1. The Construction Management faculty met for an annual review of the CM degree program on August 12, 2019.

2. Faculty present:
   a. Dr. Albert Bleakley, Program Chair Construction Management
   b. Dr. Troy Nguyen, Associate Professor, Construction Management
   c. Dr. Junyong Ahn, Assistant Professor, Construction Management

3. Old business:
   a. none

4. New business
   a. Program Objectives. Objectives remain unchanged. Three to five years after graduation, we expect our graduates to:
      i. Demonstrate exemplary technical knowledge and skills while achieving success as a practicing constructor and leader, and display the highest standards of ethical conduct. Assessment: This objective is assessed through feedback from employers and graduates. All known graduates are successfully practicing constructors and leaders displaying ethical conduct. Feedback from employers including Turner Construction, W+J Construction, Consolidated General Contractors, MH Williams Construction, Construction Consulting Company, Ivey’s Construction, Coastal Mechanical, and Building Management Systems, Inc. has uniformly confirmed accomplishment of this objective.
      ii. Value the concept of life-long leaning and continue to grow intellectually while keeping informed of new concepts and developments in the construction process. Assessment: This objective is difficult to directly assess. Based on feedback from graduates and employers discussed under objective 1, graduates are actively learning and incorporating new concepts and developments in the construction field.
      iii. Advance the construction management profession by being actively involved in professional associations and societies, serving in professional and community volunteer positions, and acting as a role model for the future generation of construction managers. Assessment: Graduates are
achieving this objective by actively participating in the local Associated Builders and Contractors chapter, by providing field trip and guest speaker support to the FIT CM program, mentoring the FIT ABC chapter student competition team, and by participating in FIT Career Fairs to recruit intern and full-time employees.

b. Program Goals

i. Achieve American Council for Construction Education accreditation by 2018. Assessment: This goal was met. The initial accreditation visit was held September 29th – October 2nd. 5-year accreditation was granted in February 2019. This goal will be changed to correct weaknesses and concerns noted in the ACCE Visiting Team Report by November 2019.

ii. Expand enrolment to 100 undergraduate students by 2024. Assessment: Freshman applications are down from last year; transfer applications are up. Dr. Bleakley has individually emailed approximately 130 prospective students for fall 2019. The CM webpage is under revision to help publicize the program.

iii. Start a Construction Management master’s degree program by 2020 – three potential new dual-numbered graduate courses have been developed, Assessment: No further action will be taken on this goal until the impacts of pending reorganization within the College of Engineering are clear.

iv. Encourage students to take the American Institute of Constructor’s exam. Assessment: no progress has been made yet on this goal.

v. Place over 90% of students in construction related jobs within 9 months of graduation. Assessment: the improving national and local job market has resulted in nearly full employment for CM graduates. There is only one 2016/2017 graduate who is not employed in the industry. 2017/2018 graduates are all employed in the industry or planning to attend graduate school except for one international student whose status is unknown (returned to China).

vi. Grow the Associated Builders and Contractors (ABC) student chapter membership to at least 50 students. Assessment: membership is
approximately 40 students including primarily CM and Civil Engineering majors. The ABC club participates in the prospective student Discovery Days to attract new members.

vii. Participation in scholarly activities by each faculty members. Assessment: faculty members are participating in scholarly activities. These were presented at the April CIAB meeting. CIAB firms are participating in one project – energy efficient renovation of the campus alumni house which broke ground in the spring of 2019.

viii. Enhance the effectiveness of the program faculty by encouraging and supporting professional development in technical areas as well as teaching. Assessment: This goal is being met. Dr. Bleakley is participating in ACCE. Dr. Nguyen and Dr. Ahn both attend at least one professional conference per year.

ix. Earn a national award of excellence for the program at least once every five years. Assessment: 2016-2017 was the first year to participate in the ABC student competition. Our student team competed in the ABC competition in Long Beach in the spring starting in 2018. So far we have not won any national awards. Local industry advisors are actively assisting and sponsoring the ABC student competition team.

c. Faculty continued collecting assessment data for evaluation of the 20 ACCE student learning outcomes in accordance with the Quality Improvement Plan. Indirect assessment data collection was started in 2015/16. Direct assessment data collection began in AY 2016/17. Data collection and assessment is performed for all 20 outcomes each year. Individual outcomes are discussed below.

