregate manufacturing. The Company provides good paying jobs in exchange for hard work and dedication. Advancement is provided openly to those who seek it out and demonstrate ability. Management positions are widely held by former entry level employees.

I guess if I could give you any advice it would be to have an open mind and explore your opportunities in highway construction. It is an exciting, lucrative and sustaining industry to be a part of.

Dawn Pratt
Human Resources Manager/EEO Officer
(Former Project Engineer)
Equal Employment Opportunity Employer

Wisconsin Labor History Society

Labor History Essay Contest for High School Students



The Wisconsin Labor History Society announces its High School Essay Contest for the 2014-2015 School Year. Win cash prizes up to \$500 for essays of about 750 words on the topic:

“Unions have been important to my family and my community because . . .”

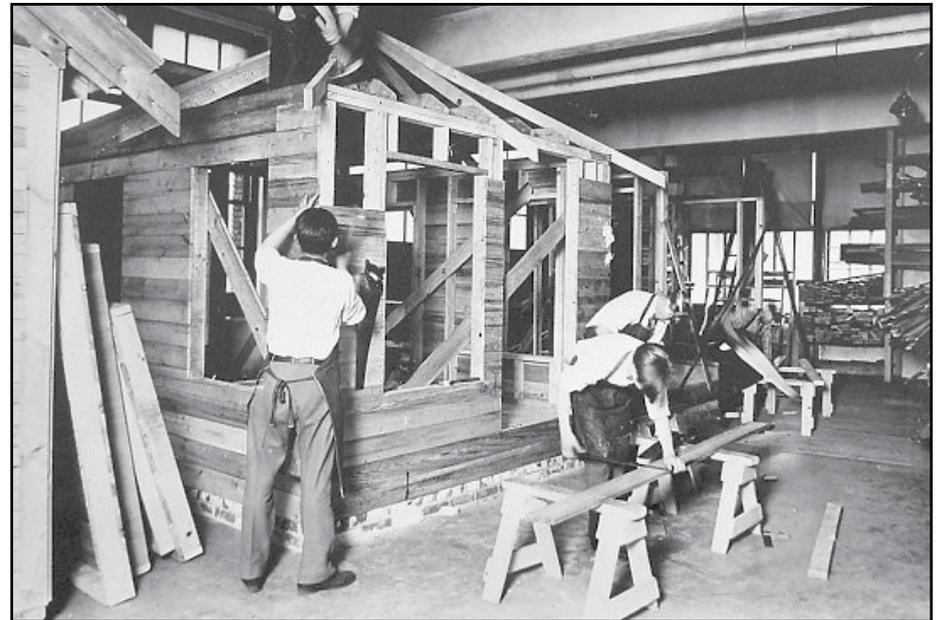
Top Prizes!

- First Prize: \$500
- Second Prize: \$300
- Third Prize: \$200
- Honorable Mention: \$100 (Up to five awarded)

Wisconsin high school students (grades 9–12) are eligible to participate. Students are urged to interview family members, neighbors, friends or others for their stories about work and unions.

Rules: Essays should be approximately 750 words in length. They will be judged on understanding, evidence of original research, writing style and significance. Essays must be typed, double-spaced, on white paper. Two copies must be submitted (One may be a photocopy.) Please be sure to provide the following information on the cover sheet: Your name, address, home telephone number, your grade in school, name and address of your school, and, if you were encouraged or assisted by a teacher, the teacher’s name. (Also, list your family’s union membership, if applicable.) If you have any questions, contact: Harvey J. Kaye (920-465-2355 or kayeh@uwgb.edu).

**6333 W. Blue Mound Rd.
Milwaukee WI 53213
Phone: 414-771-0700 x20**



E-mail: info@wisconsinlaborhistory.org
Deadline: Submissions must be posted by February 13, 2015 or before

Read winning essay from 2013–14 contest at the website below:
Website: wisconsinlaborhistory.org/contests/high-school-essays

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For information about gaining your apprenticeship, what a career with the Laborers can do for your life, and what steps to take next, please contact:

Ray Wiatt, Apprenticeship Coordinator
(608) 846-5768 or rwiatt@wilaborers.org

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www.wilaborers.org

Wisconsin Operating Engineers **APPRENTICESHIP**

The purpose of the apprenticeship program is to recruit and train those interested in a career in operating and maintaining heavy equipment.

What is an Operating Engineer?

Operating Engineers are the operators of what is generally referred to as *Heavy Equipment* such as Cranes, Dozers, Scrapers, Loaders, Motor Graders, Tractor Loader Backhoes, Excavators, Rollers, Pavers, Concrete Plants and Mixers, Compressors, Pumps and so on.

The Work Site for an Operating Engineer will be at construction projects such as commercial and residential developments, dams, roadways, etc. It may also be in plants that produce rock, sand & gravel, or in the clean-up of hazardous waste sites. This could mean working in isolated areas, or right downtown in a major city. It also means reliable transportation is a must for Operating Engineers.

Maintenance and Servicing of equipment is another part of the job. Any schooling you take for engine, hydraulic and electrical repair will be to your advantage. Also, many of our machines now use computers for part of their control systems.

How Will I Be Trained?

The best way to learn the skills of an Operating Engineer is to do the work of an

Operating Engineer. Therefore, an Apprentice will actually work on the job, learning from journey worker operators. Each apprentice must work 6000 hours (approximately four years), and is paid a percentage of journey level wages. Apprentice wages start at approximately \$22*/hour with regular raises to approximately \$33*/hour.

Journey level operators make approximately \$32*/hour depending on the contract.

In the classroom, the apprentice will supplement on-the-job training with mandatory related instruction courses which are conducted during the course of the apprenticeship. Apprentices receive instruction in safe operating procedures, construction fundamentals, first aid and CPR, Tele-Handler/Forklift safety certification, MSHA, OSHA 10+, Operator Qualification and 40-Hour Hazmat training as well as many other pertinent classes. 400 hours of instruction is required at the Wisconsin Operating Engineers Training Site located on 380 acres near Coloma, Wisconsin in Waushara County. All apprenticeship classes are accredited through Fox Valley Technical College.

In the field, apprentices who are serving a 6,000 hour on-the-job apprenticeship will be trained in specific processes necessary for heavy equipment operation.

**Based on 2013 wages.*



What's next?

Upon completion of the minimum requirements the Committee will issue a "Letter of Eligibility." Although the Training Center will maintain a list of qualified applicants which will be available to prospective employers, your best chance of obtaining employment as an Operating Engineer apprentice is to contact employers or job supervisors personally, giving them a copy of your "Letter of Eligibility."

The "Letter of Eligibility" will remain in effect for a period of one year. If employment is not gained within the year you must advise the Committee in writing of your continued interest in this trade.

For more information, contact Wisconsin Operating Engineers Local 139, W11584 State Road 21, Coloma, WI 54930. Phone: 715-228-4911.

