FROM THE AUTHOR

This booklet was prepared as part of the centennial celebration activities of the Department of Civil and Environmental Engineering. Other activities include development of a history link on the department’s Web page, a centennial banquet to be held on October 30, 2009, and a year-long effort to collect papers and artifacts for deposit with the Michigan State University Archives and Historical Collections or the Michigan State University Museum.

I have enjoyed reading and writing about the history of the university, college, and department. I hope you will enjoy reading it!

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The centennial year is an occasion to reminisce and in this booklet you will find a lot of that. We have come a long way over the years, with humble beginnings in 1909 in the Michigan Agricultural College. The various milestones of the department as it evolved over the years are documented in this booklet. Let me summarize the transformation of the research and educational programs of the department.

During its first 60 years or so the department was primarily teaching-oriented. Research was strengthened over the last 40 years and the tenure stream faculty size has grown to the present number of 24. In addition, the department employs several fixed-term faculty, specialists, and postdoctoral researchers supported by grants, and six secretarial staff members provide support. Over the last few decades, as retirements occurred, new research-intensive faculty were hired. The growth of research demanded new laboratory space, and the physical footprint of the department also grew. Today the department occupies space in four buildings: the Engineering Building where the civil engineering faculty offices and teaching laboratories are located; the Engineering Research Complex on Service Road where the environmental engineering faculty offices and their research laboratories are located; the Civil Infrastructure Laboratory on Jolly Road in Okemos, also housing the Fire Testing Facility; and an adjoining building housing the National Center for Pavement Preservation and the Highway Traffic Safety Program. Our primary research strengths are in environmental, hydrology and water resources, structural, and pavement engineering. Research also is conducted in geotechnical & geoenvironmental and transportation engineering. Our external research expenditure was at an all-time high of $5.7 million for FY 2008–09, and many of our faculty members are internationally recognized for their research.

Along with research, the educational program also has grown and diversified. Currently we award about 90 BS degrees each year, and the graduate student enrollment is about 100, equally split between MS and PhD students. The curriculum has changed considerably over the years. Surveying was a prominent part of the curriculum over the first 75 years, but is now taught in only half a course. On the other hand, engineering design has been strengthened considerably, being introduced to freshmen and culminating in a senior design project in which teams of 5–6 students work on a large civil engineering project. Many of our students partake in a study abroad experience. More and more of our undergraduate students work alongside graduate students on research. Slide rules have been replaced by PCs and laptops, and computer tools are used extensively across the curriculum. Students are very active in extracurricular activities, with participation in the concrete canoe and steel bridge contests and three professional student organizations being the mainstay.

I would like to thank Professor Emeritus Mackenzie Davis and his wife, Elaine, for spending numerous hours compiling the history that is presented in this booklet. We are fortunate that we have amongst us that rare civil engineer who also has a passion for history!

I feel privileged to be sitting in the pilot’s seat at this important time. The success of the department is due to the untiring work of our faculty, students, staff, and alumni over the last 100 years. We are poised to reach new heights in the years to come.

Ron Harichandran
Civil engineering is considered to be the oldest of the engineering disciplines, and was defined as such to distinguish it from military engineering. John Smeaton, an eighteenth-century British engineer, was the first to call himself a “civil engineer.” The first engineering school, the National School of Bridges and Highways in France, opened in 1747.

Early civil engineers were responsible for constructing railroads, roads, bridges, dams, buildings, and water and sewer systems. Civil engineering has come a long way since that time. Today's civil engineers are still involved in building and maintaining our infrastructure, but new technologies, new materials, and new challenges have changed the way that civil engineers work, and thus the way that civil engineering is taught.

Over the years, the curriculum here at this institution focused heavily on surveying. Today, surveying is just a small part of the curriculum. The focus now is on structural engineering, mechanics and materials, transportation infrastructure systems, hydrology and water resources, and geotechnical and geoenvironmental engineering. Civil engineers of today may work with chemical and materials science engineers to develop new composite materials for use in constructing bridges. Or they may team up with electrical engineers to develop “smart” technologies for transportation systems. Researchers in our Structural Fire Testing Facility, the first such facility in a U.S. university setting, are leaders in developing new materials and methods that will allow our built infrastructure to better withstand fire.

Terminology that didn’t exist a decade ago is now an integral part of today’s civil engineer’s vocabulary—“nanocomposites,” “structural assessment and health monitoring,” “pavement preservation,” “ceramic and polymeric membrane technologies for water treatment.”

Though there have been notable changes in the department name, the curriculum, the student experience, and the research focus over the past 100 years, one thing has not changed—those who earn a degree from MSU’s Department of Civil and Environment Engineering are prepared to be at the forefront in solving today’s problems and making our world a better, safer place to live.

Satish Udpa
FROM THE DEAN
The Michigan Legislature created the Agricultural College of the State of Michigan in 1855. It was commonly referred to as “the College.”

The College was renamed the State Agricultural College in 1861 but references still called it “the College.”

In 1907, George W. Bissell was appointed the first dean of engineering; and in 1909, the Department of Mathematics and Civil Engineering, the Department of Physics and Electrical Engineering, and the Department of Mechanical Engineering were grouped together to form an administrative unit called the Division of Engineering.

In 1909, the College was renamed the Michigan Agricultural College. It was still called “the College” but the abbreviation M.A.C. quickly came into common usage.

In 1909, the Department of Mathematics and Civil Engineering was divided to form the Department of Civil Engineering and the Department of Mathematics.

The changing role of the College was reflected in the change of the name to Michigan State College of Agriculture and Applied Science in 1925. M.S.C. replaced M.A.C. and within a year the “Aggies” became the “Spartans.”

In 1955, the M.S.C. abbreviation became MSU with the granting of university status and another name change to Michigan State University of Agriculture and Applied Science.

In 1955, the Division of Engineering became the College of Engineering.

The name Michigan State University was adopted in 1964.
**PRELUDE**

In the beginning* there was civil engineering ... and it was surveying. In 1860, the only applied course was that in surveying. It was conducted by the devoted classical scholar, later to become president, Theophilus C. Abbot. In his spare moments, Abbot laid out the college grounds. In this effort he was admirably assisted by the new professor of zoology, Manly Miles†.

In his 1864 report, recognizing that he knew "less of these things than anyone else on the premises,"‡ President Abbot recommended that a civil engineer be appointed to the Faculty of Instruction.

"In 1875, the Department of Mathematics and Civil Engineering was put in charge of Professor Rolla C. Carpenter, a graduate of the College and the University Course in Civil Engineering, under whose charge it is [sic] taken on a more systematic shape."§

Here is his story.¶

**Rolla C. Carpenter: Renaissance Engineer**

Rolla Clinton Carpenter, born near Orion, Michigan, in 1852, graduated from The State Agricultural College in 1873 with a bachelor of science degree. He received a Master of Science in civil engineering from the University of Michigan in 1875, and was appointed as professor† of the Department of Mathematics and Civil Engineering at The State Agricultural College that same year. In 1876, he received another master’s degree.¶ He would later take a sabbatical leave, and earn a third Master of Science in mechanical engineering from Cornell University in 1888. He received an honorary L.L.D. from The State Agricultural College in 1907.

Carpenter was a Renaissance engineer. He designed bridges, built ice houses, and taught students French, rhetoric, astronomy, math, mechanical drawing, mechanical physics, surveying, and civil engineering. The mechanical physics course covered hydrostatics, hydraulics, acoustics, and optics. In the twelve-week civil engineering course, he taught properties of building materials; strength of materials; roads and canals; foundations; and bridge, truss, and roof building. "Practical problems were given in framing and bridge designing . . ." He even coached the school’s first football team.

In his report to the State Board of Agriculture dated December 1, 1875, he says about his first year as an instructor: "During the greater portion of the year I have spent from three to five afternoons of each week in doing work not in my regular College duties . . . I have done a considerable amount of surveying of farm lines, boundaries of fields, and underdrains; in fact, I have done all that profitably can be done with our present instruments."

* Well, it was almost the beginning. Civil engineering is first listed as part of the “course of study” for the second quarter in the second (handwritten) catalog of The Agricultural College of the State of Michigan.

† Carpenter started out with the rank of professor. From our perspective 134 years later, this was a remarkable accomplishment. Today, achieving professorial rank in less than 14 years is considered a rare accomplishment. To top it off, the college built him (and all others of professorial rank) a house to live in on the campus grounds!

‡ In all likelihood this was from The State Agriculture College. It was the custom in those days to confer a Master of Science degree on graduates who were still actively pursuing scientific study three years after graduation. By 1879, one third of the living alumni who had been out of college for three years or more had received the master’s degree.
As for his class work in astronomy “… I met them three nights a week on the roof of the boarding hall, and gave all the opportunity for observing the planets through the telescope now at the College.”

Carpenter wrote in his 1876 report: “Connected as I am with the Engineering Department of the College, a large amount of outside work is of necessity required of me. In some instances afternoons and Saturdays from one to three weeks consecutively have been required … Under my direction the maps of the College farm and grounds, for the library and farm office were finished …”. He prepared the design and working drawings for rebuilding the Red Cedar bridge (now known as Farm Lane Bridge). In his report he noted: “The appropriation of the last Legislature of $800.00 for building of the bridge was barely sufficient for its construction. One contractor only would bid the work, most of them regarded the amount as altogether too small for building of 125 feet of bridge, and the structure erected was the best possible under the circumstances.”

