1. The Construction Management faculty met for an annual review of the CM degree program on August 10, 2022.
2. Faculty participating:
    a. Dr. Albert Bleakley, Program Chair Construction Management
    b. Dr. Troy Nguyen, Associate Professor, Construction Management
    c. Mr. Pedro Colom, Adjunct, Construction Management
3. Old business:
    a. none
4. New business
    a. Program Educational Outcomes (PEO). Outcomes 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, Certified General Contractors, MH Williams Construction, Construction Consultants and Designers, Inc (CCDI), DR Horton, Ivey's Construction, Coastal Mechanical, Conti Federal, 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. Several graduates have achieved General Contractor licenses or are in the process.
        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 Objectives: The Program has adopted the ACCE Student Learning Outcomes as its primary objectives for student outcomes. The Program has the following additional objectives:
    i. Maintain American Council for Construction Education accreditation by having a successful reaccreditation visit in the Spring of 2023. Assessment: This goal is in progress. All weaknesses noted in the ACCE Visiting Team Report have been corrected. The Concern about documentation has been addresses. The Concerns about the administrative workload of the Program Chair and faculty retention may remain concerns since one of the program's three faculty positions was eliminated in 2020. The three-year interim report was accepted by ACCE in December 2021.
    ii. Expand enrollment to 75 undergraduate students by 2024. CM enrollment has remained constant in the 40 to 50 range for the past five years. On the positive side, there was not a significant drop in enrollment during the 2020-2021 COVID pandemic. More than half of the CM students historically have been transfer students or change of major students. Freshman admissions have varied from three to eight over the past five years. Dr. Bleakley has individually emailed prospective students, however this has not had a significant impact on program enrollment. The CM website was updated in 2019 and is being refreshed in 2022 to help publicize the program.
    iii. Start a Construction Management master's degree program by 2020 – Five CM graduate courses were developed and approved by the Graduate Council in 2019 for inclusion in the University catalog starting with the

2020-2021 academic year. These courses primarily support the Civil Engineering and Engineering Management graduate programs. The Civil Engineering program offers both MS and Ph.D. degrees in the Construction Management/Engineering specialization. The CM faculty manages these programs which typically include five to ten Civil Engineering MS students per year. The Department also offers and MS in Engineering Management which the CM courses support. Applications in both Civil Engineering and Engineering Management increased dramatically from 30 to over 200 starting in 2022. No further action will be taken on the goal of establishing a Construction Management MS program unless the third CM faculty position is restored.

iv. 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. The Program worked with the Career Services Office to hold very successful Civil Engineering/Construction Management specific career fairs each term starting in the fall of 2021. There is only one 2021-2022 graduate who we have not confirmed is either employed in the industry or attending graduate school.

v. Grow the Associated Builders and Contractors (ABC) student chapter membership to at least 50 students. Assessment: the ABC student chapter was significantly impacted by the COVID pandemic. Students were not able to participate in the industry ABC chapter events and the annual golf fundraiser was cancelled. The NAWIC Block Kids competitions in which students served as judges were cancelled for the past two years. On-campus prospective student events were also cancelled. We anticipate that activities will be fully returned to normal by fall 2022 so the ABC club can rebuild.

vi. Participation in scholarly activities by faculty members as appropriate. Assessment: faculty members are participating in scholarly activities. These were presented at the April CIAB meeting. Several CIAB firms

participated in the energy efficient renovation of the campus alumni house which Dr. Nguyen was the PI for.

vii. 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, ABC, and HBCA activities. Dr. Nguyen is on the university Sustainability Council and active in multiple civic and governmental organizations.

viii. Participate in at least one regional or national student competition each year. Assessment: Students participated in the national ABC student competition from 2016 to 2019 but have not participated for the past several years due to the COVID pandemic. Local industry advisors are actively assisting and sponsoring the ABC student competition team which we plan to re-start in 2022-2023.

c. Program Objectives (ACCE SLO): Faculty continued collecting assessment data for evaluation of the 20 ACCE student learning outcomes in accordance with the Quality Improvement Plan. Data collection and assessment is performed for all 20 outcomes each year. The Program uses one direct and one indirect measure for each outcome. Individual outcomes are discussed below.