The Wisconsin Operating Engineers Apprenticeship Program is sponsored by IUOE LOCAL 139 in conjunction with the Associated General Contractors of Wisconsin (AGC of WI), Associated Construction Employers Association (ACEA), Wisconsin Underground Contractors Association (WUCA) and Wisconsin Transportation Builders Association (WTBA).

www.woetrainingcenter.org

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Local 139 Instructor Woody Wickersheim shows Monona Grove High School students how to operate an earth-moving simulator.

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Operating Engineers
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Business Manager



Main Street Reconstruction in the Village of Little Chute Wins National Award for Excellence in Concrete Pavements

By Heath Schopf, Director of Construction Engineering, WCPA

The American Concrete Pavement Association (ACPA) has named the recipients of its 25th Annual "Excellence in Concrete Pavements" Awards, which recognize quality concrete pavements constructed in the United States and Canada.

The reconstruction of Main Street / STH 96 in the Village of Little Chute received the Gold Award for the Municipal Streets and Intersections (>30,000 SY) Category. The Awards Ceremony was held on December 5, 2014 at the 51st Annual Meeting of the ACPA in Scottsdale, Arizona.

Municipal Streets & Intersections (>30,000 SY) Gold Award

Project: Main Street / STH 96, Village of Little Chute, WI

Contractor: Vinton Construction Company

Owner: Village of Little Chute & WisDOT NE Region

Design Engineer: McMAHON

Construction Engineer: Mead & Hunt, Inc.

The \$3.7 million dollar urban construction project involved reconstructing a 1.5 mile urban segment of Main Street (STH 96), from Jackson Street to the village limits in the Village of Little Chute, Wisconsin. Main Street is an

east/west connecting highway classified as an urban arterial serving the Village and surrounding communities carrying over 7800 vehicles per day, including 500 trucks per day, through a residential and commercial area. The existing roadway consisted of a 48' clear width and narrow terraces constructed in 1957, had never been resurfaced, and was in poor condition.

The main purpose of the project was to replace the deteriorated pavement and undersized storm sewer system. The proposed improvement incorporated various sections from a 40' clear width with 2 travel lanes, bike lanes, and on street parking on one side to a 46' clear width with 2 travel lanes, a bike lane, and a TWLTL.

Reconstruction of this corridor required an extraordinary level of planning and construction effort to deliver and minimize the impacts to the 29 businesses and 110 residents within the project limits. The major items of work on the project consisted of 30,840 SY of removing concrete pavement 45,129 CY of excavation, 19,587 tons of base aggregate and 38,031 SY of 8-inch doweled concrete pavement. There was also over 65,000 square feet of concrete sidewalk, 5,161 SY of concrete driveways, 9,542 LF of storm sewer mainline, 4300 LF of storm sewer laterals, 102 sewer structures and 16,250 SY of lawn sod on the project. The corridor included 12 intersections and over 139 drive-

way openings. Aesthetic improvements included decorative sign posts, landscaping, and pedestrian rest areas which included colored concrete sidewalk, decorative benches, decorative concrete planters, and decorative concrete waste containers.

Construction began in May of 2013 and had a completion date of October 15th, 2013. Utility coordination, coordination with local businesses and residents and coordination with the Village on concurrent projects all added to the complexity of this project. Vinton Construction is well known in Wisconsin for their excellent project coordination, and their extraordinary efforts on the Main street project was a key component of the project success.

Vinton Construction delivered a high quality concrete pavement with all materials meeting specification. The paving foreman was very thorough and paving crews were experienced, adequate in size and well trained in each specific task. Vinton's personnel paid close attention to detail and performed high quality workmanship with all aspects of the paving



operation. Overall the project was well designed and the construction personnel on site were seasoned and well organized which made for a smooth running project.

A true partnership was forged by WisDOT, McMAHON, Mead & Hunt, the Village of Little Chute and Vinton Construction. Every aspect of the project from conception to completion was carefully thought out, well executed, and a huge success. The Village of Little Chute has a revitalized corridor which will spur business redevelopment for many years to come thanks to the commitment of all parties involved and the use of concrete pavement.



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Pictured Here: Capitol Drive in the City of Milwaukee. It was constructed by the City of Milwaukee and by WCPA member the Zignego Company. It was the recipient of a 2013 Gold Award for Excellence in Concrete Pavement in the Category of Municipal Streets and Intersections, Greater than 30,000 SY..

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The Engineering Benefits of Asphalt

The wide range of engineering benefits make the case for asphalt:

- Asphalt pavements are quick to construct, with methods that allow planners and managers to fix congestion hot spots and bottlenecks during off-peak hours, so commuters may never see an orange barrel or a construction-related traffic jam.
- Asphalt is a top-performing material, helping reduce traffic noise at the point where the wheel meets the road and providing a smooth, continuous surface that adds pavement longevity and requires less maintenance than rougher roads.
- Asphalt pavements are the choice for safety, providing drivers with a quiet, skid-resistant surface, excellent gripping power, and ultimately, a safer ride.

Check out the following reports on the engineering benefits of asphalt, available from the Wisconsin Asphalt Pavement Association: www.wispave.org/engineering

Perpetual Asphalt Pavements

Asphalt Pavement Alliance Technical Report

Summarizes the activities that have taken place over the last decade, synthesizes the information in way that is useful to providing guidance for Perpetual Pavement design and construction, and provides a vision for further research and development to refine Perpetual Pavements.



Pavement Structure Design

WAPA Technical Bulletin

Step-by-step guidance for pavement design based on subsoil quality and expected traffic. Easy-to-use charts derived from WisDOT's design manual and AASHTO formulas help planners quickly determine the required layer thickness for alternative pavement designs.



Subdivision Street Design

WAPA Technical Bulletin

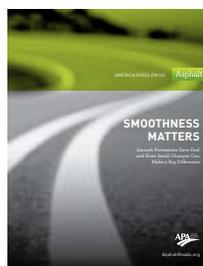
An improved approach to subdivision street design that takes real-world pavement loading conditions and soil types into account. Included are WAPA's design recommendations for asphalt binder layer thickness based on soil type and number of homes in a new subdivision.



Smoothness Matters

Asphalt Pavement Alliance Fact Sheet

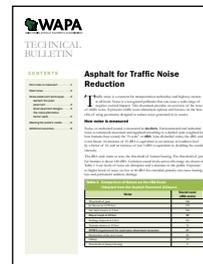
Experts say that vehicles consume less fuel when traveling on smoother pavements. This makes sense intuitively. And lower consumption of fuel conserves natural resources for a healthier environment.



Asphalt for Traffic Noise Reduction

WAPA Technical Bulletin

Noise barrier walls are both expensive and ineffective for urban noise abatement, but asphalt—already the quiet pavement—can help reduce noise generated at the tire/pavement interface. This document describes how stone matrix asphalt and open-graded friction courses can be highly effective and cost-efficient noise abatement solutions.



