

Construction Management Technology News
<http://www.umaine.edu/cmt/>
Spring 2014

GRADUATES —The following students graduated from the Construction Management Technology program: Keith Aucoin, Christopher Crouch-Foster, Thomas Doherty, Justin Henry, Chad James, Matthew Kelley, Shayne Kennedy, Thomas Kennedy II, Garrett Kilfoyle, John Knowles, Corey LaRue, Andrew Mannke, Joseph Martorano, Benjamin Myers, Patrick Shaw, Kyle Silva, Jacob Stevens, Patrick Verville, and Brent Williams.

Seniors scheduled to graduate in August include: James Martin, Shayn McPherson, Andrew Myers, and Nathaniel Williams

CAPSTONE PROJECTS — The last portion of the newsletter contains a detailed summary of the capstone project along with recognition of companies that helped with the capstone projects.

EMPLOYMENT OF SENIORS — Employment offers are being made. Most if not all seniors have full time employment.

ASC COMPETITION — Two teams attended the ASC Region 1 competition held in Morristown, NJ on November 7-10, 2013. Though they didn't win, the teams performed well in the Commercial Building and Heavy Civil Competitions. On the way to the competition, the teams stopped at a Gilbane project in Boston.

APPRECIATION: Several contractors have donated their time to come to the classroom and speak to students. During the Spring Semester, Sargent Corp and Kiewit-Mass Electric held Pizza Nights for students with resulting summer job opportunities for many. Kirk Ball (2003) from Acheron Engineering made a presentation to Mac's Building Construction class.

PRESIDENTIAL SCHOLAR ACHIEVEMENT RECIPIENTS: The Presidential Scholar Achievement Award is a selective award for students who are academically at the top of their class. To be eligible for the Presidential Scholar Achievement Award a student must have completed 12 or more calculable credits in the semester and have earned a 4.0 semester GPA. In the CMT program, Kurt Massey received this award.

ABET ACCREDITATION: This Fall, CMT will have its ABET accreditation visit. The CMT program is ABET/TAC accredited. Under Maine regulations, ABET/TAC graduates can take the fundamentals of engineering exam. Graduates from the Construction Management Technology program with successful scores and proper experience can be licensed as professional engineers. (For additional information on ABET, visit www.ABET.org)

PROPOSED NAME CHANGE — The Construction Management Technology program will be required to change its name in order to maintain its ABET/TAC* accreditation in the future. More news on this topic will appear in future newsletters.

*Technology Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012 - telephone: (410) 347-7700

ABC STUDENT CHAPTER — The Student Chapter of ABC set up a Spaghetti and Marshmallow tower competition at the All Trades show in Augusta on November 22, 2014 in Augusta. The Program also had an informational booth for the hundreds of Maine high school students attending the event.

CMT CROWE AWARD — Congratulations to Bob Falciani for receiving the distinguished CMT Crowe Award.

Bob has a B.S. and M.S. in Mechanical Engineering. He also has an M.B.A. Bob has considerable experience with construction management (PM/CM) activities and design build projects. His responsibilities included the development and execution of unique project delivery approaches including fast-track design assist, turnkey, CM at risk, and design build. After his retirement from private practice, Bob has been using his experience by serving as an adjunct professor in the CMT program.

Prior distinguished Francis Crowe inductees include Charles E. Furbish (2000), Robert Chaput, P.E. (2001), Keith Anderson (2001), Eldon Morrison, P.E. (2002), Jack Kelly, P.E. (2003), Mark Bancroft (2003), the Sergeant's Clan (Ralph Leonard, Herbert R. Sargent, Herbert E. Sargent, James Sargent, Shane Sargent) (2005), Timothy Sommers (2006), Ken Ouelette (2008), Karl Ward, CPC (Dec. 2008), Bollie Bollenbach (2009), Shawn Shelley (2010), Brent Cross (2011), Tharryn Smith (2012), and Tom Perkins, P.E. (2013).

COURSE NEWS (Will Manion): In the sustainability course, students are learning green building concepts and the specifics of LEED certification, with the goal of passing the Green Associate Exam. As part of the course, students went on two campus field trips and had one group of guest speakers. Many thanks to Carolyn McDonough of UM Facilities for the facilities management overview and tour of the Innovation Center, to Jamie Mahoney of UM Facilities, Fred Townsend and Karl Ward of Nickerson & O'Day for the tour of the new Planetarium project, and to Jenifer Richard and John Poulin of WBRC AE for the class presentation on building with LEED!