d. The indirect measure is a survey completed by students at the end of the senior design (capstone) course. The most recent indirect assessments were collected in May 2019 as part of the senior project course. The class of 2019's average ratings were higher on 16/20 outcomes compared with 2018 results with an average of 8.6/10. Most improved categories were 1 Written Communications, 10 Electronic Technology, 11 Surveying, 15 QA/QC, 17 Legal, and 18 Sustainability. In 2018 the CM program published an on-line poll for alumni to rate themselves on the 20
ACCE SLO’s and to solicit suggestions for additions/improvements to the curriculum. A link to this survey was sent by email to all CM graduates. The survey response rate was approximately 20%. Alumni rated themselves over 8/10 on all outcomes except for using surveying for site layout. Dr. Ahn, a CM faculty member, will be taking over the surveying course in spring 2020 due to Dr. Heck’s retirement. The course has been changed from a single 3-credit combined lecture/lab course to separate 3-credit lecture plus a 1-credit lab to allow more hands-on practice. The University is adopting a new internet opinion survey platform which will be implemented in the fall of 2019. This platform will be used to develop the next alumni survey.

e. Direct outcomes measures: A uniform target was adopted for the first three-year round of metric collection as the program implemented outcomes based assessment. Generally students met the initial target of 70% of students achieving 70% on the metrics. The metrics were generally found to be adequate for assessing the outcomes however several modifications were proposed for future assessment rounds:

i. SLO 1 – Create Written Communications. The metric for this outcome is the CON 4092 Senior Project written submission. Each student prepares a part of the team project report. Each student is assessed on their section. Metric data was collected in the Spring 2017, Spring 2018, and Spring 2019 terms. The target was met with all students achieving at least 70%.

ii. SLO 2 – Create Oral Presentations. The metric for this outcome is the CON 4092 Senior Project presentation at the annual Harris-Grumman project showcase. Each student prepares a project display and presents part of a team presentation to a panel of industry judges, faculty, and the public. Each student is assessed on their presentation. Metric data was first collected in the Spring 2017 term. A single combined rubric was used to assess both the written (SLO 1) and oral (SLO 2) outcomes. Starting with the Spring 2018 round of assessment a more detailed rubric was used specifically for the oral part of the presentation. For Spring 2019 the target was met with all students achieving at least 70% on this metric.
iii. SLO 3 – Create Safety Plan. This requirement was initially part of a group term project in CON 4000, Construction Controls, but was changed to be assessed as an individual project in CON 4005, Construction Safety. Metric data was collected for Fall 2016, Fall 2017, and Fall 2018. The target was met with all students achieving over 70% for all seven assignment criteria.

iv. SLO 4 – Create Cost Estimates. Groups of students receive a complete set of plans for a light commercial building and create a complete cost estimate. Metric data was collected on the group term project for Fall 2016. All groups met the target overall but there were two sub areas that averaged below 70%. It was not possible to assess each individual student. The metric was changed for Fall 2017 to assign each group member specific CSI sections so each student receives an individual grade for their section. The target was met but one sub area is slightly below 70%. The assignment was further refined in Fall 2018 to individually assess additional aspects such as organization and oral presentation. The target was met with all students achieving over 70% for all eight assignment criteria.

v. SLO 5 – Create Schedules. The metric for this outcome is an individual term project to create a construction schedule for a $500,000 project which includes demolition, renovation, and new construction. Students receive a complete set of plans and a total contract cost. They create a cost-loaded master CPM and a variety of reports. Metric data was collected in the Fall 2016, Fall 2017, and Fall 2018 terms. The overall target was met however most students had tasks missing from their activity list. Three students failed to submit the project which skewed the averages on all 13 assignment criteria. The course syllabus will be changed for 2019 to make failure to submit the term project grounds for failing the course.

vi. SLO 6 – Analyze Decisions Based on Ethics. Students are assigned individual ethics case studies in CVE 4074, Leading Construction. Students submit a written analysis based on CMAA code of ethics. The
metric was assessed in Spring 2017, Spring 2018 and Spring 2019. Assessment: The target was met. Students averaged over 70% on 9/10 assignment criteria, however the average was only 68% for Presentation, grammar and usage with 6/13 students below 70%. Additional emphasis will be placed on this topic.

vii. SLO 7 – Analyze Construction Documents. This outcome is assessed with a series of exam questions which require students to read and analyze construction drawings. The metric was assessed in the Fall 2016, Fall 2017, Fall 2018, and Fall terms. Analysis: The target was met with 95% (18/19) of students achieving at least 70% on the evaluation criteria. One of the seven criteria, Identify drawing objects and assemblies, had an average slightly below 70% (69.5%). This area will be emphasized in lectures and HW assignments. The metric currently only assesses analyzing plans. The instructor is reviewing possible modification to add specification analysis in addition to drawing analysis.