Quiet Pavement Technologies

World Road Association (PIARC) Report

This publication explains tire-pavement noise fundamentals and a framework for managing road noise through practical asphalt pavement solutions.



www.wispave.org/engineering

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The Wisconsin Asphalt Pavement Association is a statewide, non-profit organization representing the interests of the asphalt industry. WAPA members are Wisconsin-based contractors and manufacturers, asphalt mixture producers and liquid asphalt suppliers who support the industry by providing quality pavements, materials and services.



WAPA

Wisconsin Asphalt Pavement Association
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 Phone: 608-255-3114 | Fax: 866-298-2857
www.wispave.org

Learn more about careers in asphalt and find job openings at: wispave.org/get-started

WISCONSIN RIDES ON US

Digital Electronics Class Takes on Power Problem with UAVs

LaCrosse High School
LaCrosse School District

Students in Steve Johnson's Digital Electronics class are taking their skills up a level, literally. The Logan 10th through 12th graders are embarking on a project to design an unmanned aerial vehicle (UAV) that would be used to identify power line problems and obstructions.

"We are in the very beginning stages," explains Johnston. "This is something that has never been done before at the high school level."

One of the greatest obstacles Johnston and his students faced to launch the program was funding. Thanks to a recent Classroom Innovation Grant awarded by the La Crosse Public Education Foundation, that challenge no longer exists. The grant will purchase the needed materials to build the vehicle.

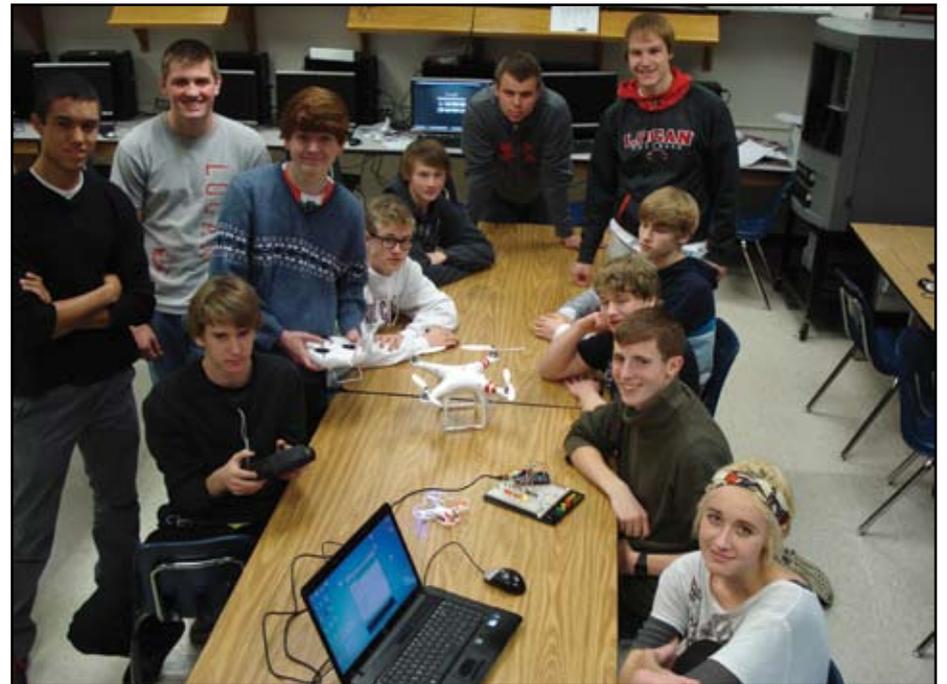
The project involves students designing an unmanned aerial vehicle that would travel power lines during an outage to determine where in the line and what is causing the

power outage. The goal would be to increase efficiency in identifying and repairing the problem and restoring service to the customers.

"This is a real world technical problem that the students can relate to," Johnston states. "When the power is out the impact on a person and community is great. The UAV can travel the power lines quickly to identify the source of the problem."

The students will start by researching vehicle designs as well as calculate power requirements and battery needs. Engineers from Dairyland Power Cooperative will offer technical expertise on the power line grids that the vehicle would travel.

"This project is a perfect example of the types of projects the La Crosse Public Education Foundation likes to fund," shares David Stoffer, the foundation's executive director. "Teachers are stretching students' thinking through innovative projects and we are able to support the innovation through a classroom grant."





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14 awesome ways drones are being used today



According to ex-Wired editor and 3D Robotics CEO Chris Anderson, the (AVR-powered) DIY drone community will soon have more than 15,000 drones flying, compared to some 7,000 drones in use worldwide by military forces.

1 Farming is tough, and drones are making it easier. With their aerial abilities, farmers can now see if their irrigation systems are working, how their crops are growing, even see if any of the plants are sick by using infrared technology. This enables farmers to make critical decisions about where and when to fertilize, plant or water. Though these observations and improvements may only equate to cents per acre, when prac-

ticed over thousands of acres, that can translate into much greater amounts.

2 Going to Hollywood! UAVs have already been adapted by a number of film makers looking to capture more innovative shots with less limitations. Drones are enabling creators to achieve the effects that would otherwise require wires, spider cam rigs, dollies, cranes, and crane operators.

3 Capturing the beauties life has to offer. Given its aerial abilities, drones have been able to capture things in ways never before seen. Take for instance, a charter captain runs whale-watching charters out of Dana Point, California.

He recently used a small camera-equipped drone to capture video of a "mega-pod" of hundreds of common dolphins as well as three gray whale migrating off the coast of San Clemente. In a separate venture, the drone returned footage of a family of humpback whales off of Maui.

4 Trying to sell your house? Drones can help. Once reserved for luxury-home listings, aerial photos and videos are popping up in ads for moderately priced places, thanks to the use of relatively inexpensive drones. Move over still photos and open houses, the next real estate listing may be accompanied by a drone tour.

5 Weaving high-rise structures: A team of researchers at ETH Zurich recently programmed drones to build and weave high-rise structures. While the test was relatively simple, the idea of choreographing drones to act as aerial construction workers is pretty fascinating. In spider-like fashion, the drone spools cable behind it as it zips between supports. It is weaving a structure high above where ordinary building equipment can easily reach. The team is also teaching drones to build towers from foam bricks.

6 Covering the news. When it comes to reporting, there's nothing more important than catching the action as it happens. In what may become the next trend in journalism, students across the country are already learning how

drones could help them be better reporters, and some reporters have already begun using UAVs to capture the day's news.

7 Putting out wildfires. Drones are becoming an incredibly useful tool for firefighters, especially those who have the seemingly impossible task of putting out wildfires. Not only are the aircrafts being used to spot the fire and tracking its movement, but they can actually fight fires as well, ultimately keeping people out of harm's way. Unlike helicopters, which can take up to an hour to arrive on the scene and gather information, drones are operational within three minutes.

8 Preventing endangered species. Tracking endangered is not an easy feat; however, with its unparalleled aerial abilities, drones may become the next tool in preventing poaching.

9 Saving the world. From authorities potting environmental violations to the EPA testing air quality, a wide range of scientists are using drones to keep tabs of the environment. NASA is even using drones to test the makeup of the ozone. Drones used for environmental monitoring is already the topic of many an academic paper.

