



Roger Williams  
University



**B.S. IN CONSTRUCTION  
MANAGEMENT  
PROGRAM  
ASSESSMENT REPORT  
AY 2021/2022**

## EXECUTIVE SUMMARY

The program assessment review is part of our overall program assessment planning process. It is a critical self-analysis designed to systematically evaluate our program by concentrating on: (1) what it is doing, (2) how well it is operating, and (3) how it can be strengthened

Our process focuses on:

- Assessing the true state of the program
- Identifying our achievements
- Identifying areas for improvement and recommending how to implement those improvements
- Developing information to be used for improvement of the program
- Ensuring the program is meeting the accreditation standards as set forth by our accrediting body

This report provides the opportunity for stakeholders to review the current state of the Construction Management (CM) undergraduate program at Roger Williams University (RWU) and covers the reporting period of AY 21/22. The purpose of this report is to focus on assessment of academic activities throughout the year. The data were collected thru a variety of measurements tools to include surveys, interviews, reports, course assessment reports (CAR), and meeting minutes.

AY 2021/2022 was a very busy, challenging, and productive year for the CM program as indicated by the following highlights:

- Enrollment continue an upward trend with current numbers at  $\approx$  234. Transfer activity has been steady with students coming in from various programs within RWU to include but not limited to business, education, architecture, engineering, and undeclared majors. The numbers are a testament to the quality and demand of the program but continues to put pressure on hiring more FT faculty to meet demand
- Adjunct faculty pool now stands at 22 people and the current course offerings are taught by approx. 38% adjunct
- Club activity has been strong with getting back to pre-Covid participation and membership
- Students continued to conduct faculty led, funded research in unique areas of interest
- Competition team activity has started to come back to pre-Covid levels with some moderate success



**Class of 2022 – Senior Banquet**

## **INTRODUCTION**

The Construction Management Program is accredited by the American Council for Construction Education (ACCE). The CM program was last reaccredited in spring 2017 and is scheduled to be re-evaluated in fall 2023. During each year of accreditation, the program has published an annual assessment report that complies with the assessment and strategic plans.

On an annual basis, the program faculty collectively review the assessment methodology, data collection instruments, and scope of the assessment process. Each faculty is asked to help collect data from specific sources which are then reviewed by the group. The data that are collected from a wide array of sources is the basis of measuring our success in meeting our defined objectives and outcomes as outlined in the SECCM Assessment Plan.

The Construction Management Program focuses on providing the student both the “soft” collaborative skills and the “hard” technical skills to prepare the graduate to lead and manage a construction project. The construction graduate will work closely with owners, architects, engineers, and trade contractors throughout the entire design-build process. Graduates will typically take responsibility for the budgeting, scheduling and control of the construction operation. Construction careers are broadly diversified with our graduate’s finding employment in the principal industry sectors to include: residential, commercial building, heavy highway and industrial. In addition, all construction management graduates also earn a business minor. Each of these categories provides the student with an essential component of their overall educational experience and ensures that students are prepared for construction management practice as required by our accrediting body.

The construction management program is designed to encompass six functional categories of courses:

- General Education
- Mathematics and Science
- Business and Management
- Construction Science
- Construction
- Other program specific courses

Each of these categories provides the student with an essential component of their overall educational experience and ensures that students are prepared for construction management practice as required by our accrediting body.

## CURRICULUM DESIGN

As discussed above, the construction management curriculum has been designed around six operative classifications of courses. Each of these classifications is discussed below:

### 1. General Education

It is important that every Constructor's education include appropriate courses in communications, social sciences, and the humanities. This content should reflect the needs of the construction industry as well as the philosophy of the educational institution. Construction is concerned with people and their relationships. Thus, the ability to communicate, both orally and in writing, and the understanding of human behavior are essential assets to the constructor.