d. The indirect measure is an exit survey completed by students at the end of the senior design (capstone) course which is offered in both the fall and spring terms. The most recent indirect assessments were collected in December 2021 and April 2022. The ’21-’22 class average ratings were very similar to the previous year’s results with an average of 8.3/10. Highest categories were SLO 4 Create Cost Estimates (8.6), SLO 6 Analyze Ethical Decisions (8.8), and SLO 7 Analyze Construction Documents (8.6). 13 other SLO’s were rated over 8.0. The Program supplements this indirect assessment with an on-line poll in which alumni rate themselves on the 20 ACCE SLO’s, provide demographic data, and make suggestions for additions/improvements to the curriculum. In 2018 the survey response rate was approximately 20%. Alumni rated themselves over 8/10 on all outcomes except for using SLO 11, Apply surveying for site layout. 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. Although surveying is a Civil Engineering course, it has been taught by CM faculty since 2020. In the 2022 alumni survey alumni rated all SLOs over 8.0 including SLO 11 (8.2).

e. Direct outcomes measures: The Program adopted a uniform target or 70% of students achieving 70%. Generally students met the target from year to year. 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 Fall 2021 and Spring 2022 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 part of the presentation. Originally 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 implemented specifically for the oral part of the presentation. Metric data was collected in the Fall 2021 and Spring 2022 terms. 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 in the Fall 2022 term. 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. Metric data was collected in the Summer 2021 and Fall 2021 terms. 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 GANTT chart and a variety of reports. In the previous year the target was not met because three students failed to submit the project which skewed the averages on all 13 assignment criteria. The instructor implemented an interim progress report which improved this issue. Metric data was collected in the Summer 2021 and Fall 2021 terms. The target was met with all students achieving over 70% for all eight assignment criteria.

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. Metric data was collected in the Spring 2022 term. Assessment: The target was met with all students achieving over 70% for all assessment criteria.

vii. SLO 7 – Analyze Construction Documents. This outcome was previously assessed with a series of exam questions which require students to read and analyze construction drawings. The program faculty determined that

most of the questions were at the Understand rather and Analyze level. Starting in Fall 202 this assessment was changed to a homework assignment in CON 2001 to better assess at an Analyze level. Students access web-based construction documents to create a change order proposal including a revised schedule, cost estimate, analysis of project impacts and a letter to the owner. Metric data was collected in the Fall 2021 term. Analysis: The target was met with 79% (11/14) of students achieving at least 70% on the evaluation criteria. Students did well analyzing the schedule and cost impacts but did not do as well identifying potential indirect impacts of moving a wall on electrical and HVAC plans. These areas will be emphasized in lectures.

viii. SLO 8 – Analyze Methods, Materials, Equipment. Students analyze construction equipment applications for multiple scenarios on the CON 4006 final exam to analyze equipment selection, and production rate and cost for a variety of scenarios. The metric was assessed in Spring 2022. Assessment: The target was met with 8/10 students achieving over 70%.

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. Civil engineering team members serve as structural, geotechnical, transportation, water/wastewater, or hydrology designers. Construction management team members create CM portions of the project such as 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 in the Fall 2021 and Spring 2022 terms. Assessment: The target was met with all students achieving at least 70% on this metric and having satisfactory peer ratings indicating active participation.

x. 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. This class historically has been conducted in a regular classroom with two computer labs in MS Project. Based on student feedback in the course evaluations the computer lab sessions were increased to four starting in 2018. In 2021 the class was moved from a regular classroom to a computer lab to allow for additional hands-on experience with MS Project and Excel. Metric data was collected and assessed in the Summer 2021 and Fall 2021 terms. Assessment: The target was met with 85% (11/13) students achieving 70% or better overall. The overall target was met however most students had tasks missing from their activity list and many students omitted estimates for one or more task. These areas will be emphasized in course lectures.