10 Saving lives, too. A graduate student from Austria recently took life-saving equipment to the next level. He devised a system whereby drones could deliver defibrillators to

Continued on Page 18

Move Over or Slow Down for Emergency Flashing Lights

One of the most dangerous places for emergency responders and maintenance personnel is along the side of the road. Each year hundreds of these hard working men and women are injured or killed by passing motorists while working along the nation's highways. In 2001, Wisconsin passed a law designed to protect law enforcement officers, emergency responders, tow operators and highway maintenance personnel who are conducting business on Wisconsin's roadways.

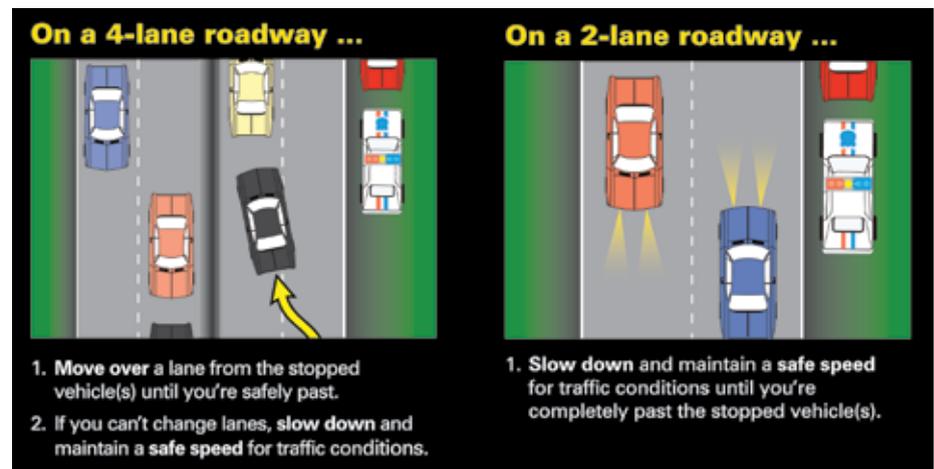
If you see a stopped emergency or maintenance vehicle with its emergency lights flashing, move over or slow down.

It is called the Move Over Law, and the concept is simple. If you see a vehicle on the side of the road with its emergency lights flashing, you are required to move out of the lane closest to the vehicle if possible.

If a safe lane change is not possible, or you are traveling on a two lane roadway, you are required to slow your vehicle, maintaining a safe speed for traffic conditions, and drive at a reduced speed until completely past the vehicle.

"Our troopers, maintenance workers and others who work on busy highways take every possible precaution to avoid getting hit by vehicles," says Wisconsin Department of Transportation Secretary Frank J. Busalacchi. "But we need help from every driver on the highway. When motorists obey the Move Over Law and create a safety zone, they reduce the dangers to themselves and those who work along our highways."

Not moving over can be painful. If you get a ticket, you will be assessed three demerit points on your license and a \$249 fine. In addition, your driver's license will be suspended if you are involved in a crash, and you may serve up to seven years in prison if you hurt or kill someone.



When drivers pass stopped emergency/maintenance vehicles, everyone's safety is at risk

Remember, the law applies to any emergency response or maintenance vehicle with its emergency lights flashing.

For more information, contact your local law enforcement agency or the Wisconsin State Patrol.



A Hidden Danger — Black Ice

Black ice frequently forms in the late winter and early spring. Black ice is almost invisible to the naked eye and is frequently mistaken for a wet or newly paved road. Black ice can form even when it's not raining or snowing. Melting snow that runs across the road or condensation from overnight dew can freeze forming a thin layer of ice that creates one of the slickest road conditions known to man.

It is because black ice can form so quickly and is so camouflaged on the road that Occupational Safety and Health Administration officials call it one of the deadliest of all winter driving hazards.

Here's what to watch out for:

- Pavement that looks dark, wet or like new asphalt.
 - Low-lying areas that may have standing water or run off from nearby melting snow banks or puddles.
 - Bridges and Underpasses.
 - Any road areas which are shaded from the sun.
 - Any time the temperature is below 40 degrees F.
 - Vehicles that have slid off the road under any of the above conditions.
- Here are some things you can do:
- First of all understand that not all cars

respond the same to icy, slippery roads. For that reason, knowing how to handle your vehicle and how it responds in various weather conditions is important. AAA recommends that motorists practice slow-speed maneuvers on an empty snow or ice covered parking lot. You should also look through your owner's manual and familiarize yourself with your vehicle's braking system and other features.

- Wear safety belts every time you get into a vehicle. Be sure all children and passengers are secured in proper restraints, too.
- SLOW DOWN! — posted speed limits are for ideal travel conditions. Driving at reduced speeds is the best precautionary measure against any misfortune while driving on slippery roads. Allow more time to travel. Resist the temptation to drive faster. Allow extra time not only for the reduced speeds, but for potential problems on the road.
- When the roads are wet or look wet, watch the vehicle in front of you. If it is not leaving tracks or its wheels are not "throwing" water, it is probably black ice and not just wet
- Look well ahead to compensate for the greater distances required when driving on slippery surfaces, focus your attention

as far ahead as possible—at least 20 to 30 seconds.

- Drive with your head lights on. This will turn on your tail lights and allow others to see you almost twice as far away. Being visible will give others time to avoid hitting you.
- Be especially leery when driving your car into shaded areas and slow your vehicle down when you encounter such areas.
- Avoid driving while fatigued.
- Maintain more space. Increase your margin of safety. Don't tailgate! Maintain a minimum of 8 to 10 seconds in following distance.
- Anticipate problems. On slick surfaces, any abrupt maneuver will increase the probability of losing vehicle control. Skids can best be avoided by anticipating lane changes, turns and curves, slowing down in advance, and by making smooth, precise movements of the steering wheel.
- Use chains in deep snow and on icy surfaces. Check state and local laws before installing chains, and drive at slower speeds to avoid damage to the tires and vehicle.
- Do not use cruise control. Winter driving requires you to be in full control.
- Steer with smooth and precise move-

ments. Changing lanes too quickly and jerky steering while braking or accelerating can cause skidding.

Here are some braking tips should you find yourself on black ice:

1. Braking without anti-lock brakes: Use the heel-and-toe method. Keep your heel on the floor and use your toes to press the brake pedal firmly just short of locking up the wheels. If the wheels lock, release the pressure on the pedal, and press again in the same way. Repeat this until you come to a full stop.
2. Braking with anti-lock brakes: Apply the brakes. Do not remove your foot from the brake pedal or pump the brakes. The ABS should keep the brakes from locking while allowing you to steer as you continue to slow the vehicle down.

In both cases, if your vehicle begins to skid, remember to steer in the direction of the skid. You may also find it advantageous to put your transmission in neutral while trying to stop on black ice.

www.maine.gov/bgs/riskmanage/tipofthmonth/tip20.htm

The Panama Canal Expansion — a Third Set of Locks



On August 15, 1914, the Panama Canal, a man-made waterway connecting the Atlantic and Pacific oceans, officially opened to traffic. United States' cargo ship, the SS Ancon, was the first ship to officially traverse the Panama Canal. This day marked the culmination of one of the largest construction projects ever undertaken by the United States. The \$400 million dollar project began in 1909 on the Isthmus of Panama and was actually completed ahead of schedule, despite the challenges faced by the construction crews.