In the BIM course, students learned Autodesk REVIT and some Navisworks, but also learned about the rationale for and management aspects of BIM as a tool in construction. Two guest speakers presented to the class, so thanks to Stacey Gomm of Turner Construction and Jonathan Dientes from Cianbro for sharing their industry perspectives! In Management of Construction, a new approach was taken, where students found, developed and executed construction-oriented service projects. *See the other news article*

in this newsletter for more details. In addition, thanks to Stacey Gomm of Turner Construction for facilitating a class tour of a Genzyme Pharmaceutical project in Allston, Massachusetts, and to Cody Jean of Sargent for talking with the class about service projects and early career experiences!

ALUMNI NEWS:

- J.D. Kray (2010) has been selected to attend United States Marine Corp Officer Candidate School. Congratulations J.D.!
- Ben Jamo (2006) and his wife, Sarah, had a baby girl in October. Her name is Brynn Jamo. They also have a three year old boy, Cooper. His current project with Wright-Ryan is the renovation of a former nursing home for Bowdoin College into a new student residence called the "Bowdoin Stevens House Project" which will be turned over in early August.
- Brendan McGuirl (2010) will finish the executive MBA program at UNH as soon as he finishes his last paper. He also got his PMP Certification. He is currently at G&R Construction in Quincy, MA.
- Robert Chaput (1990) was just promoted to President/CEO of S.W. Cole Engineering, Inc. He has been working for S.W. Cole since he graduated in 1990.
- Jason Jendrasko (2007) is the new business development manager for Benchmark in Westbrook, ME. He and his wife are expecting their first child (boy) on July 26th.
- Evan Agren (2004) has left left Maine Technical Source last summer and started a new business with a partner: Nubble Site Solutions, Inc. It was established in July 2013. The business specializes in providing construction layout and machine automation systems to construction companies in Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, and New York.
- Karl Ward (1983, 1993) bought, relocated and operates Concrete Coring of Maine in Brewer and has appointed Wade Poulton (2011) as General Manager. Nickerson & O'Day has numerous accomplishments. It was recognized by the Cross Insurance Construction Services Group Trust and AGC of America for having ZERO injuries in 2013. The firm was awarded a Maine Preservation Historic Preservation Honor Award for the Restoration of the Hammond Street Church Steeple. It was awarded the contract for the new Emera Planetarium and Observatory on the UMaine campus, scheduled to open in Fall 2014. At the home, Karl's daughter Katie, a pre-med sophomore at Penn has been accepted into the Wharton School of Business for a healthcare administration minor and is studying overseas this summer. His son Ryan has been named a Nation Merit Finalist and has been accepted into the pre-med program at the Johns Hopkins University in Baltimore, Class of 2018. Karl's son Braeden recently won the Eastern Maine Mathematics League championship, finished 2nd in the Maine State Invention Convention held at UMaine and will enter John Bapst Memorial High School this fall. Please note that Karl is also a candidate for the Maine House of Representatives in District 131 (Otis, Dedham, Orland, Penobscot, Verona Island, Prospect and Stockton Springs) on the November, 2014 ballot. If you live in that area, he would welcome your vote.