In 1878, at the request of the State Board of Agriculture, he took charge of constructing the brick oven in the college boarding house, laying a water supply pipe line to Williams Hall and Wells Hall, and designing a pile driver that was used to build a dam across the Red Cedar for the water supply. Construction of the campus icehouse fell to Carpenter in 1878–79. During 1879–80, he was assigned to oversee “repairs in brick and iron, including repairs to the steam works.” When the board approved construction of an astronomical observatory, the carpentry work was done almost entirely by students under his supervision. A windmill reconstruction and a new vegetable boiler in the college kitchen were other projects for which Carpenter was responsible.

During 1881, assisted by students, Carpenter made extensive changes in the steam-heating system in the original Wells Hall, a dormitory. In 1882–83, he prepared plans and specifications for a new boiler house and chimney and served as construction superintendent. Because of the the high price and the “bad color” of bricks available near Lansing, the building committee decided the bricks should be handmade for the construction of the boiler house and a “Professor’s residence.” Naturally, Carpenter was put in charge. Nearly
400,000 bricks were made at the college brickyard and, according to Carpenter were “...of uniform color” and “in every way first-class.”

In his annual report for 1883–84, Carpenter said that his work outside the classroom “has been of that particular kind which could only be satisfactorily done when under my immediate oversight. The work ... has been principally devoted to finishing the construction of the water-works, to supervision of the construction of the boiler-house and chimney, to construction of a dam and ditch for a water supply to be used by the State Fish Commission in the breeding of mirror carp, the location and surveying of drains on the farm and garden departments, and the purchase of fuel and general oversight of the steam heating works ...”

Carpenter designed the Mechanical Building (constructed in 1885), sometimes referred to as the mechanical lab or mechanical shops, and later referred to as the engineering shops. He prepared the specifications and drawings with the aid of students. He described the building as “plain and devoid of architectural ornament ... convenient, well constructed and satisfactory to all those who occupy it.” In the summer of 1887, Carpenter prepared the plans and specifications for an addition to the Mechanical Building and was the construction superintendent.

In 1886, at Carpenter’s request, he was relieved of his fire department duties, including the weekly fire drills he had been running. Responsibility for the weekly drills was turned over to the Military Department. He remained engineer of the water works, recommending that the water works be extended to the professor’s residences and to the barns for fire protection. During 1889–90, Carpenter was superintendent of construction for a new Agriculture Laboratory. In addition, a hot water heater was built for the secretary’s office and an experiment was conducted in the use of kerosene in the boilers to remove scale and rust. Carpenter presented a paper on this work at the American Society of Mechanical Engineers’ convention. It was republished in “nearly all the scientific and engineering papers in the country.”

In August 1890, at the end of the school
year, he went to Cornell to accept the chair of Practical and Experimental Engineering in the Department of Mechanical Engineering with, one might conjecture, a great sigh of relief at the prospect of devoting the remainder of his career to teaching and research. With all his newly found free time at Cornell, he published four books on the subjects of internal combustion engines, heating and ventilating of buildings, the effect of steam jackets on high-speed engines, and experimental engineering.

OVERTURE

In the fall of 1891, Professor Herman Klock Vedder was placed in charge of the Department of Mathematics and Civil Engineering. In 1900, he expressed the need for a course of study "allowing for specialization along the Civil Engineering Lines." On December 4, 1901, the governing board approved the new option. Seventeen members of the junior class choose it. On June 18, 1903, fourteen seniors became the first graduates from the Civil Engineering option.5

Construction of Engineering Hall was completed in 1907 and G. W. Bissell, the first dean of engineering, embarked on his duties on June 18. The work of installing furniture and equipment was not begun until September 1 and was not wholly in place until after January 1, 1908. The building was formally dedicated on June 22, 1908. The principal feature of the exercises was an address by Dr. R. C. Carpenter, ’73, of Cornell University, on “The Education of an Engineer.”6 The address is printed verbatim at the end of the Dean’s report to the State Board of Agriculture.*

In the years between his taking charge of the department and moving into the new engineering building, Professor Vedder repeatedly protested the crowded class and laboratory facilities. In his 1908 report he noted . . . “Of the 232 graduates of the Engineering Course, 117 had taken the Civil Option. . . . Of the 8,707 student-hours of instruction in the Department of Mathematics and Civil Engineering, 3,482 had been in civil engineering subjects and 5,207 in mathematics . . .” He then proposed that in order to best serve the students, civil engineering should be a separate department.

On July 7, 1909, the State Board of Agriculture approved the separation of mathematics and civil engineering into two departments. On September 1, Professor Vedder took charge of the newly formed Department of Civil Engineering.7

VEDDER TAKES CHARGE

In his 1909 report, Professor Vedder rather coyly expressed his preference for leadership of the Department of Civil Engineering8: “In view of the many and increasing duties connected with the teaching side of the department I would again suggest that I be relieved of the responsibilities connected with the teaching of mathematics. The reason for this recommendation is largely a selfish one and is not intended to favor any sharply defined separation of mathematics and engineering at this college.”

The fact that Vedder held a CE degree from Cornell might have had something to do with his “selfishness.” We who are civil engineers can hardly blame him for this.†

Vedder had already been in charge of the Department of Mathematics and Civil Engineering for 16 years. Thus, after the mathematics department was split off, there were only minor changes in the curriculum and operation of the department for the remainder of his 33-year tenure in the post. He had by this time established a firm philosophy of the education of the civil engineering student—one that was to remain virtually unchanged until the 1960s. It can be summed up as principles and PRACTICE. With the obvious emphasis on the latter.

* Professor Carpenter’s remarks are as valid today as they were 100 years ago.
† In this age of e-mail, text messages, and Twittering, it was difficult for the author to refrain from inserting :-).
Early in his career at M.A.C., he also expressed a view of the role of the college in “turning out an engineer” that is still in practice today. Namely, that it was not really to turn out engineers but rather to train people “who know how to do things, who know how to put into practice some of the simple theories to the end that they are able to earn a living immediately upon graduation. Over time, experience enabled former students to become engineers.” Today, we formalize that philosophy. The BS civil engineer, upon passing the fundamentals exam, becomes an engineer-in-training. After four years of experience and the successful completion of the practical exam, the graduate is truly a professional engineer.

1909–1919
THE FIRST DECADE

Out of the Ashes

The fire began early Sunday morning March 5, 1916. The story is told in graphic detail at the centerfold.

World War I

President Kedzie’s 1917 annual report began with the recognition that things were not going to be the same in the coming year: “For the third time in the sixty years since M.A.C. was founded, our College has been obliged to harmonize as best it could the demands of the class room and laboratory with the call to the patriotic citizen for service to the government.” The opening of the spring term coincided with the entry of the United States into the war on April 6, 1917. Seniors were granted diplomas without completing the spring term. Likewise, juniors who entered Officer’s Training Camp were given credit for the spring term.

The Division of Engineering was still recovering from the losses incurred in the fire but instruction continued with smaller classes. It is interesting to note that Vedder specifically identified the lack of apparatus for development of instruction in “mechanical methods of computation.” Did he mean the slide rule?

Although the students were granted a longer summer vacation to permit them to help in planting and harvesting, College instruction changed little in the first year of the war. The real change occurred in May 1918, when 500 soldiers were sent to M.A.C. for specialized training in truck maintenance and operation. Three detachments completed the vocational program between May and December.

A second Student Army Training Corps (SATC) unit of 600 men arrived for induction and instruction in October. These men met the requirements to be regular college students. They were destined for Officer’s Training Camp and their instruction included courses in math, chemistry, and French. Little was accomplished with this unit as influenza struck early in the term. By the time the quarantine was lifted, the war was over. Eighteen men had died of the flu and related complications.
Vedder’s comments on the impact of the war on the department reflected both frustration with the military and pride in the M.A.C. alumni who went to war:

For the fall of 1918 all thought of following our normal schedule was abandoned for the requirements of the S.A.T.C. . . . They were more than ready to exert themselves to the utmost so long as their training could have possible use in the war program . . .

When the possibility was removed by the armistice

. . . It was interesting to note the remarkable transformation from classes of uniformly earnest and purposeful to groups largely indifferent and apparently stupid when judged by the usual standards.

From the war committee on education:

. . . we received assurances that other information would be supplied in a few days regarding outlines of courses, sample exercises, and the like. It would have been fatal to wait for the promised material, and it is interesting to note that practically none of it arrived in 1918, while quantities of it did appear about the 1st of May 1919, more than five months after the armistice . . .

None of the SATC men graduated from M.A.C.

On the other hand, there was ample pride in H. G. Ward, a recent civil engineering graduate of the department and instructor in civil engineering:

When the United States entered the war with Germany, Mr. Ward was the first man to be called from M.A.C. He left the college May 2, 1917. . . . He became First Lieutenant in the field and was discharged at Camp Custer, June 30, 1919.

1919–1939

HOLDING THE COURSE

Although there were events of both local and global significance during this period, the overriding response of the department was cautious adaptation. Perhaps the greatest impact on the civil engineering profession and the education of civil engineers was the dramatic increase in the number of automobiles from 6 million in 1918 to 26.7 million in 1929. Even with the stagnation of the economy, the number of registered vehicles rose to 32.5 million in 1940. The automobile needed roads designed by civil engineers. In 1919, the people of Michigan approved a state bond issue in the amount of $50,000,000 to build highways.