The Canal Zone was initially ceded to the United States indefinitely, but in 1977 U.S. President Jimmy Carter signed a new treaty that returned the Panama Canal to Panama on December 31, 1999.

The Panama Canal was designed to stretch across nearly 50 miles of land, which consisted of varying terrain. In order to accomplish this feat, the design of the canal needed to feature a series of "locks," which would allow a boat to travel between varying water levels without ever leaving the canal. In total, a boat traversing the Panama Canal must go through a series of six locks in order to complete the journey. Between the locks are a series of lakes.

history1900s.about.com/od/1910s/fl/The-Panama-Canal.htm

What Is the Panama Canal Expansion?

The expansion of the Panama Canal is expected to be completed by December 2015.

The Expansion Program consists of several components:

- New Locks (Third Set of Locks)
- Pacific Access Channel

- Improvement of Navigational Channels (Dredging)
- Improvements to Water Supply

A new third lane will double the canal's capacity. It will accommodate Post-Panamax ships, which are 1,200 feet in length and carry three times the cargo of 965-foot-long Panamax ships. (Source: USA Today "Super-size container ships require larger locks," August 5, 2009)

Five ports carry 70% of U.S. ship imports: Los Angeles/Long Beach (LA/LB), New York/New Jersey (NY/NJ), Seattle/Tacoma, Savannah, and Oakland. All of these, and the port of Charleston, either already can or will be able to receive Post-Panamax ships by 2018. Traffic is expected to double to these ports by 2030. Expansion of the Panama Canal will help relieve the congestion to the U.S. transportation system by relieving congestion to the LA/LB port, which receives most of the traffic from Asia.

useconomy.about.com/od/tradepolicy/p/Panama-Canal-Expansion-Impact-On-U-S-Economy.htm

Panama Canal Expansion Update: Project Now 83 Percent Complete

In another major milestone for the Panama Canal Expansion Program, the electro-mechanical installation phase, one of the most important of the project, has begun with the installation of the first steel rolling gate at the Atlantic side.

"This year, the Expansion Program completed several milestones towards the completion of the project," said Panama Canal Administrator Jorge L. Quijano. "I am proud of the progress we have made on this project and the uninterrupted service we have pro-

vided to global shipping for 100 years. The Expansion will double our tonnage capacity and reinforces our continual commitment to provide greater service to our customers.

With the arrival of the last four of the 16 rolling gates for the new locks in November and the transfer of the eight gates for the Pacific-side locks through the waterway, all electro-mechanical components are ready to be installed. All gates are to be installed by mid-2015.

The massive steel structures weigh on average 3,400 tons. The gates vary in sizes depending on their location (Pacific or Atlantic) and their position on the locks chambers. The tallest of all gates is 33.04 meters high, the equivalent of an 11-story building. Unlike the current Canal, which uses miter gates, the expanded Canal will have steel rolling gates. The rolling system facilitates gate maintenance.

A major component of the Canal's Expansion is the construction of the new locks. Already, much of the 4.4 million cubic meters of concrete needed has been poured, giving form to the structure and making the locks visible.

To date, the overall program is 83 percent complete, with several major components, such as its dry excavation and dredging projects, already finished. In addition, 94 percent of the works required to be able to operate the new water level of Gatun Lake have been completed.

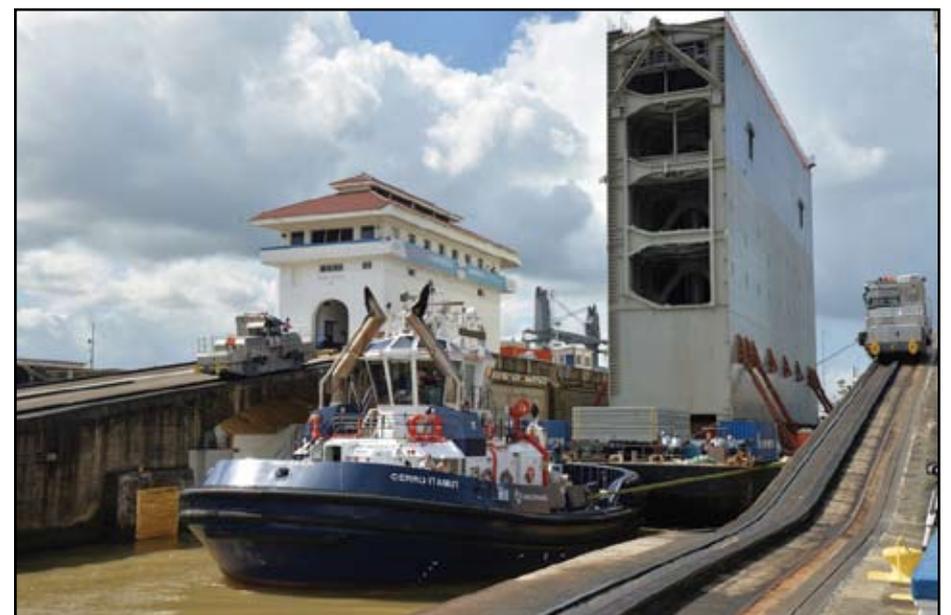
Currently, excavations of the Pacific Access Channel (PAC) are 82.2 percent complete. The PAC is a 6.7-kilometer-long channel designed to provide navigation access to and from the new Pacific locks to the existing Culebra Cut section, the narrowest stretch of the Panama Canal. Three of the four PAC phases needed for its execution are now complete.

The fourth and final phase (PAC-4) registered an important milestone this month with completion of the grout curtain for the Borinquen 1E Dam. The construction of the 2.3-kilometer-long, is of particular importance to the project because, after Expansion is completed, the Canal will have two locks in the Pacific side separated by Miraflores Lake. With a water level difference of nine meters between the new channel and Miraflores Lake, Expansion's new lane will allow ships to bypass the lake altogether by going directly from Culebra Cut to the new locks.

micanaldepanama.com/expansion/2014/12/panama-canal-expansion-update-project-now-83-percent-complete

To View Frequently Asked Questions, Videos, Photos and Live Web Cams please visit the website below.

Website: micanaldepanama.com/expansion



Who Will Teach the Future?



Mr. Pete McConnell, WTEA Past President, Retired TEE Teacher, Merrill High School

Working with students in Technology Education and Engineering is necessary and important. It always has been and I am continuing to work hard to make sure it is in the future. The question is who will teach the future and why is it important? There is a population of people who think well

when they use their hands and their minds to produce something that can be used. Problem solving skills are second nature to this group because the challenge is fun and exciting. They take pride in providing goods and services to those who depend on their dedication to the product. They continue to look for methods and solutions to make the product the very best. Working together with others to

make decisions is a strength, not a weakness. I hope that you are a member of this group. My concern lies in who will teach this group in the future?