Table 1. General Education Courses		
Course #	Course Title	Credits
COMM 210	Intro to Speech Communications	3
CORE 102	History and the Modern World	3
CORE 103	Human Behavior	3
CORE 104	Lit Phil & Ascent of Ideas	3
CORE 105	Artistic Impulse	3
WTNG 102	Expository Writing	3
WTNG 220	Critical Writing for the Professions	3
<b>Total Credits</b>		<b>21</b>

### 2. Mathematics and Science

It is essential that every Constructor possess a well-developed concept of mathematics and physical science. Construction is in part a technical process that can be best controlled by applying the principles of mathematics, statistics, and computer science. Furthermore, an understanding of the behavior of the materials, equipment, and methods used in construction requires knowledge of

the laws of physics, chemistry, geology, and environmental sciences. Basic scientific, quantitative, and qualitative topics, which provide a foundation for subsequent technical subjects, are to be considered in this category.

<b>Table 2. Mathematics and Science Courses</b>		
<b>Course #</b>	<b>Course Title</b>	<b>Credits</b>
MATH 124	Basic Statistics	3
MATH 136	Pre-calculus	4
PHYS 109	Physics I-Algebra based + lab	4
MATH 207	Applied Calculus	3
---	Physical Science Elective <sup>1</sup>	4
<b>Total Credits</b>		<b>18</b>

### 3. Business and Management

The Constructor is a manager. To be an effective manager, the Constructor must know how to manage the principal resources of the industry, i.e., people and money. The Constructor should have a broad understanding of the fundamentals of the free enterprise system, accounting, finance, business regulations, contract law, labor law, and marketing. This category involves fundamental courses to provide a foundation for contemporary business practices appropriate to applications in construction. No specific number of semester hours or subject areas are required; however, eighteen semester hours are required in this category.

<b>Table 3. Business and Management</b>		
<b>Course Number</b>	<b>Course Title</b>	<b>Credits</b>
ACCTG 101	Accounting I: Financial	3
ECON 102	Principles of Microeconomics	3
MGMT 200	Management Principles	3
MRKT 200	Marketing Principles	3
LS 220 or BUSN 305	Legal Elective	3
	Business Elective	3
<b>Total Credits</b>		<b>18</b>

### 4. Construction Science

The Constructor must have an understanding of the contribution of the design disciplines' processes. The Constructor must be able to communicate with the design professionals and should be capable of participating during the planning phase of design-build projects. Construction sciences and architectural or engineering design topics selected to facilitate communications with the design disciplines and to solve practical construction problems are included in this category.

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<sup>1</sup> CHEM 191, BIO 103, NATSC 103, or PHYS 240

<b>Table 4. Construction Science</b>		
<b>Course #</b>	<b>Course Title</b>	<b>Credits</b>
CNST 130	Plans, Specifications and Building Codes	3
CNST 200	Construction Methods and Materials and Lab 1	4
CNST 201	Construction Methods and Materials and Lab 2	4
CNST 204	Construction Statics	3
CNST 250	Construction Equipment	3
CNST 302	Surveying and Lab	4
CNST 304	Applied Structures	3
CNST 455	Mechanical and Electrical Design for Buildings	3
<b>Total Credits</b>		<b>27</b>

### 5. Construction

The construction curriculum category is of vital importance in a quality construction curriculum. Courses should include both office and field activities and include the effective management of personnel, materials, equipment, costs, and time. All types of construction should be included. Curricula topics should address the constructor's role as a member of a multi-disciplinary team, the assessment of project risk, and the alternate methods that can be used to structure the owner-designer-constructor team. Course work will examine the various roles and responsibilities of project participants throughout a project's life and the creative ways that project teams can be assembled. Fundamental topics to provide an appropriate combination of breadth and depth in current construction industry practice are to be considered in this category. These topics should develop skills that will facilitate advancement of the individual in the construction profession. Construction courses should be presented in a manner that encourages problem definition and solution, creativity, communication, evaluation, and continuous learning. The knowledge, understanding, and skills gained from prerequisite courses should be integrated and utilized in subsequent courses.