A now long-standing association with the State Highway Department began when C. A. Melick withdrew from the college in 1919 to
join what we now call the Michigan Department of Transportation (MDOT). Over a long period of time he provided topics, information, and guidance on bachelor of science thesis projects. To this day, many students find research projects, financial support, and jobs at MDOT.

Two harbingers of the long-term future of the department arrived on the scene in this period: the hiring of Chester Lawrence Allen and the establishment of the Engineering Experiment Station.

Allen came to M.A.C. with both the CE and MS.* The significance of this was that the CE was a professional degree while the MS was a research degree. He was the first civil engineering faculty member to have the MS degree since Rolla Carpenter. On the retirement of Vedder, Allen became head of the department, a post he held for 24 years.

The Engineering Experiment Station was formally established on January 16, 1924. Although late in the game (M.A.C. was the 25th land-grant college to establish a station), it was a beginning. Three of the first eleven funded projects were for civil engineering research: (1) Properties of Michigan Cements, (2) Bituminous Fillers for Cracks in Concrete, and (3) Aluminite Cement.13

Other Notable Events

- Michigan enacted legislation that established the Professional Engineer license in 1919.
- Establishment of the Student Chapter of the American Society of Civil Engineers at M.A.C. in 1921.14
- Although the Department of Civil Engineering was permitted to grant the Master of Science as early as 1909, it was not until June 18, 1928, that a Master of Science degree was granted. Howard Allen Preston was the first recipient.15 His thesis topic was “The Design of a Reinforced Concrete Laboratory Building for the Department of Civil Engineering.”
- Accreditation of the civil engineering

* SB (civil engineering), MIT, 1905; CE (Honorary), Lafayette, 1916; MS, Pennsylvania College, 1917
1937–1969

GROWING PAINS

Also known as the “Hannah Years,” because they coincide with John Hannah’s tenure as president, this period was a time of accelerating growth in student enrollment, and significant changes in virtually every aspect of what we now call Michigan State University. Although he had a direct hand in many of the changes that brought a small M.S.C. to the stature of MSU that we know today, three were particularly important to the department:

- The creation of the Basic College
- Implementation of the tenure system for faculty
- Bootstrapping the faculty

The Basic College

Though the “educated person” had once been a vital concern in every course of study at M.A.C., the focus on general education had disappeared under the pressure to present new technical courses. The engineering student, with six elective credits in four years, was no longer required to study biological science, nor social science, and nothing beyond 12 quarter credits of English composition in the humanities. Given free elective credits, the engineering students tended to use these to narrow their training rather than broaden it.

In 1942, Hannah tried an experiment in required general education as a means of serving high school graduates who were inadequately prepared for college work. Its success led to the formation of the Basic College in 1944. The Basic College evolved to the administrative unit now called the University Undergraduate Division (UUD). It provided a modicum of the broad general education alluded to by Rolla Carpenter in his 1907 address at the dedication of the first engineering building. In addition to the educational experience, it provided an opportunity for the student to explore and mature before admission to the upper division courses of engineering.

The Tenure System

The implementation of the tenure system resulted in major changes for the faculty and, in turn, the student. In 1935, an engineering student was unlikely to find either a PhD or a professor as a teacher. Out of a full-time M.S.C. faculty of 344, there were only 61 PhDs. Of the 46 professors, only 12 held the PhD. The introduction of the tenure system changed the faculty dramatically. It forced a more selective process in hiring and promotion.

Hannah established the principles for evaluation of faculty during the probationary period before tenure was granted. In summary they were a PhD and documented performance in at least two of three fields: research, teaching, and service. These stand today, in the same order of importance, for tenure and for promotion from associate professor to full professor. The implication for the engineering student was, and still is, that they were to be trained by individuals extremely well qualified in their technical specialties. For many of the faculty of the time, these principles implied a dramatic change in life. Many of the instructors and assistant professors did not have the first qualification for tenure or promotion—the PhD.

Bootstrapping

Hannah, who himself had only one of the qualifications for tenure, namely service, recognized that some form of assistance would be required to bring the staff up to
the new higher standard for promotion and tenure. A liberal policy of sabbatical leaves was instituted to provide the opportunity for faculty to obtain the PhD. While instructors composed two-fifths of the M.S.C. teaching staff in 1940, by the 1950s, instructors accounted for less than a fourth of the staff and were outnumbered by associate professors. Throughout the 1960s, the Department of Civil Engineering head continued to report on the progress and success of the staff in achieving the PhD. By the 1970s only one civil engineering faculty member remained without the PhD.

Other Notable Events

- In 1940, enrollment at M.S.C. was 6,776.
- Obviously, the most notable impact on M.S.C. was World War II. Unlike World War I, the U.S. involvement came early in the war. As in virtually all facets of life, the impact on M.S.C. was immense.
- The State Highway Department established a lab in quarters on the campus in 1942 but the lack of graduate students and available faculty resulted in little cooperative work. The civil engineering undergraduate enrollment was 68 at the end of the spring quarter.18
- In 1943, no advanced degrees were conferred in the Division of Engineering. Civil engineering undergraduate enrollment dropped to 54. In the spring term, all enlisted Reserve Corps students were called to military service. The Division of Engineering enrollment dropped from 1,103 to 486. Twenty-seven off-campus short courses were conducted by the Division.19
- By the spring of 1944 the Division of Engineering enrollment decreased to 116 from 229 in the fall. The number of civil engineering undergraduates decreased from 54 in 1943 to 9.
- The Highway Research Lab reported on two projects and listed eight ongoing research projects.20
- In the 1945 annual report, Dean Dirks reported that the Division’s enrollment dropped from 91 in the fall to 68 in the spring quarter. Civil engineering was down to five students.21
- The end of the war brought growth! An engineering enrollment of 2,423 was given in the 1946 Division report.22
- In the 1952–53 catalog, the requirement for a BS thesis was dropped and summer...
surveying camp began (9 weeks, 8 hours a day, 5½ days a week, one grade for 13 credits).23

- The M.S.C. chapter of the National Civil Engineering Honor Society, Chi Epsilon, was installed as chapter number 42 in 1951.
- Beginning in 1956–57, students in engineering, with an appropriate grade point average, were invited to join the Honors College.24
- In the 1960–61 catalog, summer surveying camp was dropped. Surveying was reincorporated into the academic year program.
- In 1962, the College of Engineering moved from R. E. Olds Hall to the current Engineering Building on Shaw Lane.
- In 1964, enrollment at MSU was 31,268.

1954–2009

SCIENCE, RESEARCH, TECHNOLOGY, & GLOBALIZATION

The astute reader will note the overlap in time periods with the previous section. Historians (and civil engineers masquerading as historians) are allowed to do this. Readers will also note that citations to official documents decrease as the author relies more on his impressions in the years that he experienced at MSU.

Science & Research

While engineers made contributions to the development of the United States’ military effort in World War II, it was often the physicist
with advanced fundamental training who led in the creation of new devices and systems. This stimulated a change in engineering curricula across the United States. At MSU and similar institutions, the curricular emphasis changed from principles and practice to principles and practice.

At MSU the driving force for change was the newly installed dean of engineering, John D. Ryder. In his 1956 report he noted that, “In 1954 the Engineering College at Michigan State University was definitely outdated in curriculum, staff, and teaching approach, and quick remedial action was needed.”

On the curriculum he continued:

Almost all curricula have now introduced differential equations as a required mathematics subject. It is also possible to report that all shop courses have now been eliminated and that upon transfer to the first buildings in the new engineering campus the college will not even have facilities for the teaching of such work. We are attempting to substitute for these courses with demonstrations, with various visual aids, including moving pictures.

In the Department of Civil and Sanitary Engineering:

…it was felt that the curriculum with its seven options was too highly specialized and was not providing sufficient breadth of training for our graduates, and thus to some extent was contributing to their poor performance record in the state Engineer-in-Training examinations.

In the following year Ryder reported:

Drastic changes were made in the curriculum by the deletion of nine undergraduate courses and by the dropping of all stated options. The year was also marked by the deletion of the undergraduate curriculum in Sanitary Engineering.

All students in the college were now required to take at least one course in nuclear physics.

It is interesting to note that in 2009 the civil engineering curriculum included six tracks (environmental, geotechnical, pavements, structures, transportation, and water resources) as well as a concentration in environmental engineering. The requirements specify completion of 9 credits in one track and one course (3 credits) from each of three other different tracks.

The requirements for drafting and surveying work were gradually eliminated. In the 1956–57 catalog, drafting was titled “Engineering Communication.” By the mid-1990s, there was no longer an engineering communication requirement. The requirement for surveying was reduced to one course by the 1970s. Surveying is not listed as a course in the 2009 catalog. It is integrated into a broader course entitled “Introduction to Civil Engineering.”