- Cory Verrill (2000) is still with Cianbro Development Corporation (the business development wing of the Cianbro Companies.) His role involves planning and mapping new energy infrastructure, primarily electrical transmission. From 2006-2009, he managed a team (both in-house and subcontracted) that planned, mapped, surveyed, and evaluated the MPRP transmission upgrade for Central Maine Power. He is currently working on a similar project that I hope you'll hear a lot more about in the next few years. At home, his wife is happily raising their two daughters 7 and 9 years old.
- Jennifer Paradis (2009) has been promoted to assistant construction manager.
- Billy Roy (2013) is a project manager at Knowles Industrial Services Corporation. His firm recently landed a contract for \$130,000.00 to perform concrete repairs and apply elastomeric waterproofing on two 50 ft. tall clay slurry ballard tanks at Twin Rivers Paper Co. in Madawaska, ME. One of his first projects as a project manager was in his hometown and where his father has worked for more than 35 years.
- James Murphy (2013) is currently working as an Engineer on the TX I-35E Managed Lanes Project in Dallas, TX. This 1.1 Billion Dollar, design-build project was awarded to AGL Constructors, which is a joint venture of Archer-Western, Granite & The Lane Construction Corporation. The scope of work includes, improving existing lanes of the interstate, providing continuous frontage roads and constructing a new, reversible managed toll lane to keep traffic moving at 50 mph, between Dallas and Denton.
- Eric Clifford (2013) started a new position with Site Specific, LLC located in Providence, RI as an assistant project manager. The firm is a small general contractor employing around 18 people including project managers, assistant project managers, carpenters and laborers. The firm performs high-end residential projects as well as smaller commercial projects for Brown University, RISD, retail stores and local hospitals.

FACULTY NEWS:

Knud Hermansen – Knud has been a faculty member since 1989. During the previous semester, he has given webinars for the New York Association of Professional Land Surveyors, Pennsylvania Society of Land Surveyors, and Connecticut Association of Land Surveyors. He presented seminars for the Florida Surveying and Mapping Society, New Hampshire Land Surveyors Association, Maine Society of Land Surveyors, the University of New Hampshire, and Rangeley Builders. In January, Knud was appointed to the Maine Board of Professional Engineers.

Phil Dunn – Professor Phil Dunn Serves as the Region I ASC Director and has been elected to the AGC Education Foundation. He traveled to the national committee functions including the AGC National Convention and ASC Convention. He did a spaghetti and marshmallow tower project with students at RSU 34 on March 13, 2014, SET days with students Shawn McKenna and David Mazerall on April 17, 2014, and RSU 34 Science Night on April 29, 2014. He also set up an interactive booth at the UMaine Engineering Exhibits on March 21. Professor Phil Dunn and

students David Mazerall, Shawn Mcdougall, and Stephen Mullins attended the UMaine Engineering banquet and had a booth at the day long Engineering Exhibits on March 21-22, 2014 at UMaine.

Mac Gray – Mac Gray has been notified that he is promoted from Associate Professor to Professor effective 1 September 2014.

Will Manion – Will Manion taught three courses in spring 2014: Sustainability with LEED, Building Information Modeling (BIM) and Management of Construction (Senior Capstone). Will kept up with the state of the profession by attending conferences. He attended the Associated Schools of Construction Annual Conference March 26-28 in Washington, DC, and the AGC BIM Forum April 23-24 in Boston. He is also the chair of the ASCE National Committee on Student Members, attending and presenting at four different student conferences and chairing one weekend committee meeting this semester. This upcoming academic year (Fall 2014-Spring 2015), Will Manion will be on sabbatical from the University of Maine, and will be at Virginia Tech for one year, starting graduate work toward a PhD in construction. After this one intensive year, he expects several more years of part-time and summer work to complete the degree. Virginia Tech has a very strong and respected school of building construction, so in addition to building his own education, he will be taking notes on their best practices for potential implementation at UMaine. If you have any interest in teaching plan reading, BIM or Management of Construction while he's away, please contact Phil Dunn.

COMMENTS OR QUESTIONS — Contact Knud Hermansen at 207-581-2168 or Knud.Hermansen@umit.maine.edu if you have comments or questions regarding this newsletter or program information.

CET 458: Management of Construction, senior capstone service projects 2014

Construction Management Technology, University of Maine

Taught / managed by Assistant Professor William P. Manion, P.E.

In the spring semester CET 458: Management of Construction (senior capstone) course, students found, developed and executed construction-oriented service projects. Under the guidance of Professor Will Manion, each team developed a detailed written work proposal to their project owners, including a background, scope of work, management plan, schedule, budget estimate, safety plan and deliverables. Following presentations of their projects and approval by the owners, the students actually executed the work as detailed in their proposals, practicing a complete set of construction management skills. The students were the primary point of contact with the owners, coordinating material orders, equipment, labor, schedules, productivity and quality.

The overall goals of this class exercise were to give students experience managing their own real projects and to demonstrate for the University and the project owners how to perform construction-based service projects safely and professionally. It's also an opportunity for graduating students to transition from academics to industry, showing what they have learned and how to implement it. Three of these projects are presented below, followed by a discussion of some of the benefits of such project-based learning.