<b>Table 5. Construction</b>		
<b>Course #</b>	<b>Course Title</b>	<b>Credits</b>
CNST 100	Introduction to Construction Management	3
CNST 116	Computer Applications in Construction	3
CNST 260	Construction Estimating and Scheduling	3
CNST 321	Advanced Building Estimating	3
CNST 445	Construction Project Management and Lab	4
CNST 450	Construction Planning and Scheduling	3
CNST 475	Construction Project Control	3
CNST 480	Construction Management Capstone	3
CNST XXX	Construction Elective	3
<b>Total Credits</b>		<b>28</b>

## 6. Other Program Requirements

The Roger Williams University Core Concentration involves a five-course exploration of one liberal arts discipline unrelated to the major which includes a senior seminar. Construction management students select their core concentration from 39 different fields of study. This requirement ensures that students graduate with significant knowledge of at least two fields; that of the major and that of the core concentration.

Table 6. Other Program Requirements		
Course #	Course Title	Credits
---	Core Concentration	15
<b>Total Credits</b>		<b>15</b>

## PROGRAM HEALTH AND STATUS

AY 21/22 finds the CM program to be in a very good position to continue to deliver top-notch construction education to current and future students. Health of the program is demonstrated by solid enrollment; high graduation rates; student participation in competition teams and clubs; industry participation and support; dedicated faculty; and status amongst peer institutions.

### Enrollment

The CM program is in a very healthy state in terms of enrollment. Program growth has been steady (see Figure 1) over the past eight years with the largest growth rate exhibited from AY 18/19 to AY 19/20. In addition, the incoming freshmen class is the largest ever at 59 students.