viii. SLO 8 – Analyze Methods, Materials, Equipment. Students analyze construction equipment applications for multiple scenarios on the CON 4006 final exam to determine production rate and cost. The metric was assessed in Spring 2017, Spring 2018 and Spring 2019. In the Spring 2018 term the target was met with 8/10 students achieving over 70%. All sub areas averaged over 70%. In the Spring 2019 term the target was not met with 4/9 students achieving over 70%. Only 4/10 criteria averaged over 70%. This year the exam was at the end of exam week which may have contributed to poor performance. The instructor will incorporate an additional review session next year and determine whether there is a trend or if this was an anomaly.

ix. SLO 9 – Apply CM Skills on a Multi-Disciplinary Team. The metric for this outcome is the CON 4092 Senior Project. Teams of 4 – 6 students create a written project proposal including scope, drawings, budget, schedule, quality plan and safety plan. Projects also include physical and computer models which are presented at the Harris-Grumman showcase.
Each student is responsible for a specific part of the written report and oral presentation. Each student is assessed on their section. Additionally, students complete peer evaluations to rate the contribution of each team member. Metric data was collected and assessed in the Spring 2017, Spring 2018, and Spring 2019 terms. The target was met with all students achieving at least 70% on this metric and having satisfactory peer ratings indicating active participation.

SLO 10 – Electronic technology. Metric data was collected based on the Construction Controls individual term project with includes using MS Project and MS Excel for scheduling, changes, and progress payments. Metric data was collected and assessed in the Fall 2016, Fall 2017 and Fall 2018 terms. The target was met with 77% (10/13) students achieving 70% or better overall. The overall target was met however most students had tasks missing from their activity list. Three students failed to submit the project which skewed the averages on all 13 assignment criteria. The course syllabus will be changed for 2019 to make failure to submit the term project grounds for failing the course.

SLO 11 – Apply Basic Surveying. This outcome is assessed with a series of exam questions in the CVE Construction Measurements course. Metric data was collected in the Spring 2017, Spring 2018, and Spring 2019 terms. Assessment: The target was met in 2017 but not in 2018 or 2019. Students particularly had problems with vertical and horizontal batter board calculations his year. The instructor plans to emphasize this area when the course is next offered. Dr. Ahn, a CM faculty member, will be taking over this course in Spring 2020. He will determine whether it is feasible to implement a hands-on assessment as part of a laboratory develop a direct assessment metric to better assess student performance.

SLO 12 – Understand Project Delivery/Roles. This outcome is assessed with a series of exam questions in the CON 2001 Construction Methods course. Assessment: Metric data was collected in the Fall 2016, Fall 2018,
and Fall 2019 terms. The target was met with all students achieving over 70% overall on the four criteria.

xiii. SLO 13 – Understand Construction Risk Management. This outcome was initially assessed as part of the CON 4091 Senior Project report, in Fall 2016, however this was a group report so it was not possible to individually assess students. The metric was changed to a series of exam questions in the CVE 4074 Leading Construction Operations course. Data was collected and assessed in Spring 2017, Spring 2018 and Spring 2019. The target was not met in 2019. Only 67% (10/18) of students achieved at least 70% overall. One of the criteria, explaining builder’s risk insurance had a 44% average with only 8/18 students correctly identifying the elements of this insurance. The lectures on insurance will be expanded for the next iteration of the course.

xiv. SLO 14 – Understand Construction Accounting and Cost Control. This outcome was initially assessed as part of the CON 4092 Senior Project report in Spring 2017, however this was a group report so it was not possible to individually assess students. The metric was retained in CON 4092 but was changed to an exam based on accounting requirements in the Florida General Contractor’s exam. Metric data was collected and assessed in the Spring 2018 and Spring 2019 term. The target was not met with 62% (10/16) students achieving over 70%. Several questions had below 60% correct answers: external reports, journal entries, financial ratios, prevailing wages. Because students typically take their two accounting courses in their sophomore and junior years, additional review will be incorporated into CON 4092 prior to the exam.

xv. SLO 15 – Understand Construction Quality Assurance and Control. This outcome is assessed with a series of exam questions in the CON 2001 Construction Methods course. Metric data was collected in the Fall 2016, Fall 2017 and Fall 2018 terms. The target was not met in 2017 but was met in 2018 with 75% (12/16) achieving over 70% overall. Only 65% of students correctly differentiated between Quality Assurance and Quality
Control. Only 69% of students correctly identified three QC inspections applicable to a construction site. These areas will be emphasized in the lectures and homework assignments.