Are you that person who will dedicate your career to training and educating the future workforce of this state or this country? Will you devote time to developing leadership, training, and educational skills that will bring the next generation of laborers into a strong and vibrant production environment? The crucial truth is that your interest in Technology and Engineering Education qualifies you as a candidate to teach the future. It is your knowledge, training, and passion that will encourage others to get involved. There are many opportunities in your school to get involved. There are technical and academic courses you can take to build your knowledge. There are workplace opportunities where employers and teachers work together to teach you important competencies and skills. Student organizations like Skills USA provide you with opportunities to compete and develop skills and leadership character.

Wisconsin as a state has a rich and important history in training and retaining Technology and Engineering Teachers. Young men and women take this responsibility very seriously. Your willingness to

share what you have learned is so important. Who taught you? How long will they be able to continue that role of educating and encouraging young students? If you were to ask them who should continue this strong tradition and educate the future, they would resound in a loud voice that person is YOU! It is you because you are unique and concerned about the quality we bring to the products this nation provides. You are proud of what you have learned and you are anxious to share those skills in a workplace that respects your training.

Consider the opportunity to be a Technology and Engineering Teacher candidate. There are many teacher training institutions in this state that are ready to get you involved with an exciting career. Please talk with your teachers and your friends about this invitation. The shortage of Technology and Engineering teachers that we are currently experiencing is now and will continue in the future to hurt the strength of our economy. Your contributions to this profession are needed now. Look at the future and see yourself as a person who appreciates what you have learned and how you can share that with generations to come. We are counting on you and will be behind 100% of the way!

Educating Future Leaders

Earn your Technology Education teaching degree at Viterbo University

Viterbo's NCATE accredited and Wisconsin DPI approved Technology Education teaching degree and licensure program prepares teachers for leadership and success in the classroom. Coursework includes the use of a variety of teaching techniques to help students learn and develop skills related to a specific occupation or career in the areas of:

- Manufacturing/Engineering
- Construction/Wood
- General Technology
- Graphic Communications
- Power, Energy, and Transportation

Viterbo also offers a post-baccalaureate teacher licensure program in technology education for those individuals with a non-education college degree that want to enter the teaching profession.



For more information contact admission@viterbo.edu, call 608-796-3010 or online at www.viterbo.edu/teched

Grants

Resources

&

Contests

Grants

United Technologies Grants

United Technologies (UTC) wants to inspire students to embrace science, technology, engineering, and mathematics (STEM). It supports the development of the next generation of engineers, scientists, and finance professionals by sponsoring primary school to university-level programs that spark students' interest and inspire innovation. The program also focuses on promoting opportunities for minorities and women to pursue careers in engineering and research.

Deadline: Corporate headquarters accepts online applications from January 1 to June 30, annually.

Website: www.utc.com/Corporate-Responsibility/Community/Pages/Apply-For-A-Grant.aspx

PPG Industries Grants

The PPG Industries Foundation favors projects that promote academic excellence and prepare the next generation of leaders in business, science, and technology. Support for students of high academic achievement and programs that attract young people to the study of science remain priorities for the foundation. PPG's strategy for support of science, technology, engineering, and mathematics (STEM) initiatives is defined by the emerging macro trends that predict core markets, product offerings, and technology needs.

Deadline: Applications are accepted year-round.

Website: www.ppgfoundation.com/Education.aspx

BMW Group Grants

The BMW Group in North America provides funding for charitable programs that benefit society. Highest consideration is given to programs that focus on education, road safety, and the environment.

Within the education focus area, the BMW Group is concerned with advancing education at all levels. Grant making focuses on: intercultural learning for students and their teachers in kindergarten through grade 12; automotive technology, mechanics, career, and repair programs in high schools, technical schools, and community colleges; and research in the areas of safety design, ergonomics, and new materials.

Deadline: Applications are accepted year-round.

Website: www.bmwgroupna.com/philanthropy.htm

Shell Oil Grants

Grant requests related to education must focus on Shell's funding priorities. These include increasing interest in technical careers among students, and professional development in science and mathematics for educators. Funding is provided to support programs in kindergarten through grade 12 that are designed to boost students' mathematics and science skills. Shell also funds projects at vocational and technical schools where chemical and refinery operators and technicians are trained.

Deadline: Grant applications are accepted year-round, with a limit of one grant application per organization per fiscal year (September to August).

Website: www.shell.us/environment-society/grant.html

Toyota USA Foundation Grants

The Toyota USA Foundation works to enhance quality of education in kindergarten through grade 12 by building partnerships with nonprofit organizations dedicated to improving the teaching and learning of mathematics, science, and environmental science.

Awards range from \$50,000 to \$200,000.

Deadline: Applications are accepted year-round, with a review time of up to six months.

Website: www.toyota.com/usa/community/articles/community_grants_foundation.html

Contests

Extreme Redesign Contest 3-D Printing Challenge

The Extreme Redesign Contest 3-D Printing Challenge is an annual competition open to middle school, high school, and college students worldwide. Students work alone or in a team of two to redesign a current product or work of art or architecture. Winning entries must be creative, mechanically sound, and realistically achievable. There are three contest categories:

- Engineering: secondary education is open to students in middle school and high school.

- Engineering: postsecondary for university, college, or postsecondary school students.
- Art and Architecture: open to students of any grade level.

Scholarships of \$2,500 each for first-place winners per category and \$1,000 each for second- and third-place winners per category are awarded, as well as prizes for contest entrants, semifinalists, and finalists. Instructors of first-place winners receive a limited-time demo 3-D printer for classroom use.

Deadline: Entries are due February 11, 2015

Website: www.stratasys.com/industries/education/extreme-redesign/contest-rules

The Christopher Columbus Awards

The Christopher Columbus Awards is a national, community-based science, technology, engineering, and mathematics (STEM) program for middle school students. The program challenges the students to work in teams of three to four, with an adult coach, to identify a problem in their community and apply the scientific method to create an innovative solution to that problem. Entries are evaluated based on creativity, innovation, scientific accuracy, relevance to the community, feasibility, and clarity of communication.

Eight finalist teams and their coaches will attend the National Championship event and compete for scholarships, the Columbus Foundation Community grant, and \$200 development grant to further refine their idea. These teams will also participate in the Christopher Columbus Academy, an interactive behind-the-scenes look at the science and technology at Walt Disney World.

Deadline: Applications are due Feb. 2, 2015.

Website: www.christophercolumbusawards.org

American Institute of Aeronautics and Astronautics

The American Institute of Aeronautics and Astronautics (AIAA) provides teachers with online lessons for students in grades K-12. The lessons cover topics in aviation, space and aerospace.

Website: www.aiaa.org/Secondary.aspx?id=257

NASA Smart Skies

Use an exciting new approach to teach Distance-Rate-Time problems using an Air Traffic Simulator. For grades 5-9.