Re-roofing a covered bridge



Photo 1: The covered bridge with one side finished



Photo 2: The crew at work with fall protection, installing new shingles

Leonard's Mills is a historical non-profit museum, which showcases life in Maine in the early 1800s through monthly "Living History Days," tours and activities for school children. The Bradley, Maine site is managed by volunteers through the Maine Forest and Logging Museum, and has many historic-style buildings and structures. The students' project was to strip and replace the cedar shingles on the roof of the covered bridge. Shingles, nails and materials were provided by the museum through a grant. Since it's a bridge across a raging spring stream, safe access was a significant challenge. The site conditions wouldn't have worked well with a boom lift, so the team decided to cut holes in the lower part of the roof, providing access with staging set up inside the bridge structure. The sequence of work was to then to:

- install fall protection anchors along the whole roof peak;
- install tarps across the river to catch demolition debris;
- remove one or two courses of roof sheathing boards all along the lower part of the roof so that workers could stand on the top sill of the wall and strip the old shingles;
- install two courses of new cedar shingles from the edge of the roof, followed by roof jacks;
- replace the roof sheathing boards and re-shingle, working from the roof jacks;
- eventually patch the last "glory hole" in the roof;
- and sequentially remove the roof jacks, patch in the shingles where the roof jacks were, remove roof anchors and install cedar roof cap boards.

All workers on site were required to wear appropriate clothing, hardhats and safety glasses at all times. In addition workers on the roof were required to be trained specifically in fall protection and utilized fall protection harnesses with retractable lanyards at all times. In total, approximately 15 squares of new cedar shingles were installed with a 6" reveal, using a pneumatic coil nail siding gun, which only fell in the river once. Unfortunately, detailed labor-hour records are not available, but the work was performed part-time over a 5-week period,

mostly on weekends, Fridays and a big push during finals week. Roughly 500 man-hours were put in overall.

The project team was led by Nathaniel Williams, PM, and included Shane Raymond, Keith Aucoin, Jackson Lane and Kyle Silva. Six other students helped out with occasional labor.

Building a new outdoor basketball court



Photo 3: Placing and compacting fill

The Lewis Libby School in Milford, Maine is for kindergarten through 8th grade. To play basketball in the back parking lot, two existing hoops were located perpendicular to each other, adjacent to the playground and staff parking. However, they had been hit several times, and children would frequently have to ask for cars to be moved so they could play. Given this unsafe and poor quality environment for basketball, student and Milford resident Mike Comstock approached the school district to propose a plan for a completely new basketball court outside the existing parking lot. After attending several town selectmen and school board meetings to present their proposal, students eventually received approval and funding to build a new court themselves. The Town of Milford Public Works department generously donated equipment time, some operator time, supplies and gravel, but many other area companies donated materials, money and services to make it happen. The school district provided funding for all other materials. Many thanks to the following companies!

- Sargent Corporation for small tools, traffic control barricades, use of a large tamp and providing trucking for 250CY of import gravel from Greenfield. Thanks also to John Sturgeon of Sargent for arranging the gravel donation and trucking from Thornton's pit.
- Thornton Construction for loading and providing 250CY of gravel from their pit in Greenfield.
- Dirigo Slipform for providing a discounted price to form, place and finish the concrete slab.
- OJ Folsom for providing a discounted price for the concrete.
- WPB&A Engineering for layout and surveying supplies and equipment.



Photo 4: Setting the basketball posts

The new basketball court is 84 ft by 50 ft, with a 6 inch thick reinforced concrete slab placed over at least 12 inches of compacted gravel. The complete sequence of work was to:

- layout proposed new basketball court and survey existing grades, since the project was in a sloped area;
- install silt fence and catch basin protection for erosion control;
- strip topsoil and remove existing soils down to at least 12" below final subgrade, including removal of existing demolition debris in the fill materials;
- barricade off the work area from the adjacent playground with snow fence, traffic control barricades and barrels;
- install approximately 60 LF of 6" underdrain pipe, tying into an existing 18" pipe run;
- place and compact approximately 300 CY of good quality gravel to level the site and bring it up to grade, including traffic control and playground monitoring while trucking;
- move the existing basketball posts to the new court locations and install them;
- fine grade the gravel, providing a minimum slope for effective drainage of the finished slab;
- help Dirigo Slipform crews to set the concrete forms, place and tie the rebar (#4s @ 18" EW);
- install the new basketball backboards;
- and finally clean up around the new slab, mulch and seed.