Increasing emphasis on research in this period is evident from the growth in external research dollars, graduate course offerings, and new facilities. In 1959, the department received about $127,000 in external funding. In the 2008–09 fiscal year, the department funding was $4,233,425. In 1909, there were 23 undergraduate courses and no graduate courses offered by the department. In 2009, there were 30 undergraduate courses and 46 graduate course offerings. In 1987 the environmental engineering faculty moved into new offices and laboratories in the Engineering Research Complex located behind the Clinical Center off Bogue Street. In 2002, the Civil Infrastructure Laboratory was established just off Jolly Road south of campus. It was expanded in 2005 to add a fire testing facility.
In 1954, unbeknownst to freshmen, seniors, and faculty alike, the days of the iconic “slip stick” (slide rule) were numbered. In the footsteps of ILLIAC at the University of Illinois, the Michigan State University Integral Computer (MISTIC) joined the leading ranks of computing technology when it became operational in 1957. Civil engineering students of the class of 1959 still remember the trials of writing code in machine language to run (or fail) on MISTIC. The CDC 3600 was acquired in 1963. By 1969, all engineering students were required to take an introductory course in computer science (read: FORTRAN® programming). Homework assignments ranged from the use of “canned” programs to actual FORTRAN® code. With the advent of the microcomputer laboratories in the Engineering Building in the 1980s, homework assignments requiring programs written in BASIC® were assigned. These assignments
were in turn replaced with assignments requiring the use of spreadsheets. By 2009, the required course in computer science was replaced with a course in engineering modeling, and, starting about 2000, the university required every entering student to have a microcomputer. Faculty in engineering can now write very realistic and demanding homework assignments.

The slide rule that had served engineers for more than a century was abruptly displaced by the electronic calculator in the decade of the ‘70s. At first, only those students with pecuniary advantage could afford to spend money on a calculator that could perform only basic arithmetic and trigonometric operations. Nonetheless, faculty had to limit calculator use in examinations to prevent unfair advantage. By the mid-1970s, the functions increased to practical value and the price dropped sufficiently so that a larger number of students could afford calculators. At this point, the dean of engineering provided a pool of calculators that faculty could borrow for use by students in examinations. By 1980, the calculator issues in exams had disappeared. With the advent of inexpensive programmable calculators, faculty began requiring that students have non-programmable calculators for examinations, and engineering students had to come to campus “armed” with two calculators!

The age of the Internet began in earnest in the 1990s. First it was e-mail, then the Web. E-mail changed the way students and faculty communicated. Most (but not all) faculty learned to use e-mail and to permit
Globalization

International students first came to the Agricultural College in 1870. In 1943, Professor Shao Chang Lee came to campus under the newly formed Institute of Foreign Studies. In the 1950s, MSU developed its commitment to international study, research, and outreach. By 1960, this was reflected in the composition of the civil engineering faculty, which included three professors of international origin. Over the intervening decades, the international character of the faculty grew such that in 2009, 14 of the 19 faculty members are of international origin. Coincident with this globalization of the faculty, the international enrollment in the graduate program has grown such that 92 of 120 students are of international origin.

In 1998, the department initiated summer study abroad at Volgograd, Russia, and by 2004, more than 70 students per year were participating in this program.

Other Notable Events

- The department was moved to the College of Communication Arts and Sciences building from 1981 to 1989 because of a lack of space in the Engineering Building. The department returned to the newly completed wing of the engineering building.
- The MSU chapter of the civil engineering honor society, Chi Epsilon, hosted the 29th National Conclave in April 1986.
- In 1988, MSU hosted ASCE’s first National Concrete Canoe Competition at Lake Lansing.
- The Environmental Engineering Student Society (a student chapter of the Air & Waste Management Association) was established in 1988.
- MSU’s concrete canoe team took their canoe, the Rowing Stone, to Buffalo, New York, and won the National Concrete Canoe Competition in 1990.
- MSU switched from the quarter system to the semester system in 1992.
- The Associated General Contractors chartered a student chapter in the department in 1991.
- In 1992, MSU hosted the first National Student Steel Bridge Competition and became the first national champions.
15. This is the first report in the official records. I was unable to track any earlier graduates in State Board of Agriculture Reports. This does not mean there were none. It just was not part of the standard data that were reported. Report of the State Board of Agriculture (1926) “Report of the Registrar,” p. 79.

(The State Board of Agriculture reports were printed in June of the year stated and reflect the fiscal year activities starting in July of the year previous to the date cited in the reference.)

Students, instructors, and guides from the summer 2008 study abroad program in Russia. 1ST ROW (SITTING), LEFT TO RIGHT: Jonathan Libby, Stephen Remias, Steven Mikula, Cara Parks, Ashley Washabaugh, Melissa Howe, Julio Martinez, Olga Eremina (leading guide), Robert Dahmen, Alexey Orlov (guide). 2ND ROW (STANDING), LEFT TO RIGHT: Elena Yadykina (guide), Valerie Ingle, Jeanette Benzie, Daniel Williams, Carsten Loewe, Emeka Ezekwamba, James Coughlin (instructor), Jason Provines, Benjamin Luedeman, Jeffery Walters, Brent Morgensen, Derek Ambs, Ivan Parker, Goli Nossoni (instructor), Goran Arya, Kathryn Slynar, Cameron Walsh, Kevin Hejmanek, and Richard Hensh (instructor).

Chronology

1875–90  Rolla C. Carpenter, professor
1891–1924  Herman Klock Vedder (headed the Department of Mathematics and Civil Engineering, 1895–1909; thereafter headed the Department of Civil Engineering)
1925–49  Chester Lawrence Allen
1949–51  Charles O. Harris
1951–56  John R. Snell
1956–69  Charles E. Cutts
1969–72  Robert K. L. Wen
1972  Orlando Andersland, acting, March 1–June 30, 1972
1972–86  William C. Taylor
1986–87  Francis X. McKelvey, acting
1987–90  William C. Taylor
1990–95  William E. Saul
1995–  Ronald S. Harichandran

Photos courtesy MSU Archives and Historical Collections

CLOCKWISE FROM UPPER LEFT: Herman K. Vedder, CE (the original photo caption stated “Professor of Mathematics and Civil Engineering. Mild, meek ———-!!!”); Chester Allen; Charles Harris; and John Snell.
Distinguished Alumni

Awards presented by the Department of Civil & Environmental Engineering

2003  **Leo V. Notestine** (BS 1938)

Professor Emeritus, Department of Civil and Environmental Engineering, Michigan State University

*Philanthropist, leader of the profession, teacher, mentor, colleague, and friend to generations of engineers who honor him with respect and affection*

2004  **Leroy R. Dell**, PE (BS 1966)

Founder and Past President Dell Engineering, Inc. and Western Michigan Environmental Services, Inc., Holland, Michigan

*Engineer, entrepreneur, executive and Spartan; protecting public health and the environment, serving his community, and guiding MSU to greater success*

2005  **Ben C. Maibach III** (BS 1969)

President, Chairman and Chief Executive Officer, Barton Malow Company, Southfield, Michigan

*Leader, construction manager, and humanitarian; building facilities and serving Detroit, his profession, and education*

2006  **Alton L. Granger**, PE (BS 1954)

Chairman, Granger Construction Company, Lansing, Michigan

*Exemplary philanthropist, leader, and construction manager; upholder of faith and family; stalwart supporter of Michigan State University*

2007  **Paul H. Woodruff** (BS 1959, MS 1961)

Founder, Environmental Resources Management Group

*Entrepreneur extraordinaire, leading global environmental engineer; provider of exemplary service to the profession, businesses, and the community; true to his faith and family*

2008  **Frank DeDecker**, PE, PS (BS 1949)


*Leader, mentor, and humanitarian; designing infrastructure for future generations and serving Michigan, his profession, and education*

2009  **James K. Wight**, PhD, PE, FACI, FASCE (BS 1969, MS 1970)

F. E. Richart, Jr. Collegiate Professor of Civil Engineering, Department of Civil and Environmental Engineering, University of Michigan

*Leader in concrete structural engineering, outstanding researcher and teacher, mentor to generations of students*
The Champions

In 1992, MSU hosted the first National Student Steel Bridge Competition and became the first national champions. The team members (left to right) were Ben Sherman, Craig Lehner, Chris Schneider, Tony Thomas, and Bert Sherman.

1990 Concrete Canoe champions (left to right): Dr. Mark Snyder, academic adviser; Ken Kucel, Elena McDonald, Julie Townsend, paddler Linda Clowater, John Marsh, Tom Mixter, paddler Julie Vandenbossche, Martin Kane, paddler David Jeakle, paddler Geoffrey Wilkie, Janiene De Vinney, Dr. Mackenzie Davis, academic adviser, and Julie Hoogerwerf.
From left: Brad Boddy, Craig Galecka, Kristen Sherwin, Susan Masten (faculty adviser), Sarah Stapleton, Swati Sharma, and Mike Contrera hold trophies and a $10,000 check following their first-place finish at the Fourth Annual International Environmental Design contest in Las Cruces, New Mexico, in 1994.

RIGHT: Several members of the 1994 Spartan Environmental Technologies team pose for a photo with their faculty advisers (left to right, 1st row): Mackenzie Davis (faculty adviser), Kristen Sherwin, Heidi Finley, Susan Masten (faculty adviser); (2nd row) Dan Gietzen and Jon Meyer; (3rd row) Eric Clausen, Mark Sumner, Brad Boddy, Mike Contrera; (4th row) Laura Dunatchik, Lynette Payne, Gary Sifferman, Clay McCormack; (back row) Cris Harvey, Sarah Stapleton, and Fred De Groot.