Website: www.smartskies.nasa.gov/

Resources

United States Coast Guard (USCG)

The United States Coast Guard is a multimissioned maritime service and one of the nation's five armed forces. Its mission is to protect the public, the environment, and U.S. economic interests – in the nation's ports and waterways, along the coast, on international waters, or in any maritime region as required to support national security. The site has information on Coast Guard equipment, boating safety, search and rescue, licensing, historical information, images and artwork.

Website: www.uscg.mil/

Portfocus

Country listings of marine transportation links, maritime services, yacht and boat supplies, shipping cruise and sea freight links, bunkerfuels and bunkering, and port, harbor and marina information.

Website: portfocus.com/

US DOT Federal Railroad Administration (FRA)

The FRA promotes a safe, environmentally sound, successful railroad transportation system. The site includes railroad safety data and reports, FRA regulations, orders, and notices, railroad legislation, information on high speed rail developments, and a section for children and educators.

Website: www.fra.dot.gov/Page/P0001

US DOT Federal Highway Administration (FHWA)

The FHWA provides expertise, resources, and information to continually improve the quality of the nation's highway system and its intermodal connections. The site has full text of Administration publications, press releases, legislation and regulations, and information about its programs.

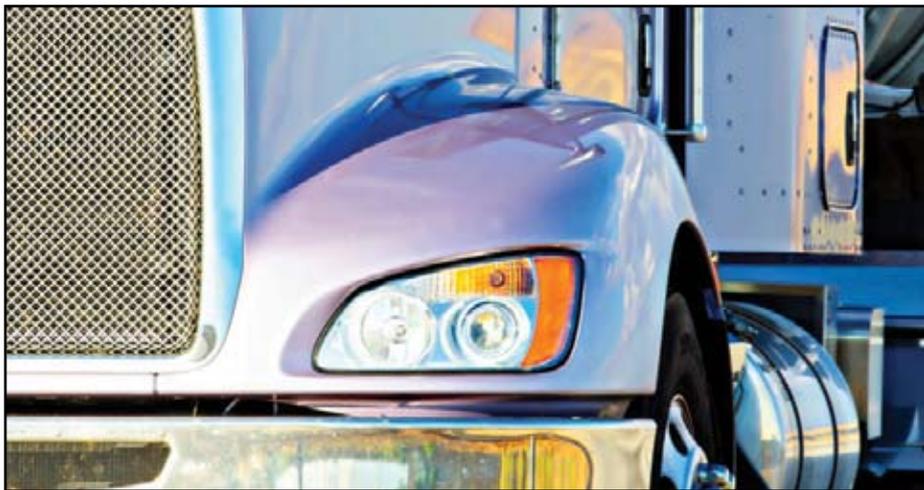
Website: www.fhwa.dot.gov

National Highway Institute (NHI)

Develops and delivers training to accelerate implementation of research results. Includes the Local Technical Assistance Program (LTAP) and other state and university partnerships. The site includes information about publications, grants, and courses.

Website: www.nhi.fhwa.dot.gov/default.aspx

16 Insane But True Things About 18 Wheelers



Trivia is always fun. Unusual trivia is an even greater blast. Some of the stuff I'm telling in this article you probably already know. Most of it, I hope not.

1 Why do we call our 18 wheelers semis? Rumor has it it's because of the trailer. As you all know, your trailer doesn't have front wheels, so it can only go places when connected to your tractor. Hence, the name "semi-trailer."

2 Semi-trailers are generally about 53 feet long, minus the cab. Add the cab and they're about 70 to 80 feet long. The maximum load they can haul is 80,000 pounds. Unless you're in Australia. Down under folk allow "road trains." What's a road train? A tractor with four trailers attached to it hauling upward of 300,000 pounds.

3 An 80,000 big rig weighs 20 to 30 times more than a car. The Australian road train could weigh what? Seventy-five to 112.5 times a car. Three-hundred thousand pounds divided by 80,000 is 3.75 times 20 and 30.

4 Truck engines weigh more than car engines, too. All-in-all, a truck engine

is six times larger than a standard car engine. Truck engines also have 300 to 400 more horses under the hood, and they have 900 to 1,800 more feet/pound of torque.

5 Semi-truck engines also offer 800,000 more miles of life than car engines. They're just built to last a lot longer! Maybe that's because they are also designed to keep running, which keeps the oil flowing and parts lubricated. You don't have to shut your engine down ever except to service it and change the oil.

6 This, by the way, is going to take 15 gallons or more. Yeah, they are oil beasts! But they need to be. Truck engines endure a lot of wear and tear, upwards of a 100,000 per year or more for long-haulers.

7 Should your truck decide it ain't moving ANY further, you'll have to call the "draggin wagon" after you let your "travel agent" know you're out of commission. In other words, call your dispatcher first to report the break down and then call the tow truck!

8 So, you probably already know that it takes two football fields to stop these babies. What you might not realize is it takes longer if you're hauling on a smooth road. No resistance equals longer braking time!

9 What if you don't have enough time to stop or your brakes fail? Well, a standard 18-wheel truck has numerous gears that you can downshift to slow down. The average rig has 10 forward drive gears and two reverse drive gears. Some rigs have nine, 13, 15 or 18 gears. It just depends on your manufacturer, and you can split high and low range gears if you're driving an 18-gear cab.

10 What if you need to flip a u-turn? Forget it on U.S. roads! A big rig needs 55 feet to successfully flip a u-turn. The U.S. generally allots 12 feet per highway lane. You can't flip u-turn unless you're on at least a four-lane roadway without a center divider! The divider would definitely put a kink in things!

11 You might unintentionally begin flipping a u-turn if you jackknife. To officially jackknife your rig, you must complete a 45-degree angle between your tractor and your trailer. Not really something you want to accomplish! But still, who decided it had to be 45 degrees to call it a jackknife?

12 And where does this 45-degree angle occur? At the kingpin. The kingpin is the pin that connects the tractor and trailer. It's surrounded by a greased metal plating.

13 The greased metal plating is what protects and the rig's "fifth wheel." The fifth wheel is located behind the cab. When attaching the tractor and trailer, the fifth wheel slides beneath the king pin's metal plating and then locks into the king pin.

14 Did you know that truckers are super-models? That's right! We work it on the "cat walk"! The cat walk is the area behind your cab where you connect your air and ABS lines and your electrical Suzie's.

15 One-third of all 18 wheelers are registered in Florida, Texas and California.

16 If you're a trucker in Europe you can't speed. No, seriously, you can't! European rigs are fitted with "speed limiters." These little devices prevent the rigs from going faster than 56 miles per hour.

Reprinted with permission from TruckersReport — truckersreport.wordpress.com

Drones Continued from Page 13

heart attack victims much faster than it would take an ambulance to get there. UAVs can prove to be an asset in time-critical situations, such as ski patrollers using beacons on small drones to search for buried avalanche victims.

11 Helping in disaster relief. As extreme weather becomes increasingly severe, technology will play a critical role in monitoring and response and the drones are becoming indispensable in disaster relief operations. Natural disasters and other times of emergency call for timely distribution of medication and aid. Fortunately, drones can make this more efficient.