All workers on site were required to wear appropriate clothing, hardhats, safety glasses and high visibility clothing at all times. The Town of Milford's backhoe-loader and front end loader were operated by students almost the whole time, except for one afternoon when a public works employee helped out in the backhoe. Particular care was taken to ensure the safety of schoolchildren in the nearby playground, including the installation and monitoring of the barricades full-time by one or two people, and sometimes just shutting down all moving equipment when children were present. Unfortunately, detailed labor-hour records are not available, but the work was performed part-time over a 3-week period, mostly on weekends, Fridays and a big push during finals week. The students put in roughly 350 man-hours to the construction.

The project team was led by Michael Comstock, PM, and included James Martin, Thomas Kennedy, Garrett Kilfoyle and Olivia Jones. Four other students helped out with occasional labor.

Surveying and promoting a trail system

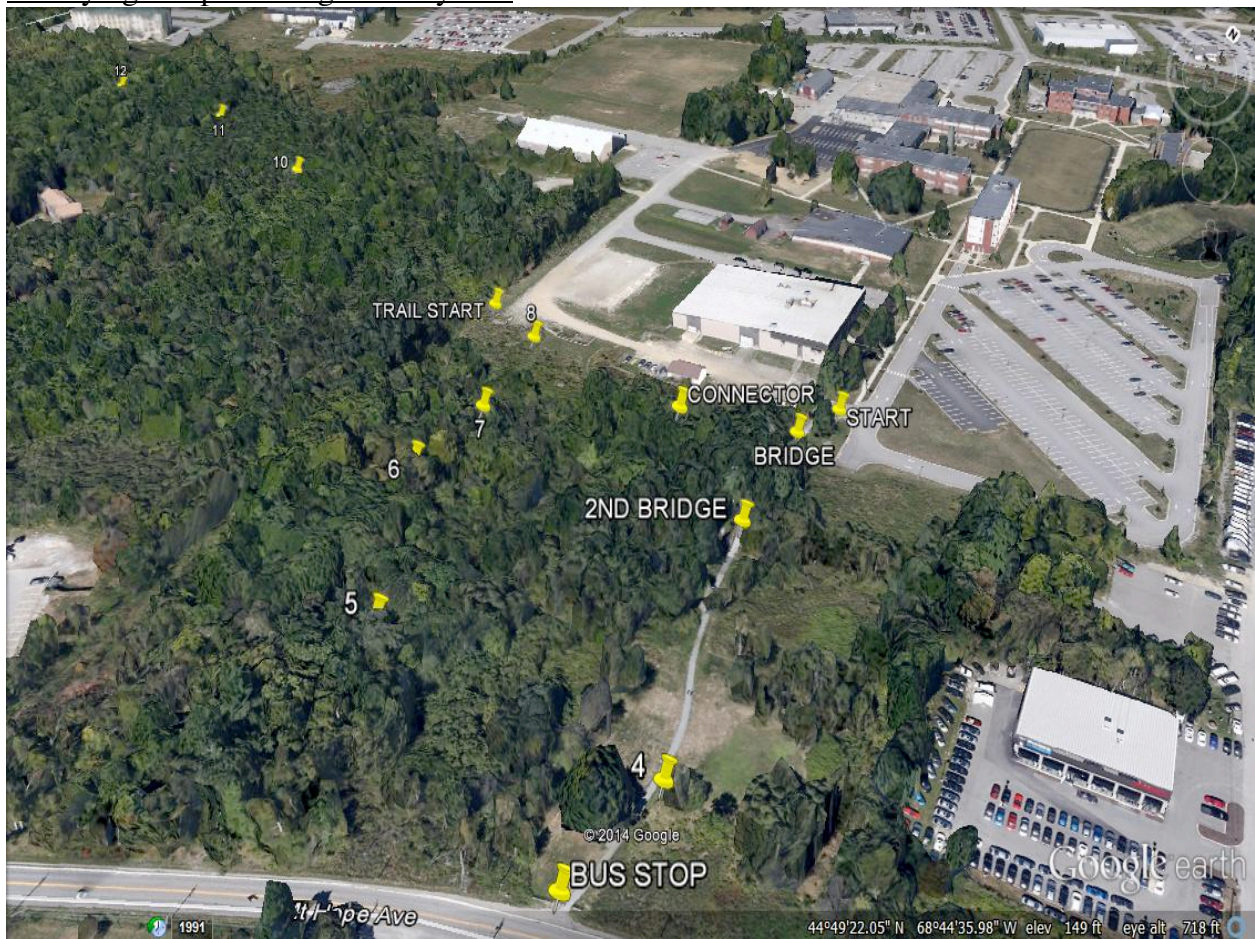


Photo 5: Overall view of trail network with locations. Base photo courtesy of Google Earth
Eastern Maine Community College (EMCC) in Bangor, Maine is a growing campus that has recently begun promoting student health and fitness. The UMaine CMT students' project was to survey, map and promote their existing (rough) trail system, as well as to provide maintenance and management plans. By connecting with the Bangor Trail system, stretching from Cascade Park to many other areas of the City, EMCC will be able to use already developed trails to combine with their campus trails. As more of a preconstruction services project, the students

delivered a trail map of the existing trails, an annual maintenance plan, a signage and expansion plan, and statistical information gathered from EMCC students, facilities and faculty contacts. Some specific work items included:

- performing background research on the surrounding trails systems and connections;
- surveying the existing trail systems with help from EMCC Civil Engineering Technology students;
- presenting their plans to students at “Tech Day,” a day of service projects for EMCC students;
- integrating the survey data into a foldable trail map;
- and providing maintenance, safety, signage and expansion plans for future work.

Prior to performing the surveying work, the UMaine students briefed the EMCC students on site specific hazards and how to avoid them, and everyone work appropriate personal protective equipment. The students, including both UMaine and EMCC, put in approximately 100? man-hours into this project.

The project team was led by Chad James, PM and included John Knowles, Jacob Stevens and Shayn McPherson.

Summary of and discussion of project-based learning benefits

