This document provides the Strategic Plan 2015-2020 for the Department of Construction Management and Engineering (CM&E) at North Dakota State University (NDSU). The Plan was developed during Spring Semester 2014 by engaging all constituencies (students, faculty, staff, Industry Advisory Council members, alumni, and employers of graduates) via conversations, meetings, and e-mails. The developed Plan is not a set-in-stone document. It will be reviewed, modified, and updated annually by the CM&E Department with input from all constituencies. During the development process, the Department analyzed its strengths, weaknesses, opportunities, and threats. The Plan is divided into the following sections:

1. Vision
2. Mission
3. Values
4. Goals, Strategies, and Actions
5. Moving Forward

**Vision**

The CM&E Department is an educational unit dedicated to the aspirations of students.

**Mission**

The CM&E Department provides quality educational programs that prepare nationally competitive undergraduate and graduate students for successful careers in the construction engineering and management professions.

**Values**

The values of the CM&E Department are as follows:

1. Honor integrity
2. Respect diversity, individual rights, academic responsibility, and freedom
3. Believe in inclusion, transparency, and communication
4. Commit to an excellent educational environment
5. Advance knowledge through basic and applied research
6. Serve communities, organizations, and societies

**Goals, Strategies, and Actions**

The Strategic Plan consists of five goals that articulate how the CM&E Department achieves its mission. These goals set the Department’s future direction and establish priorities to guide resource allocation. To make sure that we will stay on course, a number of strategies have been developed to demonstrate how to accomplish each goal. In addition, we refine each strategy into a series of specific action items that can be measured over a period of time. These five goals are:
1. Strengthen undergraduate programs
2. Increase graduate degree production
3. Enhance research to benefit student learning and the construction industry
4. Strengthen ties with the construction industry
5. Sustain the growth by expanding education infrastructure and resources

The following paragraphs describe the strategies and action items to accomplish these goals.

**Goal No. 1: Strengthen Undergraduate Programs**

Since the creation of the first undergraduate construction program in 1969, the CM&E Department has provided good educational experiences to thousands of students. To meet the demand from the construction industry and competition from other construction programs around the country, it is time to turn a good education into a great one. The strategies that are utilized to strengthen undergraduate programs are outlined as follows along with actions to achieve them.

1. Enhance the success of construction students along their paths from recruitment to graduation.

   **Action 1:** The CM&E Department will participate in every recruiting activity organized by the College of Engineering and the University. In addition, the Department will continue supporting faculty members to conduct outreach to K-12 and provide service to the Northern Plains BEST robotics competition.

   **Action 2:** The CM&E Department will strengthen the relationship between students and their academic advisor. We believe that a strong relationship between them will ultimately improve retention and increase graduation rate. The benchmark to success is that the six year graduation rate reaches 70% compared to the current rate of 50% by 2020.

2. Enrich construction students’ educational experiences through study abroad and research.

   **Action 1:** The CM&E Department recently established a study abroad summer program, GO GREEN, in Germany. The Department is also working on a study abroad program in China. By 2020, we strive to achieve that 25% of our undergraduate students have study abroad experience by the time of their graduation.

   **Action 2:** The CM&E Department will engage undergraduate students in research by providing paid research assistant positions. By 2020, at least 10% of graduates will gain some research experiences during their time at NDSU.

3. Provide more learning opportunities for undergraduate students by establishing the specialty area of built environment system.

   **Action 1:** Recognizing the job opportunities in the building construction sector, the CM&E Department will establish a specialty area, which is the built environment
system. The Department will hire several faculty members in this area with the first hire in 2014. In addition, several undergraduate level courses will be developed in this area and ready to be offered in 2015.

**Action 2:** The Department will support the establishment of student chapters in the specialty construction areas. These student organizations will include, but are not limited to, the student chapters of the National Electrical Contractors Association (NECA), Mechanical Contractors Association of America (MCAA), and the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).

**Goal No. 2: Increase graduate degree production**

The CM&E Department has a very small on-campus enrollment of graduate students. As of spring 2014, there are a total of 35 students enrolled in the CM&E master programs: 28 in the online Master of Construction Management (MCM) program and seven in the on-campus Master of Science in Construction Management (MS in CM) program. In addition, there are four Ph.D. students under the supervision of CM&E faculty members. These Ph.D. students are enrolled in the Department of Civil and Environmental Engineering. In the fiscal year 2012-2013, five students graduated with the MS in CM degree, eight graduated with the MCM degree, and no one graduated with the Ph.D. degree. The graduate programs prepare future thinkers, researchers, and educators, which are important for the sustainability of the construction education in the nation. To increase graduate degree production, three strategies are outlined as follows along with action items.

1. **Establish a Ph.D. in Construction Engineering and Management program in the CM&E Department.**

   **Action 1:** The Department will conduct a study on the need of Ph.D. students in construction engineering and management in the fiscal year 2014-2015.

   **Action 2:** The CM&E Department will start the process of establishing the Ph.D. program in the fiscal year 2015-2016 if the result of the above study is positive.

2. **Increase financial support and course offering for graduate students.**

   **Action 1:** The CM&E Department will increase external and internal funding opportunities for graduate students. Specifically, the Department will create research assistant opportunities for graduate students in the summer.

   **Action 2:** The CM&E Department will increase the on-campus graduate level course offering from two courses per semester to three courses per semester by the beginning of fiscal year 2015-2016. With this increase, an on-campus master student will be able to complete the construction related course work within two semesters, and a Ph.D. student will be able to finish the construction related course work within three semesters.