xvi. SLO 16 – Understand Construction Project Control. The metric for this outcome is a series of questions on seven different areas of Project Control on the final exam in CON 4000, Construction Controls. Metric data was collected and assessed in the Fall 2016, Fall 2018 and Fall 2019 terms. Assessment: The target was met with (10/13) students achieving over 70% overall. The average on all seven criteria was over 70%.

xvii. SLO 17 – Legal Implications. This outcome is assessed with a series of exam questions in the CON 2001 Construction Methods course. Metric data was collected in the Fall 2016, Fall 2017 and Fall 2018 terms. Assessment: the target was met in 2016, not met in 2017, and met in 2018. 80% (13/16) of students score over 70% overall. The average on all five criteria was over 70%. No corrective action is required.

xviii. SLO 18 – Sustainable construction. This outcome was originally assessed in a series of exam questions in CON 3002, Building Mechanical Systems. After analyzing the data it was determined that there is significantly more sustainability content in CON 4001, Building Electrical Systems. Assessment of this outcome was changed to CON 4001. This was a Weakness on the accreditation visit because the Visiting Team felt that the areas assessed were too narrowly focused in technical electrical problems. In Spring 2019 this assessment was moved back to CON 3002, Building Mechanical Systems as an individual HW assignment which more broadly addressed sustainability. The target was met with over 70% of students achieving over 70%, however the assignment will modified next year to cover additional sustainability topics.

xix. SLO 19 – Structural behavior. This outcome is assessed in the CON 3001, Building Structures, term design project. The project was changed from a group to an individual project to give each student broader exposure to the different areas of structural behavior and to individually assess each
student. Metric data was collected in the Spring 2017, Spring 2018 and Spring 2019 terms. Assessment: The target was met in 2017 and 2018 but not met in 2019. Only 45% (5/11) students achieved over 70% overall on the seven criteria. There is one recurring problem – most students fail to submit adequate hand-check calculations to verify their computer printouts. Hand-check calculations will be added to the Interim Progress Review (IPR) report due prior to the final submission. One student did not submit the term project which skews the average results for the seven criteria. The syllabus will be modified so that failure to submit the project will result in failing the course.

xx. SLO 20 – Mechanical and electrical systems. This outcome is assessed in two different courses, CON 3002, Building Mechanical Systems, and CON 4001, Building Electrical Systems. In both courses the assessment consists of a series of exam questions. Electrical assessment data was collected in the Fall 2016 and Fall 2017 terms and Mechanical and Piping data in the Spring 2017, Spring 2018 and Spring 2019 terms. Assessment: The target was met in all instances. All students (13/13) achieved at least 70% overall on the Electrical questions. The averages on all six sub criteria were over 70%, however Determining building loads, required supply power, and operational cost was marginal at 71% average score with only 7/12 students over 70%. This topic will receive additional emphasis in lectures and HW assignments. For the Mechanical and Piping components, 92% (12/13) students achieved at least 70% overall on the exam questions. Students achieved an average of over 70% on 6/7 criteria but only 67% on Identifying functions and characteristics of mechanical systems in buildings. This topic will receive additional emphasis during lectures and HW assignments.

f. Changes to course content, descriptions or credit hours.

i. OCN 2062, Environmental Geology – this is currently a required course. It is only offered once per year in the spring term and is frequently difficult to get into since in it a college-wide elective. The faculty discussed
modifying the CM curriculum to allow additional choices similar to the Civil Engineering curriculum. The Civil Engineering curriculum includes a Science Elective with more options including BIO 1010, BIO 1020, ENS 1001, OCN 1010, OCN 2407, OCN 2602 and ENS 3101.

ii. CVE 1001, Computer Applications – this course currently covers AutoCAD 2D. Dr. Nguyen is coordinating with Dr. Heck, the Civil Engineering course instructor, to include 3D and Civil 3D content in this course and possibly into CVE 1000, Intro to Civil Engineering and/or CVE 2080, Construction Measurements.

iii. COM 2223, Scientific and Technical Communication – this is currently the only course allowed for CM students to meet their third communications core requirement. This course is focused on scientific and technical publications, abstracts, proposals, etc. The faculty discussed giving students and option to take COM 2223, COM 2224, Business and Professional Writing, or COM 2270, Speech.

iv. CVE 2080 Construction Measurements (surveying). Dr. Ahn, CM faculty, will take over this course in Spring 2020 due to Dr. Heck’s retirement. The course will be split into a 3-credit lecture, CVE 2080, and a 1-credit lab, CVE 2081 to allow more field practice. Dr. Ahn will investigate including more site layout into the lecture and labs.