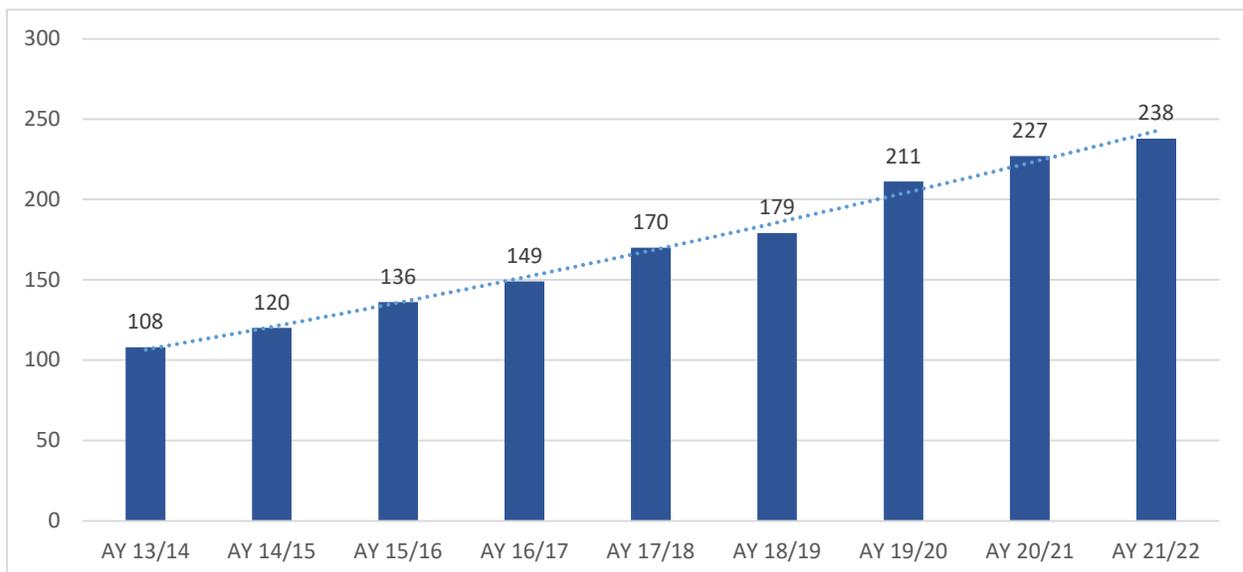
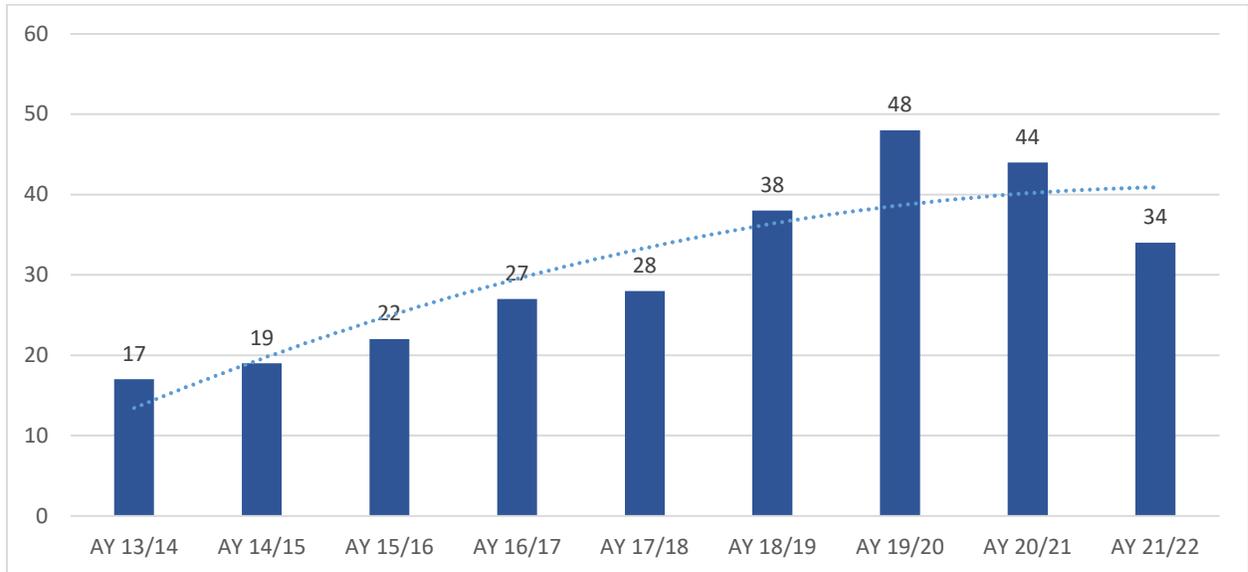


Figure 1. CM Student Population Growth

The previously rising trend in the number of graduates has reversed with recent declines in the number of students who finish the program (See Figure 2).