BEGINNING AT UPPER LEFT: 1. The mechanical building, built around 1885, was sometimes called the mechanical lab or mechanical shops and later referred to as the engineering shops. 2. The Engineering Building was built in 1907 and formally dedicated on June 22, 1908. Both the engineering building and the mechanical building were destroyed in a fire in the early morning hours of Sunday, March 5, 1916. (Pictured to the right of the Engineering Building is Wells Hall, a dormitory) 3. The R. E. Olds Hall of Engineering (center of photo) was built on the old foundation of the former Engineering Building. Inside and out, it was a near replica of the original structure. Olds Hall was formally dedicated on June 1, 1917, along with the new engineering shops ("a two-story, fireproof shop building") located to the left of Olds Hall). Wells Hall is to the right of Olds Hall in the far distance. 4. The College of Engineering occupied Olds Hall until 1962. 5. On December 28, 1960, groundbreaking ceremonies for a new engineering building on Shaw Lane took place. Standing, left to right: Dean John D. Ryder; Carl I. Mensendick, assistant to the dean; Maria Z. Krzywoblocki, professor of mechanical engineering; Agnes McCann, assistant to the dean; Charles E. Cutts, professor and head of civil engineering. Kneeling: Siegfried M. Breuning, associate professor, engineering research. 6. Construction was completed in 1962. 7. In 1989, the building was renovated and expanded. The $34.5 million, 77,000-square-foot addition was dedicated on October 11, 1989. On October 4, 1995, a cornerstone ceremony was held at the site of the future Herbert H. and Grace A. Dow Institute for Materials Research. That $46 million, 46,000-square-foot addition, known as the Dow Wing, was formally dedicated on April 11, 1997.

RIGHT, MAIN PHOTO: 1. Wells Hall starts to burn. The fire purportedly started about 5:00 A.M. Sunday, March 5, 1916, in the cement labs in the southeast corner of the Engineering Building basement. Fire quickly spread through the building and to the engineering shops. The fire then leapt to the roof of Wells Hall (left), a dormitory near the Engineering Building, but it suffered only minor damage. According to the 1916 Wolverine (the yearbook), "...the ruins had scarcely ceased smoking before a new schedule of classes...was formulated" for the 400 engineering students. "When sessions began on Monday morning...not a class was missed."

R. E. Olds, in a letter to MSU President Frank S. Kedzie dated April 29, 1916, confirmed his intent to contribute $100,000 toward reconstruction of the engineering building. The April 25, 1916, issue of The M.A.C. Record had reported: "The story goes that in the early days of M.A.C., Dr. Kedzie's father, Dr. R. C. Kedzie, was in a position to do a great favor to the father of Mr. Olds. These men were warm friends and their sons have continued this friendship. Hence Mr. Olds finds this a very opportune time to help Dr. Kedzie out of the first real worry of his college administration."

On June 5, 1917, The M.A.C. Record reported: "R. E. Olds was present in person [at the dedication of R. E. Olds Hall on June 1, 1917] and, in turning over the keys of the building to Dean Bissell, he said, "It is my observation that the students turned out of this college are better fitted on the average than those from any other college in the country.""

3. Fire spread to the engineering shops. 4. Ruins of Engineering Building on March 5. Wells Hall (on right) received only minor damage. 5. Ruins of Engineering Building on March 11.
FACULTY AWARDS

INTERNATIONAL & NATIONAL FACULTY AWARDS

Canadian Academy of Engineering
2009 Venkatesh Kodur

Fellows
1955 William E. Saul, ASCE
1959 Leo V. Nothstine, ASCE
1991 Richard W. Lyles, ASCE
1992 Orlando Andersland, ASCE
1992 Richard W. Lyles, Institute of Transportation Engineers
1996 David C. Wiggert, ASME
1999 Parviz Soroushian, American Concrete Institute
2005 Ronald S. Harichandran, ASCE
2005 Venkatesh Kodur, ASCE
2007 Venkatesh Kodur, American Concrete Institute
2007 Shu-Guang Li, ASCE
2007 Shu-Guang Li, Geological Society of America
2007 Parviz Soroushian, ASCE
2009 Neeraj J. Buch, American Concrete Institute

American Academy of Environmental Engineers
1990 Mackenzie L. Davis

Fulbright Scholar
1970 William E. Saul, University of Stuttgart

von Humboldt Scholar
1970 William E. Saul

MICHIGAN STATE UNIVERSITY FACULTY AWARDS

Distinguished Faculty Award
1963 William A. Bradley
1979 Orlando Andersland
1984 Robert K. Wen

Alumni Club of Mid-Michigan Quality in Undergraduate Teaching
2004 Neeraj J. Buch
2005 Richard W. Lyles

AMOCO Foundation Excellence in Teaching Award
1994 Mackenzie L. Davis

Teacher-Scholar Award
1992 Ronald S. Harichandran
2000 Neeraj J. Buch
2006 Rigoberto Burgueño

Distinguished Academic Staff Award
2004 Dan Lee

WITHROW AWARDS

Teaching, scholarship, and service awards made by the College of Engineering.

Civil and Environmental Engineering

Teaching Awards
1991 Frank Hatfield
1992 Thomas Wolff
1993 Thomas Wolff
1994 Mackenzie Davis
1995 Frank Hatfield
1996 Gilbert Baladi
1997 Frank Hatfield
1998 Thomas Wolff
1999 Mackenzie Davis
2000 Roger Wallace
2001 Neeraj Buch
2002 Mackenzie Davis
2003 Mackenzie Davis
2004 Thomas Maleck
2005 Rigoberto Burgueño
2006 Neeraj Buch
2007 Neeraj Buch
2008 Richard Lyles
2009 Roger Wallace

College of Engineering Distinguished Junior Scholar Award
1995 Susan J. Masten
1997 Craig Criddle
2007 Syed Hashsham

College of Engineering Service Award
1997 Dennis Bryde

Gloria Stragier Award
2001 Laura J. Taylor
2004 Linda Steinman
**STUDENT AWARDS**

**HARRY L. & MINET E. CONRAD SERVICE AWARD**
This award is made to students who demonstrate outstanding service to the Department of Civil and Environmental Engineering.

<table>
<thead>
<tr>
<th>Year</th>
<th>Student Name</th>
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<tbody>
<tr>
<td>1972</td>
<td>Charles Eisele</td>
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<tr>
<td>1973</td>
<td>Dan Hanson</td>
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<tr>
<td>1974</td>
<td>Mike LaFrance</td>
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<td>1975</td>
<td>Mark A. Young</td>
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<td>1976</td>
<td>Daniel Harpstead</td>
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<td>1977</td>
<td>Daniel McClure</td>
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<td>1978</td>
<td>Joseph Baka</td>
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<td>1979</td>
<td>Parvin C. Wright</td>
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<td>1980</td>
<td>Susan Kloosterman</td>
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<td>1981</td>
<td>Raymond Eisbrenner</td>
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<td>1982</td>
<td>Gregory A. Casto</td>
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<td>1983</td>
<td>Ken Mahnick</td>
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<td>1984</td>
<td>Jennifer Bedell</td>
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<td>1985</td>
<td>Kimberly Doherty</td>
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<td>1986</td>
<td>Diane Wildey</td>
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<td>1987</td>
<td>Gene Gardella</td>
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<td>1988</td>
<td>Leslie Tyson</td>
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<td>1989</td>
<td>Richard Frattarelli</td>
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<td>1990</td>
<td>Julia K. Hoogerwerf</td>
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<td>1991</td>
<td>Michael Helner</td>
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<td>1992</td>
<td>Lisa Tunison</td>
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<td>1993</td>
<td>Warren Brown</td>
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<td>1994</td>
<td>Gil Mosseri</td>
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<td>1995</td>
<td>Lynette Payne</td>
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<td>1996</td>
<td>Jeremy Rasmussen</td>
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<td>1997</td>
<td>Yvonne Chang</td>
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<td>1998</td>
<td>Heather Marek</td>
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<td>1999</td>
<td>Heather Marek</td>
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<td>2000</td>
<td>Troy Kelts</td>
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<td>2001</td>
<td>Therese Sutphen</td>
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<td>2002</td>
<td>Therese Sutphen</td>
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<td>2003</td>
<td>Michael Nye</td>
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<td>2004</td>
<td>Nicole Danielson</td>
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<td>2005</td>
<td>Patrick Droze</td>
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<td>2006</td>
<td>Michael Briggs</td>
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<td>2007</td>
<td>Geneva Hulslander</td>
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<tr>
<td>2008</td>
<td>Heather Thurston</td>
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<tr>
<td>2009</td>
<td>Laura Burke</td>
</tr>
</tbody>
</table>

**Conrad Award winners Heather (Marek) Cheslek (above) and Therese (Sutphen) Kline (right) assisting Girl Scouts in earning their Water Wonders merit badge.**
Student Support

- **Mr. & Mrs. Benjamin H. Anibal Scholarship.** This endowment was established in 1964 by Benjamin Anibal (EGR 1909) for the purpose of financially assisting undergraduate Engineering students.

- **Stuart H. & Charlotte A. Bogue Endowed Fellowship in Civil & Environmental Engineering (A30313).** Created in 2007 by Stuart and Charlotte Bogue, this endowment is intended to encourage others to pursue higher education. Recipients of this award are full-time graduate students majoring in civil and environmental engineering who have expressed interest in pursuing a career in the areas of water and waste water purification and treatment or environmental water resources.

- **Civil & Environmental Engineering Endowed Scholarship (A30300).** This pooled endowment provides financial assistance for undergraduate students in the Department of Civil and Environmental Engineering who require financial assistance.