12 Getting into the sports action. Not only is it entertaining to watch games from above, it also can provide coaches a unique and valuable perspective on how their players are doing. Drones have even made an appearance at

the Olympics, where they were used to film ski and snowboarding events in Sochi.

13 Fighting crime in the neighborhood. Police departments across the country are buying drones that they can use for surveillance and other protection-related activities. Even the FBI is using them.

14 Inspecting oil rigs. Offshore oil rigs are notoriously tough to maintain, which as we know can be potentially dangerous. Given their ability to fly into hard-to-reach places, UAVs are able to better monitor oil fields and pipelines, which can be vast and tough for a human to track.

blog.atmel.com/2014/08/08/18-awesome-ways-drones-are-used-today

At Marten Transport . . .

One of the cornerstone philosophies at Marten Transport, Ltd. involves providing employees with quality, up-to-date and safe equipment. We believe that our drivers deserve every advantage and we work hard to make sure they have the best possible tools to do their job. Our equipment is constantly updated and meticulously maintained. We utilize the latest temperature control technology and observe regular trade cycles.

We view safety as a priority — and our track record proves it. We've been named Grand Prize Winner for Fleet Safety by the Truckload Carriers Association twice ('02 and '04) in the past four years and placed among the top three in the contest seven of the last eight years.

The Georgia Motor Trucking Association awarded us their Grand Champion Safety Award honors for General Commodities Truckload Division in 2002 and 2004. We also earned top safety distinction from the Wisconsin Motor Carriers Association in 2004.

In addition to our Safety Department, we have a Safety Committee in place. This committee has representation from the Safety Department, Risk Management, Maintenance Department, and a person from each of the outlying Marten terminals. It is a ten member committee that elects a Chairman, Co-Chairman and Secretary yearly, with the Safety Manager as the advisor.

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CAREER CENTER

What would you like to do in Transportation?



- Aircraft Pilot
- Airport Operations Crew Member
- Air Traffic Controllers
- Bus Driver
- Captain
- Chauffeur
- Deckhand
- Deck Officer
- Dispatcher



- Distribution Center Manager
- Distribution Director
- Distribution Manager
- Driver/Sales Representative
- Driver/Sales Workers
- Engineer
- Equipment Director
- Estimating Manager
- Expeditor



- Fleet Manager

- Flight Instructor
- Flight Engineer
- Fork Lift Operator
- Helicopter Pilot
- Import/Export Clerk
- Import/Export Manager
- Import/Export Supervisor
- Industrial Tractor Operator
- Inventory Control Analyst
- Inventory Control Clerk
- Inventory Control Manager
- Inventory Control Supervisor
- Locomotive Engineer



- Logistics Analyst
- Logistics Coordinator Jobs
- Logistics Manager
- Logistics Specialist



- Marine Cargo Inspector
- Marine Oiler
- Materials Control Manager
- Materials Handler
- Materials Handling Supervisor
- Materials Planner
- Merchant Mariners
- Motorboat Operator

- Motor Racer
- Operations Manager



- Packaging Engineer
- Pilot
- Production Scheduler
- Public Transportation Inspector
- Rail Car Repairer
- Railroad Brake Operator
- Railroad Conductor
- Railroad Yard Worker
- Rail Yard Engineer
- Refuse and Recyclable Material Collectors
- Sailor
- Scheduler



- Shipping and Receiving Clerk
- Shipping and Receiving Supervisor
- Shuttle Car Operator
- Streetcar Operator
- Subway Operator
- Taxi Driver

- Top Distribution Executive



- Top Inventory Control Executive
- Traffic/Rate Analyst
- Traffic Clerk
- Traffic Director
- Traffic Manager
- Traffic Supervisor



- Train Crew Member
- Transportation Director
- Transportation Manager
- Transportation Planner
- Transportation Supervisor
- Travel Coordinator
- Travel Manager
- Truck Driver Supervisor
- Van Driver
- Yardmaster

Please note: This represents a broad and not conclusive list of careers within the world of transportation

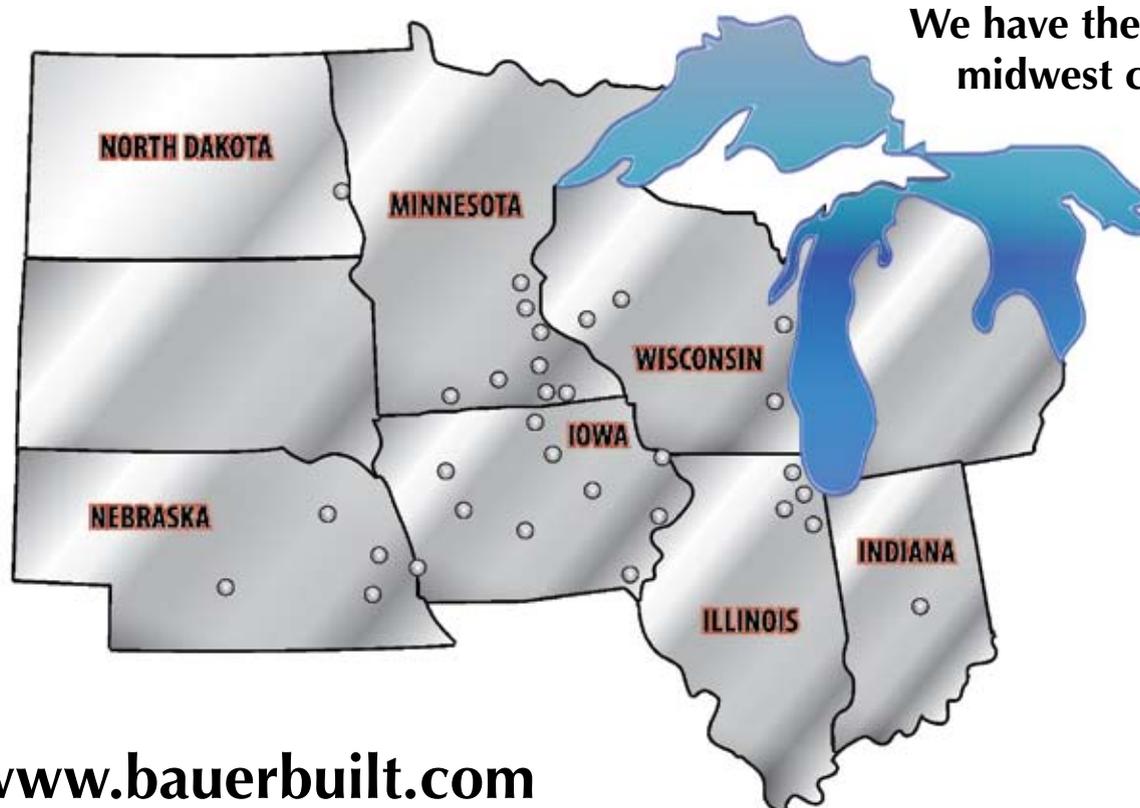
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