**Figure 2. Program Graduates**

### Industry Participation

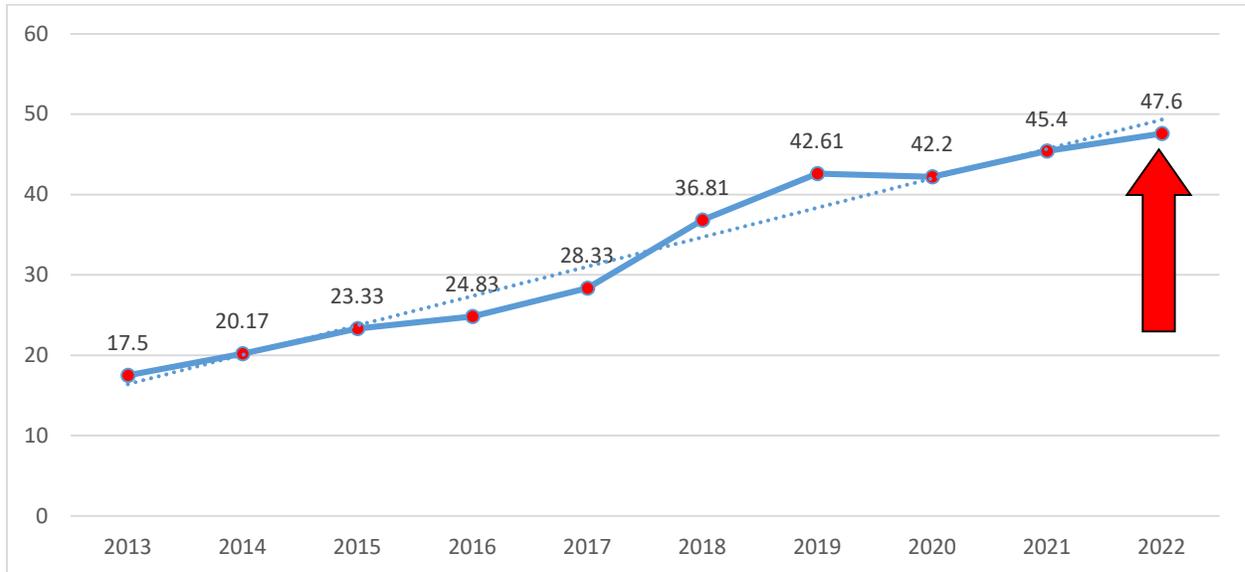
Participation from industry has been very strong in many areas of the program with tangible and positive impact. Numerous industry professionals have devoted time, money, resources, and support to the program in CM club activities, preparing of competition teams, guest speakers, and donations to support student trips. The construction management professional advisory board (CMPAB) has been the driving force behind much of the industry support. Many individual alumni have also contributed in many positive ways to include but not limited to guest speakers, CM club speakers, panel judges, outreach, and monetary support.

### Academics

The program continues to evolve in response to industry demand, administrative priorities, and student aspirations. The student to FT faculty ratio continues to climb as a result of positive program growth and not enough faculty. Several improvements to the curriculum have had a positive effect:

- Expanding the number of courses that count toward the CM minor
- Incorporation of new topical content in a wide range of courses (Ex. prefabrication and preassembly)
- More guest lecturers utilized to reinforce the skills and knowledge industry is looking for from a program graduate
- Working toward the advancement of the program specialization tracks continues with preliminary develop of course ideas and proposals

The FT faculty to student ratio (See Figure 3) continues to be an issue as it has been for many years now. The program is now at the highest ratio in the last ten years. The Dean's plans to add more FT faculty will significantly help mollify the situation.



**Figure 3. Student to Faculty Ratio**

### Faculty

A very strong and dedicated group of program faculty continue to provide excellent education and support to a wide range of activities; both in and outside the classroom. Faculty provide advising duties to the student clubs, coach competition teams, career guidance, and academic support in the form of workshops and study groups. When conditions develop where someone needs to step up to teach overload courses, faculty immediately jump in to help. This is a critical aspect of the success of the program especially in providing reasonable pathway for students who have transferred into the program. The wide range of knowledge areas of the faculty provide the students with a great reference base when confronted with assignments that challenge their ability to critically think. The CM faculty, is perhaps it's strongest resource in ensuring the success of the program. The Dean has also provided key resources to support faculty in a number of ways to enhance their ability to deliver quality instruction.

## PROGRAM ASSESSMENT

Assessment is achieved through data collection and analysis from multiple resources that evaluate the quality and rigor of the program from an academic, administrative, student, extracurricular, and industry perspective. The following data sets strongly indicate the program is very strong and continues to head in the right direction.