- **The Christman Company Endowed Scholarship (A30304).** The Christman Company created this scholarship in 2002 for full-time undergraduate students majoring in civil engineering who have demonstrated interest in a career in construction management, program management, general contracting, or real-estate development.

- **Harry & Minet Conrad Engineering Scholarship.** This endowment was established in 1959 by Harry (CEE BS 1940) and Minet Conrad. This scholarship is given to talented junior- or senior-level civil engineering majors with financial needs.

- **Harry L. & Minet E. Conrad Supplemental Engineering Fund.** This endowment was established in 2005 by Roger (CEE BS 1967) and Shelia Conrad, as a means of bringing the Harry & Minet Conrad Engineering Scholarship into the 21st century so that additional generations can benefit from the scholarship. From this scholarship fund, three student awards are granted to three undergraduate student members of the following organizations in the College of Engineering: Tau Beta Pi, Student Chapter of ASCE, and Chi Epsilon.

- **Lee & Cheryl Dell Endowed Fellowship (A30310).** This endowment was established in 2005 by Lee (CEE BS 1966) and Cheryl Dell in gratitude for the excellent education Lee received, and as an expression of their enduring commitment to MSU and the College of Engineering. This fellowship will support a graduate student pursuing an advanced degree in civil or environmental engineering at MSU. The donors request that students pursuing a degree in environmental engineering be given highest priority for consideration.
Hathaway J. & Mabel L. Hanes Education Fund (A3030). This endowment was established in 1991 by Hathaway (EGR BS 1929; EGR MS 1932) and Mabel Hanes. This fund provides scholarship support for full-time undergraduate students in the Department of Civil Engineering.

Jerry N. McCowan Endowed Scholarship/Fellowship in Civil & Environmental Engineering (A30308). This endowment was established in 1993 by Jerry McCowan (ME BS 1955; ME MS 1957). This scholarship/fellowship supports graduate or undergraduate students within the Department of Civil and Environmental Engineering. Preference is given to graduate students.

Walfred & Grady Nordberg Scholarship (A30309). This endowment was established in 2000 by James Nordberg (CEE BS 1970), in honor of Mr. Nordberg's late father, a graduate of the Department of Civil Engineering in 1924, and his late mother. Recipients of this award are full-time undergraduate or graduate students within the Department of Civil and Environmental Engineering.

Leo V. Nothstine Scholarship (A30301). This scholarship, created by Leo (CEE BS 1938) and Rebecca Nothstine in 1988, was designed to support beginning or continuing graduate students specializing in structural engineering.

The Leo V. & Rebecca Nothstine Endowed Fellowship in Structural Engineering (A30322). This fellowship, established in 2004 by Leo (CEE BS 1938) and Rebecca Nothstine, is awarded to full-time graduate students who are pursuing an advanced degree in civil engineering with a specialization in structural engineering.

The Rory M. Shaw Memorial Endowed Scholarship/Fellowship Fund (A30323). This endowment was created by Shirley Shaw and her family in memory of her son Rory M. Shaw (Mathematics BA 1979, CEE BS 1990). The purpose of this fund is to provide support to full-time undergraduate or graduate students majoring in civil and/or environmental engineering.

Emory W. Tappan Memorial Scholarship. This endowment was created in 1971 with funds from the estate of Georgia L. Tappan in memory of her late husband Emory W. Tappan (CEE BS 1911), and is awarded to deserving civil engineering students.

Discretionary

Civil & Environmental Engineering Endowed Discretionary Fund (A3033). Created through the generosity of alumni, faculty, and friends in 1992, this pooled fund is
designed to advance the work of the Department of Civil and Environmental Engineering by providing support for student scholarships, faculty development opportunities, student engineering competitions, research projects, or other worthy endeavors.

■ The Mackenzie L. Davis Student Activity Discretionary Endowment Fund (A30306). In 2003, Mackenzie “Mack” Davis, Professor Emeritus of the Department of Civil and Environmental Engineering, established this endowment to supplement the annual fund raising activities of various departmental student organizations, such as the Concrete Canoe Team, the Steel Bridge Team, American Society of Civil Engineers Student Chapter, Environmental Engineering Student Society, Chi Epsilon, Institute of Transportation Engineers Student Chapter, and the Associated General Contractors Student Chapter.

■ James & Patsy Germain Endowed Research Enhancement Fund (A30326). This endowment was created by Jim (CEE BS 1956, CEE MS 1963) and Patsy Germain in 2006. The expenditures from this endowment are to be used to support research facilities, equipment maintenance, and upgrades in research.

■ Thomas L. & Ellen E. Maleck Endowed Excellence Fund in Civil Engineering (A30321). This endowment was created in 2004 by MSU Associate Professor of Civil Engineering Thomas Maleck (CEE BS 1966; MS 1972; Ph.D. 1980) and his wife Ellen (Education BA 1967; MA 1972; Ed.S. 1983). The purpose of this fund is to help students enrich their academic experience by participating in co-curricular activities related to the engineering profession, such as study abroad, attendance at national professional conferences, and competing in national events (i.e., steel bridge and concrete canoe programs).

■ Jerry N. McCowan Discretionary Endowment Fund (A3037). The purpose of this endowment, created by Jerry McCowan (ME BS 1955; ME MS 1957) in 1998, is to support programs that enhance the overall quality of the instructional and scholarly missions of the Department of Civil and Environmental Engineering. This endowment will be funded through a planned gift.

Chairs & Professorships

■ The Donald & Nancy A. Hodgkiss Endowed Chair in Civil Engineering (A30311). This endowment was established in 2006 by Donald (CE BS 1949) and Nancy Hodgkiss (Education BS 1949) to support the creation of an endowed chair in Civil Infrastructure. Assuming there is a need in the department, it is the Hodgkiss’s particular hope that the endowed chair might specifically focus on road and airport design and construction, including the materials used. This endowment will be funded through a planned gift.

■ Paul R. & Irene B. McCowan Endowed Professorship in Civil Engineering (A3036). Jerry McCowan (ME BS 1955; ME MS 1957) created this professorship in 1997 to attract and honor outstanding faculty in Michigan State University’s College of Engineering and to advance instruction and research in Civil Engineering. This endowment will be funded through a planned gift.

REMINISCENCES

James R. Carr, PE (BS 1950)

Aggie McCann (Dean Miller’s administrative assistant) was a great help to me from 1946 to 1950 as I was an undergraduate in Civil Engineering. What a joy to fight our way through registration with a slip prepared by Aggie that was accepted by all as the gold standard of class assignments.

After graduation, the Seabees called me back in service due to the Korean “conflict” and Aggie kept in touch while I was at the Seabee embarkation base at Port Hueneme and also while I was stationed on Amchitka in the Aleutian Islands. She sent me copies of the Engineering publications, including Spartan Engineer, along with copies of cartoons about engineers. Sure helped the days and months pass by.

Dick Kriner (BS 1955)

... I recall the following: 1954(?). A course on “Contracts & Estimates.” Two students comprised a construction company to submit a bid to construct a sewage treatment plant in Mason County. The professor was also the Mason County Engineer. We received a copy of the plans and specifications and spent the term drawing up our bid to submit with fake bonds, etc. The bid letting was at night in Olds Hall with the professor presiding. The professor was a jolly old fellow whose frameless glasses rested on the cheeks of his face. As he opened each bid and read the estimate he started laughing and laughing until tears collected behind his glasses on his cheeks. By the time he opened the last bid he had laughed so much that he had to remove his glasses and wipe the tears from his face. Why tears of laughter? Well the low bid came in at 50% of the engineer’s estimate and the high bid came in at 80% of the engineer’s estimate. Had any of us been given the job we would have gone bankrupt! Somehow we all passed the course. Why I’ll never know. We all adjourned to Paul Revere’s for a beer, including the professor.

Robert C. Thomas, PE (BS 1959)

The structure of the curriculum was one that left little room for a misstep—four electives in four years and an average of 18 credits per term. Some courses were only offered once a year, and pass/fail had not been invented. Naturally, you could add other elective courses if you were interested in having a 21- or 22-credit load, but if you were that mentally challenged, you did not get past the freshman year.

The surveying summer camp (one course, 13 credits and one grade), memorable to say the least. They said there was no social life at the camp, but the mosquitoes were big enough to date, if so inclined. The department knew that they could not pull it off if the food service was not tops, and it was. Heating was by wood stove in the cabins and there was no need for air conditioning. More than once it was necessary to remove ice from the washbasins in the restroom area. This course had all of the elements of building teamwork, and the civil engineers benefited throughout the summer camp as well as the four years of study. The students were not permitted to use calculating machines; the student assistants had them to check the homework, but all enrolled students had to use natural trig.
functions and common log tables for calculations. You could make a rough check with a slide rule, but there was not adequate slide rule accuracy for the homework.

The weather in Michigan was instrumental in our relocation to Southern California in early 1960. You have not experienced the cold until you spend three or more hours in the high humidity atmosphere of the swimming pool at varsity team practice during winter quarter, then venture out into the sub-zero Michigan winter and the 20- to 30-minute walk to the dorm, location of the next class, or your parking lot. The constant snow and ice on all of the walkways also provided a challenge to remain upright. It is easy to learn how to miss the change of season. There are changes in California; for the winter, the daytime temperatures are the low 60s instead of the high 70s in the summer months, somewhere in between for the spring and fall, not a big change, but you get used to it.