xi. SLO 11 – Apply Basic Surveying. This outcome is assessed with a series of exam questions in the CVE 2080 Construction Measurements course. Metric data was collected in the Spring 2022. Assessment: The target was met 75% (9/12) students achieved at least 70% on the exam. Students particularly had problems with measuring distances and angles. The instructor plans to emphasize this area when the course is next offered. Mr. Colom, a new adjunct faculty member who is a licensed surveyor will be taking over this course in Spring 2023. 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.

xii. SLO 12 – Understand Project Delivery/Roles. This outcome is assessed with a series of exam questions in the CON 2001 Construction Methods course. Metric data was collected in the Fall 2021 term. Assessment: The target was met with 93% (13/14) students achieving over 70% overall on the series of exam questions. The average for each of the five exam questions was over 80%. No action required.

xiii. SLO 13 – Understand Construction Risk Management. This outcome was initially assessed as part of the CON 4091 Senior Project report, 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 Spring 2022 term. Assessment: The target was met; 83% (10/12) students achieved at least 70% overall. Students did not perform well on several of the individual questions. Explaining builder's risk insurance had a 58% average with only 7/12 students correctly identifying the elements of this insurance. Identifying risk mitigation and risk acceptance were also below 70%. The lectures on insurance and risk response 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, 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 Fall 2021 and Spring 2022 terms. Assessment: The target was not met with 67% (10/15) students achieving over 70%. In the previous three years between 70% and 80% of students met the target. Several questions had below 60% correct answers: external reports, journal entries, and cost-loaded schedules. 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 2021 terms Assessment: The target was met with 79% (11/14) of students achieving over 70% overall. In previous years only 65% of students correctly differentiated between Quality Assurance and Quality Control

and only 69% of students correctly identified three QC inspections applicable to a construction site. These areas were emphasized in the lectures and homework assignments. This year the average on all of the questions was over 75% indicating that there were no particular problem areas.

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 Summer 2021 and Fall 2021 terms. Assessment: The target was not met with 69% (11/16) students achieving over 70% overall. Two students failed the course in the summer 2021 term but retook and passed in fall 2021. Their data is counted twice. If only their 2nd (passing) attempt was counted, the target would be met. On average students did well on all sections except Linear Schedule and CPM Float. Linear schedule and CPM float will be emphasized during lectures. The Canvas exam may be restructured to allow more opportunity for partial credit.

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 2021 term. Assessment: the target was met with 86% (12/14) of students scoring over 70% overall. The average on all seven questions 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. and in CON 4001, Building Electrical Systems. This was a Weakness on the previous accreditation visit because the Visiting Team felt that the areas assessed were too narrowly focused in technical problems rather than Sustainable Construction. In 2018 this assessment was moved to CON 2001, Construction Methods, and changed to a homework assignment specifically addressing sustainability. Data was collected in the Fall 2021 term. Assessment: The target was met with 79% (11/14) of

students achieving over 70%. The only issue was that three students failed to submit the assignment. Submission of all assignments will be emphasized in lectures.

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 2022. Assessment: The target was met with 78% (7/9) students achieving over 70% overall on the assignment. 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. Two students did not submit the term project which skews the average results. The syllabus may 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 2021 term and Mechanical data in the Spring 2022 terms. Assessment: The target was met in the Electrical portion with 100% (14/14) students scoring at least 70% overall on the Electrical questions. The target was not met for the Mechanical and Piping components, 67% (4/6) students achieved at least 70% overall on the exam questions. This appears to be an anomaly due to the unusually small number of CM students taking the course this term. By comparison in the previous year the target was met with 93% (13/14) students scoring at least 70%. The average on each of the question groups was over 70% except for the Exhaust Fan problems. 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 planning 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). The course was split into a 3-credit lecture, CVE 2080, and a 1-credit lab, CVE 2081 to allow more field practice. CM faculty took over the teaching responsibility for this course although it remains a Civil Engineering offering. In spring 2023 we plan to have a new adjunct, Mr. Colom, take over the course. Mr. Colom is a licensed surveyor so we anticipate improvements in both the lecture and lab courses to include more typical site layout tasks.