Program Size	AY 17/18	AY 18/19	AY 19/20	AY 20/21	AY 21/22
Undergraduate Program Population	170	179	210	227	238
Freshmen Class	42	37	56	60	62
Senior Class	34	44	49	44	41
Tenured Faculty	6	4	4	3	3
Tenure-Track Faculty	0	1	1	2	2
Number of Students per FT faculty	28.33	36.80	42.61	45.4	47.6

Metric	AY 15/16	AY 16/17	AY 17/18	AY 18/19	AY 19/20	AY 20/21	AY 21/22
Average # Internships; Senior	2.73	2.71	2.80	2.81	2.64	2.51	2.64
Placement Rate	100%	93%	95%	95%	100%	95%	97%
Salary Range							
Low	\$45,000	\$45,000	\$40,000	\$45,000	\$50,000	\$48,000	\$62,000
High	\$73,200	\$72,000	\$85,000	\$81,700	\$83,700	\$86,000	\$100,000
Mean	\$59,751	\$59,926	\$62,361	\$65,500	\$67,531	\$63,372	\$71,812
Median	\$60,000	\$60,000	\$61,000	\$65,755	\$67,000	\$63,750	\$70,000

Competition Placement	AY 11/12	AY 12/13	AY 13/14	AY 14/15	AY 15/16	AY 16/17	AY 17/18	AY 18/19	AY 19/20	AY 20/21	AY 21/22
<b>ASC</b>											
Commercial	1 <sup>st</sup>	1 <sup>st</sup>	DNP	DNP	2 <sup>nd</sup>	2 <sup>nd</sup>	DNP	DNP	DNP	---	DNP
Design-Build	2 <sup>nd</sup>	1 <sup>st</sup>	DNP	1 <sup>st</sup>	2 <sup>nd</sup>	2 <sup>nd</sup>	DNP	3 <sup>rd</sup>	1 <sup>st</sup>	---	---
Heavy-Civil	3 <sup>rd</sup>	1 <sup>st</sup>	DNP	3 <sup>rd</sup>	2 <sup>nd</sup>	DNP	3 <sup>rd</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	---	---
Pre-construction	NA	NA	NA	NA	NA	NA	NA	3 <sup>rd</sup>	NA	---	---
National	NA	3 <sup>rd</sup>	NA	NA	NA	NA	NA	2 <sup>nd</sup>	NA	DNP	DNP
International	NA	NA	NA	NA	NA	NA	NA	NA	1 <sup>st</sup>	---	---
<b>DBIA</b>											
Regional								1 <sup>st</sup>	1 <sup>st</sup>	---	1 <sup>st</sup>
National								DNP	DNP	---	DNP

Note: Did Not Place (DNP)

### **Measurement Tools**

The assessment data sets are collected through a comprehensive variety of measurement tools each of which help identify specific performance aspects of the program. The data that is collected feeds the assessment process and provides the foundation of critical program analysis. All faculty provide support in the data collection across all of the CNST courses as well as other aspects of the program. The appropriateness and effectiveness of the tools are assessed each year at the annual assessment meeting and updated/modified to increase their efficiency and impact.

### **Senior Exit Survey**

This survey is given to all graduating CM seniors on the same day as their capstone presentations and senior exit interviews. The purpose of this survey is to collect data regarding the PLO's and other critical aspects of the program. Results of this survey have been folded into the program objectives and outcomes analysis in tables 11-42. For the most part the survey questions remain static from year to year in order to gather a continuous data path. Some questions are added (or retracted) depending on what information is being sought; usually targeted at a specific area not covered in the program objectives or outcomes.

### **Faculty Survey**

Faculty are surveyed on an annual basis to collect their perceptions on critical aspects of the program. Results of this survey have been folded into the program objectives and outcomes. AY 21/22 is the seventh year in a row faculty have been surveyed to collect data in support of several metrics used in the assessment and improvement of multiple program objectives to include:

- Recruit and retain exceptionally qualified and diverse faculty and staff to support the program, school, and university objectives
- Advance the construction management profession by becoming actively involved in professional associations and societies, serving in professional and community volunteer positions, and acting as a role model for future generations of constructors
- Embrace a culture of professionalism, innovation, collaboration, diversity, and tolerance
- Maintain convenient, well-equipped, and state-of-the-art facilities and resources that support learning, application, and research
- Data integrated into program objectives and outcomes analysis