Rod Conrad, PE (BS 1967)

I entered MSU in the fall of 1962. This was the first year for the College of Engineering in the new engineering building. Old Olds Hall was over and our new class only had the new building to experience. Our concrete lab was state-of-the-art, with some new equipment. The fixtures and lab counters and cabinets and space layouts of the labs were all brand new, bright and clean.

My class was the first to experience the new credit system for graduation. Summer surveying camp was eliminated and the thermo and electrical class requirements were dropped. We went from 216 to 208 quarter credits for graduation. The four-year program was set up for five classes per term for the four years. There was no allowance for variations in classes. If you dropped a CE class you had to wait a year to pick it up. We had three elective classes over the four years. The normal university load was 180 credits. Later, these thermo and electrical classes proved to be a problem for the EIT exam. The thermo and electrical problems were 20% of the exam back on the old format. In my first try I was one point short of passing first time. Winter classes at the Detroit Engineering Society solved that problem. Thermo I got, but electrical has always been a struggle. I got through the EIT next time and the PE exam on the first try.

The ASCE student chapter was the only student organization during the ’60s. Concrete canoe and steel bridge contests were still to come. We had bi-monthly meetings and asked people from industry to come in as speakers and tell us about their work and industry. I was the only student who knew what career I would follow. Most of the other students were still looking and each student would suggest a field of engineering to invite and gain insight to what was out there. We also organized field trips to special projects away from campus.

The Career Fair All Engineering College Open House Weekend in the spring was the major ASCE competition for the year. Each department would have its student group make displays and models of their studies. The hydraulic water channel was a favorite display. ASCE won the department contest four or five years straight during my years with ASCE student chapter.

During my years at MSU, I held ASCE student chapter offices of treasurer, secretary and president. In 1971, I was assigned as MSU chapter Senior Contact Member. I retired as contact member in 2001. Harry Conrad, Sr. was contact member for 25 years, 1933–58. He established the Harry & Minette Conrad Department Award & Scholarships.

Charlie Bristol, PE (BS 1973; MS 1975)

I remember the 8:00 AM Structures class that I had to take twice because I kept falling asleep before I got to school. I worked until 6:30 AM every morning.
James Berlow, PE (BS 1974; MS 1976)

The first concrete canoe team tried to make the first canoe using an old canoe as a form. We used a light concrete with cloth strips and chicken wire that was similar to paper mache. When we tried to take it to Lake Lansing for a trial we cantilevered it over the back end of the truck and it broke in half of its own weight. I didn’t go to the race but I remember pictures of the team coming across the finish line with a canoe full of water.

I will never forget a soils lab where we needed to calculate a solution using trial-and-error graphical methods. No computer programs for this yet and the personal computer was just an idea. About 10 of us holed up in an apartment for over 24 hours and we still only completed about half of the work.

I will never miss the dorm food. It was uniformly bad, and there was little selection. In particular, they had something called “city chicken” that was an awful imitation of veal cordon bleu. Not like the food served in “food courts” today at my children’s colleges. Soft serve ice cream was a staple of life. Overcooked hamburgers and frozen French fries were the menu highlight.

I also remember walking to class in the winter when it was over 20 below zero and the snow on the IM fields across from Wonders Hall was almost hip deep. It was then I resolved to find a job in a warmer location when I graduated.

When I arrived on campus in 1970, the drinking age had been lowered to 18. On-campus keggers were legal! I also remember a few trips to the Boom-Boom Room, a Polynesian-motif bar in the [Frandor] shopping center just west of campus toward Lansing. They had a group drink called “The Volcano” which was a rum-based punch served flaming. Continuing on to a planetarium show was deadly.

Concerts on campus I remember: Sly and the Family Stone (kept the crowd waiting in Jenison Field House for four hours while they sobered up Sly); The James Gang in the old MSU auditorium, intimate setting for a classic rock and roll star; Ritchie Havens in an East Lansing bar not many years after Woodstock made him famous.

Sorting and classifying and resorting (after mixing it back together again) a truck-load of garbage from married housing for one of Mack Davis’s first research projects. It tested my commitment to my profession like nothing else I have ever done. Second place: Graduate sanitary engineering course in the old wastewater treatment plant where Dr. Davis managed to divert “live” sewage from a campus interceptor sewer for us to use in our unit ops class. We had real feces in our settling tanks.

Learning FORTRAN II by sitting at a key punch machine and typing code onto huge stacks of cards and then taking them to the computing center and leaving them overnight to be run in the computer (an IBM 360 that had less power than my Blackberry). If you missed typing so much as a period or space in any line, the program would not run and you would only get a message that told you what kind of error in which line stopped it from running. You could fix it and then it would find the next error later in your program. It was almost trial-and-error and took you a week or more to develop and run a simple program. You did not get credit until your program ran successfully and you had a printout to prove it.

Great stories in Wonders Hall. Bubba and Cody Smith who were huge football stars under Duffy Daugherty at MSU. Both lived in Wonders in the ’60s before I arrived. Best story was how Bubba used to park his Caddy in the driveway of the fire station in front of Wonders because it was the closest place to his dorm room. When it was there the fire trucks had to go around it on to the lawn to respond to calls.

The “streaking” phenomenon. Kids ran naked through large classrooms, dorms, and outside anywhere on campus.
Robert W. Zuhl, PE (BS 1974, MS 1976)

There are a couple things among many that I’ll never forget that occurred in relationship to the small building along Kalamazoo Street that was above the interceptor that goes to the EL WWTP.

We had a project SE8?? lab that involved pumping raw sewage out of the interceptor and running a pilot WWTP. Some woman (girl at the time) who was never in any of my undergrad class that I knew was shocked at the vigor at which Charlie Bristol was enjoying his work. She said something to the effect “you guys really work with that stuff.” Charlie's comment had something to do with floater and sinkers.

I remember the creative extra-credit project (of a certain Prof.) in the same building that involved a Saturday morning with Berlow sorting through, classifying, and weighing solid waste that came from married housing. Seemed like too many diapers.

Daniel J. Grochowski, PE, PS (BS 1976)

Prof. Leo V. Nothstine was my academic adviser. He was a very positive and encouraging person, which I needed greatly since I was not the world's best student. (My wife says I must have gone to MSU on the "party" plan.) He was very gracious and helpful being a reference for my first job as an engineer. The only engineering student I remember becoming a friend was Ernie Ray who I lost contact with after leaving MSU.

I loved all the seasons at MSU, winter and spring being the favorites and most memorable. Freshman year I think was the coldest ever when it got down near –30°F. My roommate’s car would not start and AAA had a two-week backlog to jump start it. I do remember skating occasionally on the frozen Red Cedar River. Usually it would get covered with snow which would not be conducive to skating but occasionally conditions would be just right and it was magical. There were a lot fewer bicycles to have to dodge during winter. Spring time was usually still cool but a few of us brave souls would start working on our suntans early on the lawn south of Fee Hall by the railroad tracks. (I think there are tennis courts there now).

Tim Sullivan, PE (BS 1977)

I remember trying to figure stuff out in the library with the others. I also remember walking to a midterm, dropping my slide rule, breaking the slide hair. I didn’t think anything of it, until my first calculation, and then I panicked.

I wish I had taken another hydraulics class. I had an alternative energy course in 1976 that was pretty cool. I wish I’d had an engineering summer job, or an internship.

I routinely see many 1977 Spartan CEs: Curt Christeson, Jed Hubbell, Mike Waring, Greg Tupancy, Steve Kalinowski, Ed Cote, and Mark Kowalewski.

Mark M. Bishop, PE, BCEE (MS 1980)

I had a great educational experience at MSU and I had the ability to compare UM and MSU since I went to both. They were very different in the approach.

Michigan was “let the strong survive” . . . MSU had much more of a teamwork atmosphere among the students and I think it made for a better learning environment for me. Michigan was very competitive since many were off to professional schools and wanted the best grades versus their peers . . . at least it seemed that way. The MSU profs were very good and committed to helping students learn and excel. MSU students helped each other achieve.

OK—some things I remember. It’s been a while . . .

- The ice cream at the dairy store—man, it was good
- Standard wardrobe = jeans and flannel shirt in winter
- Riding a bicycle in freezing weather with my down parka to save gas money; I was sometimes the only bike in the rack
- Seems more females were entering engineering at that time... before, there were few
- The Peanut Barrel for a few beers and peanuts in the shell on Friday afternoon
- An Environmental Law course that intrigued me and I took two courses in it
- The Union had a really good bakery that hit the spot on those cold winter mornings
- The outdoor pool in the summer was a great way to unwind after a morning in the lab
- There were some paddle tennis courts that were constructed and we had a good time playing paddle tennis in the evening
- Basketball at the IM kept us in shape—there was a pickup game going
- Football games and tailgating was a blast
- A great group of students that I still see some of in professional circles like AWWA or working for our competition. Many have achieved great success in no small part to the excellent engineering education received at MSU.

Patrick Cook, PE (BS 1987)

It’s been over 20 years since I attended MSU, but I still remember many of the professors, classes, students, and activities during my time on campus.

At the time, the university schedule was on terms and we did not usually start fall classes until after Labor Day. However, classes for the spring term did not get out until June. The civil engineering department did have environmental courses, but did not offer a separate environmental engineering major.