Using real projects as part of the student learning process has a number of benefits. From beginning concepts to final quality checks, these projects are small but pretty thorough examples of what happens in any construction project. Here are a few communication aspects that students practice through the process:

- communication with real owners, subcontractors, suppliers and other industry folks -- students were always the primary contacts for the project team, making them the responsible party;
- communication and teamwork within their project teams -- good and bad, students had plenty of practice working together, and anecdotally a number of them even reported that they made some really good friends in the process;
- communication with a manager of their project teams, instead of the traditional faculty member role with lecture, assignment and test mode;
- communication of their ideas in writing through proposals and plans;
- and communication of their ideas in public speaking through a number of presentations for different audiences, such as their peers, stakeholder groups and owners.

For the CMT curriculum, it’s hard to imagine a better way, besides summer work experiences, for students to be exposed to and learn from the actual process of construction. Some benefits include:

- learning to focus on getting the work done in a team environment;
- solving open-ended problems with planned solutions;
- budgeting time and resources;
- motivation and excitement about construction as a profession, since CMT students aren’t typically motivated by academic grades;
- experience for underclassmen as labor for the projects – which could lead to summer employment in industry;

- and experience in different types of construction – by volunteering on several projects, such as the three presented above, students can gain a better understanding about the range of the profession and what the different types of work are like.

It also gives students a chance to utilize some common construction skills that are taught in class, but become much clearer in reality, such as:

- thinking seriously about construction safety, including real hazard analyses, required training and planned mitigation;
- thinking seriously about construction productivity and quality;
- the value of planning ahead, work breakdown structures and sequences of work;
- budgeting and cost estimating;
- and finally, trying to follow a schedule.

Overall, it is hoped that UMaine CMT will become known on and off-campus for performing these service projects safely and professionally, giving positive exposure to the program and the construction industry in general. The projects could also serve as a good recruiting tool for new and transferring students. **For students at all levels, the projects can provide a tangible focal point, providing experiences in actual construction, building camaraderie and ultimately better professional culture.**