*Note: This year the response rate was very low (1 of 5) as to negate any drawing of reasonable conclusions.*

### **Alumni Survey**

A survey was sent out to the majority of alumni from the class of 2017 to collect data relevant to the program objectives and SLO's. The response rate was lower than anticipated but did give us the data necessary to evaluate the perceptions of that group which graduated from the program five years ago (See Tables 11-21 where responses were incorporated)

### ***Freshmen Survey***

AY 21/22 marks the fifth year in a row the freshmen have been surveyed in an effort to collect data in support of the assessment and improvement of the following program objectives:

- Recruit and retain exceptionally qualified and diverse faculty and staff to support the program, school, and university objectives
- Maintain a reputation within the local, national, and international communities as a leading provider of construction education

(See Tables 11-2-42 where the responses were incorporated into the program objectives)

This year's participation rate was 91% compared to last year's 97%. 79% of surveyed freshmen reported that RWU was their first choice of university (decrease from 87% in the previous AY). Also, 70% of all CM freshmen declared construction management major as their first choice of major compared to 82% last year. These results were discussed in depth in the program objectives assessment section in tables 11-21.

### ***Employer Internship Survey***

Construction companies were contacted to provide feedback on the CM students they employed as interns. They were asked a series of questions that related to their performance as well as how the students met the expectations of the employer. In general, employers were very impressed with the knowledge, passion, and understanding of construction processes and procedures. Responses rates were down significantly from last year (50% from 76%). Responses from the surveys were incorporated into the program and objectives assessment process (See Tables 11-41).

### ***Senior Exit Interviews***

Senior exit interviews were conducted by CMPAB members Danielle Crafford '08 (Gilbane) and Matt Dempsey (Site Specific) on May 5, 2022. The exit interviews provide a setting where students can comment to the CMPAB how they feel about the program without the faculty being present (un-filtered). This an important tool for the advisory board in their oversight and assessment of the program. The purpose of the interview was to provide an opportunity for members of the Construction Management Professional Advisory Board to lead students through an informal review and assessment of their experience while enrolled in the Construction Management Program at Roger Williams University. Following are salient comments extracted from the report.

### ***Faculty***

The students felt supported and engaged by the faculty, and appreciated the access they had to the faculty if they had any additional questions outside of the classroom. The students in particular had overall very positive comments about **Dr. Emmer, Prof. Cole, & Prof. Seymour** citing their industry experience as being invaluable. The students felt that overall, the faculty were very caring and wanted them to succeed

### *Program/Coursework*

The students felt well prepared to enter the workforce and felt the most valuable courses they took were Methods & Materials, Surveying, and Residential Construction. A few students also noted Scheduling as being a beneficial class. Some classes had industry professionals join as guest lecturers, which the students thought was very beneficial. The student's also felt like they gained good presentation skills through some of their classes.

### *Facilities*

The students felt that the facilities overall were adequate in providing them the necessary things to be successful. One of their notes was the desire for a more CM focused computer lab that will allow them easier access to various programs.

### *Internships*

Most students participated in at least one construction related internship during their time at the university, with many students having completed internships with several different companies. The majority of the students cited that their internship experiences were paid.

### *Program Improvements*

1. Students felt that overall, the faculty background leans closer towards engineering than it does construction. They felt that when the faculty were able to pull from their industry experience it bettered their overall understanding of certain topics. The students also elaborated on this topic to discuss that they would prefer more guest speakers outside of the Safety class. Students cited practical experience and examples were extremely valuable
2. Students complained about the university cloud server, and said the system was very unreliable. They believed the lack of software licenses, and the unreliability of the campus network held them back from completing projects on time. Students mentioned more access to computer room and/or laptops for students that own Apple devices.
3. Students expressed that they did not enjoy the amount of required core curriculum classes outside of their major. Students believed that time could be better spent towards more applicable learning that will prepare them for outside of the classroom. Non-construction classes that would apply to the core curriculum requirement were suggested. Some of these suggestions included psychology, additional accounting classes, and finance
4. Students mentioned as well that they wish they were exposed to more programs such as P6 and BlueBeam. They had said that the wish the Computer Apps class was geared more towards the instruction of programs that would be used throughout their 3<sup>rd</sup> and 4<sup>th</sup> years rather than just broad introduction on programs they would not often use again.
5. A majority of the students expressed a strong interest towards a required CO-OP program similar to other universities. Students expressed willingness to do an extended CO-OP through Summer or Winter in order strengthen the out of classroom learning. A majority of the students agreed to being "hands on" learners and cited their internship experiences as being extremely valuable in terms of preparing them for jobs.