3. **Recruit high-quality applicants.**
Action 1: The CM&E Department will actively recruit high-quality applicants, including undergraduates, within the construction programs; students from underrepresented groups; and international students. By 2020, the target number of master students and Ph.D. students will be 40 and 10, respectively.

Action 2: The CM&E Department will establish the standards for graduate degree milestones, time to degree, outcomes, and placement and use the information to better mentor graduate students to become professionals and scholars.

Goal No. 3: Enhance research to benefit student learning and the construction industry

The CM&E Department will focus its research efforts to solve pressing issues in the construction industry and the sustainable development of economics in North Dakota, nearby states, and the nation along with providing benefits for student learning. The research themes include, but are not limited to, sustainable infrastructure, green building, and construction engineering and management education. We encourage multidisciplinary collaborations to push the boundaries of knowledge in the construction industry. In addition, we will develop accountability tools to measure and monitor research activity of faculty members. These tools will support the recommendations of tenure and promotion review and differential workload allocation. The strategies to achieve this goal are outlined as follows along with actions.

1. Increase research funding

Action 1: The Department encourages faculty members to pursue research funding opportunities at all levels. Starting in 2015, the Department will establish a special travel fund for faculty members to visit funding agencies. The initial budget of the fund will be set up at $2,500 per year and gradually increased to $5,000 per year. The department chair will award the travel fund based on the merit of applications from faculty members. By the end of 2020, each faculty member will be expected to prepare at least three research proposals per year.

Action 2: The Department supports innovative new research ideas through a variety of mechanisms including seed funding, faculty release time, and grant-writing assistance. Priority of these resource allocations will be given to the initiatives that require multidisciplinary collaborations. By the end of 2020, the annual research expenditure is targeted at $50,000 per faculty member.

2. Increase peer-reviewed journal publication

Action 1: The Department encourages faculty members to timely and widely disseminate findings of their research projects. By the end of 2020, each faculty member will be expected to publish two peer-reviewed journal papers per year.

Action 2: To measure the quality of publications and assure continuous improvement, the Department will utilize scholarly citation data to determine the impact of faculty scholarly accomplishments.
**Goal No. 4: Strengthen ties with the construction industry**

The CM&E Department has received strong support from the construction industry for many years. The Industry Advisory Council (IAC), which consists of alumni, employers, and industry professionals, meets twice a year to discuss a wide range of topics on construction degree programs. Members of IAC also review syllabi, program objectives and outcomes, and conduct teaching evaluations and senior student exit interviews. The construction industry contributes to the Department in monetary ways such as scholarships, and non-monetary ways such as guest lectures and site visits. However, to continue improving the construction programs at NDSU, we have to elevate the ties with the construction industry to the next level. The strategies to achieve this goal are outlined as follows along with actions.

1. Enhance the faculty’s understanding of construction industry practices
   
   **Action 1:** Encourage faculty members to achieve and maintain professional licensure including the Professional Engineer (PE) license and the Certified Professional Constructor (CPC) designation. By 2020, each faculty member will achieve either the PE license or the CPC designation.

   **Action 2:** Encourage faculty members who have no significant industry experience (5 years or more) to seek summer jobs in the construction industry.

   **Action 3:** Actively recruit faculty candidates with significant industry experience and the professional licensure.

2. Improve students’ readiness for working in the construction industry

   **Action 1:** Working with the construction industry and the NDSU Career Center, the Department will help students to gain real world construction experience through summer internships. By 2020, 100% of our undergraduate students will have summer internship experience by the time of their graduation.

   **Action 2:** Incorporate more industry-related activities in the classrooms such as lab experiments, site visits, and guest lectures.

3. Increase the visibility of industry support

   **Action 1:** Establish at least one industry sponsored teaching/research lab in the CM&E Department by the end of 2020.

   **Action 2:** Establish at least one industry endowed professorship in the CM&E Department by the end of 2020.

**Goal No. 5: Sustain growth by expanding education infrastructure and resources**

In the coming years, the CM&E Department must continue growing to meet the demands from the construction industry. The strategies for sustaining growth are as follows along with actions.
1. Invest in people

**Action 1:** By the end of 2020, the CM&E Department needs to hire four additional faculty members to sustain its growth. Most new faculty members will be in the area of built environment system.

**Action 2:** By the end of 2020, the undergraduate student enrollment will increase from 200 to 250 and graduate student enrollment will increase from 35 to 50.

2. Beef up education infrastructure

**Action 1:** The Department is seeking internal and external support to establish the Built Environment System Lab by the end of 2020. This lab will provide state-of-the-art facilities for faculty and students to conduct research on building mechanical systems, building electrical systems, building energy efficiency, and building facility management.

**Action 2:** The CM&E Department will work with the Dean of the College of Engineering to secure the necessary funding to renovate the Architecture and Landscaping Architecture Building, home of the CM&E Department, by 2020. In addition, the Department will secure additional spaces for newly hired faculty members, graduate students, and teaching and research labs.

**Moving Forward**

After more than 40 years of development, the CM&E Department is at its turning point. It has the opportunity to become one of the leading construction educational departments in the nation. To realize this opportunity, we must recruit, value, develop, and retain an excellent and diverse faculty and staff; we must expand the educational infrastructure to meet the increasing demands of teaching, learning, and research; and we must engage all constituencies of the construction programs.

This Strategic Plan is a guide used to drive a transformation of the CM&E Department. Through it, we will rise above our past achievements and lead the way to a prosperous future. The strategic plan is also an announcement to our constituencies that we have raised the expectations we have for ourselves. Working with other stakeholders, the Department will enact the strategies and action items described earlier in pursuit of the five goals. Faculty and staff will work closely with university leaders to discuss ideas and actions, monitor progress, and communicate regularly with all constituencies.