I wanted to be a “structural engineer” so I took a lot of the structural classes (steel design, concrete design, etc.) along with a lot of the transportation classes. Of course when I graduated I got a job in the drinking water/wastewater field and have been employed with the same company for over 22 years. I went back to MSU a year or so after I graduated and took CE 483 which was taught by Dr. Davis.

Several things I do not miss:

- Long walks across campus in the sub-zero temps of January and February
- Spending what seemed liked my entire free time in the engineering library studying
- Attending an 8 AM class after spending too much time the previous night in some watering hole
- Thermodynamics class—this was the one class that I was lost from on the first day of class and never recovered
- Trying to find an open computer in one of the computer rooms

Some things I miss:

- Long walks across campus on a sunny, fall day
- Enthusiastic and well prepared profs who really seemed to enjoy what they were doing and really cared for the students; Davis, McKelvey, and Harichandran come to mind
- Attending football games on Saturday afternoons
- Many of the other engineering students that I had classes with, completed projects with, and spent many, many hours studying alongside
- Making concrete in the concrete lab and then trying to destroy it
- The joy of finals week getting over and knowing that somehow I survived it

Fritz J. Klingler, PE (BS 1987)

A number of us in the CEE classes of 86/87 (Bruce Wilberding, Noel Hargrave-Thomas,
MICHIGAN STATE UNIVERSITY COLLEGE OF ENGINEERING

REMINISCENCES

Scott Gardner, John Starcevich, Anthony Dionise, and others) used to meet the night before each problem set was due, divide up the problems, pass around our answers, complete the entire assignment in an hour or so, then share a few beers or go to the bar. We rarely got any wrong, because we would critique each other, and someone would always catch a mistake. But one guy (I’ll call him “Bob”) would always show up an hour or more late (just before bar-time), and madly copy all the problems without looking too closely. One day, I received my problem set back, with a note from Dr. Wolff: “Next time you let ‘Bob’ copy your homework, make sure he at least labels his graphs after he traces them.” After that, we were known as “Team Xerox.”

Julie Ann Townsend, PE (BS 1991; MS 1995)

I was post-punchcard era, but not by much. I remember hearing lots of stories and being glad I had missed that experience.

There were many computer labs on campus and in the Engineering Building when I was at MSU (1986 to 1995). Almost no one had a computer of their own back at their dorm or apartment. I remember lots of hours in the computer labs and waiting in line to get to use a computer. The computer lines got shorter, as I neared graduation with my BS in 1991, as there were more and more computer labs available.

I also remember “the pit” to register for classes during my undergraduate years. I never had very long lines as engineering classes were not super popular university-wide. While completing my master’s degree, MSU went to computer registration. It was hard to trust the computer for registration but I always got the classes I wanted.

I was a worker and rider on the 1991 Concrete Toboggan team. The Canadian schools challenged us to build and race a concrete toboggan after our 1990 success with the canoe. I believe this was the only year the concrete toboggan was done.

I really enjoyed my days at MSU. The courses were challenging and proved to be very useful in my professional life. I really appreciated the civil engineering professors being personable and approachable. It made a very large campus very human.

The concrete canoe, steel bridge, and even the concrete toboggan taught many valuable skills in thinking through problems and teamwork. These projects were always a lot of fun and it was not ‘til years later that I realized how valuable they were and the skills they taught. They simulated real-life engineering situations.

I miss the general MSU college atmosphere, but I enjoy “having money” and not being always broke like I was in college.

Survey, drafting skills, and engineering economics are very important skills in the real world. I strongly recommend keeping them as required classes. I also appreciate that the civil engineering program teaches theory, not computer programs. Students need to come to the work place understanding theory and how to think. The place of work can always send an employee to training for a specific program. Thanks for doing a great job!

Nathan Safran (BS 1998)

I used a calculator and Excel—yes we had computers. In fact I had a class that used CAD, a highway design class with Maleck. Ironically I had to learn CAD via MSU’s interior design program since the CE department didn’t offer a CAD course at the time. I did take an engineering drafting class that was literally drawing shapes on paper.

My favorite lab was our surveying class since we got to go outside when the weather was decent. On one occasion everyone on my team forgot to bring our calculators with us. We didn’t realize this until we were outside.
and needed to make some field adjustments to our measurements. When I suggested that we just do the calcs on paper (long division) one of the girls on my team got this terrified look on her face and claimed that she couldn’t remember how to do long division. I was stunned. She later dropped the class and switched majors.

Really what I remember most was hanging out in the library at the Engineering Building. I knew that when I had a homework problem that I couldn’t solve, or needed help preparing for an exam, I could find a fellow student up at the library that would be willing to help out. I think that’s what I liked best about being a CE student at MSU; the friendly and helpful atmosphere enjoyed by the students.

Luke Smith, PE (BS 1998)

I really enjoyed my time at MSU. For the most part the professors were very good and I believe truly tried to prepare us for future work. There was a lot of camaraderie between all the students. We all had so many classes and projects together that we would all just hang out in the Engineering Building. That way you could always find someone who could help you with something, or you could work on a project together.

I found the curriculum challenging and for the last two years of school the vast majority of it was interesting.

I highly recommend doing an internship or co-op of some sort. It was a great experience. I think it helped me get a job and has helped me later in my career.

Therese (Sutphen) Kline, PE (BS 2001)

My first class at MSU was Introduction to Environmental Engineering with Dr. Davis at 8:00 AM sharp. The room was huge—and full of many students. How was I going to learn in this atmosphere? From the first moments I was hooked because Dr. Davis was human! And funny! He interacted with the room! I don’t know how he did it, but he did!

The Transportation Lab was open during these years, and, rather than the library, it was the place to gather and work on group projects. Dr. Baladi was in and out of the lab at all times of the day and night—as were Dr. Davis and Dr. Hatfield. I recall taking crock pots of chili and goulash to share for those long work sessions with fellow students. We all seemed to live on popcorn and Mountain Dew caffeine highs.

Heather Marie Halbeisen-Stevens, EIT (BS 2004; MS Dec 2009 hopefully!)

Ah yes, how would one survive without study buddies? Tim Greenleaf and I had almost all of our classes together our last semester. I had 17 credits that semester, so I was constantly studying with Tim. Also remember studying w/Gareth Campbell, Scott Peruski, Derek Jelinek, Sam Baushke in various classes. Mostly guys b/c there weren’t a ton of females in my classes. I can remember a lot more faces but not names, unfortunately.

I was only at MSU for two years because I transferred from Central Michigan University. There was rumor going around during my time at MSU that they were going to build a bridge under the railroad tracks on Farm Lane. I hoped and prayed they would do this sooner rather than later, but it didn’t happen until I was far out of college. I can’t count how many classes I was late for because of all the trains that run through campus. As a commuter (parking in the commuter lot), there was no way around them. . . . I was at the mercy of trains almost every day.

I absolutely loved the campus and the serene setting we as students got to enjoy (and sometimes take for granted) each and every day. There was always a small park or open area by the Red Cedar to lie down and study on in the spring and summer. Although
winter wasn’t quite as comfortable, it was nonetheless beautiful. The atmosphere for learning was amazing . . . the professors, students, and all the interactions in the classroom and out. It was just a great feeling of bettering yourself and having dreams about making the world a better place. It was, and still is, a great feeling to be a part of such a huge and well-respected organization. I am so proud to be a Spartan.

Terry Stines (BS 2009)

Even though I transferred to MSU from Xavier University because I knew I wanted an engineering degree, I for some reason decided to study geology for a year until I realized I shouldn’t be afraid of the engineering curriculum. In fact, some of my civil engineering classes were easier, and a whole lot more enjoyable than calculus or any of the university required courses.

My favorite civil engineering course was probably CE 418, Foundation Engineering. It was challenging and interesting, but what makes it stand out in my head are the classmates I shared the course with. We were somehow able to make soil borings, well, not so “boring.” My favorite non–civil engineering course was, hands-down, Russian 101. I actually took this course in Volgograd, Russia, during my study abroad experience in the summer of 2007. Although we had to cram a regular fifteen-week semester into only three, being able to walk out of the classroom and speak to the locals (sort of) made my time in Russia much more memorable.

Now that I have started my career with Power Engineers, I have found that the classes I am putting to use the most are CE 305 (Structural Analysis), CE 418 (Foundation Engineering), and CE 495 (Senior Design). Just knowing the lingo from these classes, and being able to take real-world issues and projects and breaking them down and doing my part for the greater scope has been very valuable. I will lastly always remember being dubbed “minivan girl” in Dr. Lyles’s transportation planning course, and all of Dr. Baladi’s words of wisdom. My time spent at MSU was educating, exciting, and looking back now, much too short.

Adam Wolfsen (BS 2009)

As a civil engineering major, the thing that I remember most about MSU was all of the time spent in the trans-lab. There were times that I got to the Engineering Building at 7:00 in the morning for class, and didn’t leave to go home until midnight. The best part about being in the trans-lab was that you were never alone, no matter what time it was. There were always people you knew doing the same stuff that you were, so the work never seemed that bad.

I still remember my first year at MSU and remember thinking that it was going to be forever until I graduated, and now looking back at it, it went by faster than I would have liked. I made many good friends and had a lot of great experiences at MSU.
Kishore Balasubramanian (graduate teaching assistant), Terry Stines (BS ’09), and Adam Wolfsen (BS ’09) brushing up on the operation of the Total Electronic Station (TES), a dramatic contrast to early surveying equipment used in Rolla Carpenter’s time (see photos on pages 3 and 6).
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