### *Summary*

Overall, the students expressed their satisfaction with the program. Much of what was learned or discussed in the classroom could be directly applied to internships and prepared them for future employment opportunities. The students had an overall great relationship with the faculty and felt that the small class structure was beneficial to their successful completion. COVID-19 demonstrated some challenges for the students as they cited distance learning as being difficult. Despite this, students were able to persevere through and this is evident by the high employment placement and high graduation rate.

### **Associate Instructors Exam**

Only two students took the exam with one of them passing. The exam results will not be part of the annual program assessment process.

### **Internship Program**

For AY 21/22 the vast majority of CM students had at least two internship experiences. The goal for the program is that 75% of the students participate in at least one internship and we have significantly surpassed that goal. Based on the data reported, this objective has been met. Discussions with industry representatives indicate the expectation is that students have at least two meaningful internship experiences on their resume when applying for their first full time job position (See Tables 11-41 where responses are indicated).

### **Student Club and Competition Team Activities**

As we came out of the pandemic period, students have shown renewed interest in getting re-connected to the activity of their choice such as competition teams, club activities, jobsite tours, and guest speaker presentations. Below are some highlights of various outside-the-classroom activities

#### *Associated General Contractors (AGC) Student Chapter*

This club was very active to include the following initiatives: planning and conducting site tours; bringing in guest speakers; community service volunteering; and attending the AGC National Convention. Dr. Ghanem does a wonderful job in assisting this club in meeting its objectives.

#### *Women in Construction (WIC)*

The club membership, along with strong guidance of Dr. Anderson, continues to advocate for more inclusion of women in the construction management field. Events such as the RWU CM annual WIC event, held in the methods and materials lab space, is just one example of club activities that support their mission.

#### *Construction Management Club*

The CM club had a mildly active year with bringing in a few guest speakers, designing and selling CM apparel, and conducting virtual tours.

### *Residential Construction Club*

This is a new startup club still seeking chapter membership in the National Association of Home Builders (NAHB). They brought in a guest speaker to talk about opportunities in the residential construction industry.

### *Sigma Lambda Chi Honor Society*

The honor society invited and accepted eight new members to join the growing group of RWU graduates in this prestigious organization.

### *Competition Teams*

Participation has gained interest with moderate results from the various competitions we entered. Below is a summary of our participation during the academic year (See Table 9 for comparative data).

- *ASC Region 1*  
Only one team competed in this competition. Students competed in the commercial category and did not place, although they presented a very strong proposal.
- *ASC Region 6/7 National Open Competition*  
Students competed in the Virtual Design & Construction (VDC) category and did not place but impressed the judging panel with their numerous BIM skills and project approach
- *DBIA Northeast Region*  
Students took 1<sup>st</sup> place in the northeast region for the 3<sup>rd</sup> time in the last four years. They attended the national competition as observers for the final presentations.

### **Capstone Project**

The capstone course continues to provide a real-world experience where students are tasked and challenged to develop solutions to real construction projects issues and situations. The strong mentorship of the three mentor companies (Shawmut, Consigli, Gilbane) provides a strong support mechanism for the students to succeed. Their feedback on individual course deliverables assists the students in better understanding key skills they will have to apply in their chosen career.

### **Research**

Two of the program faculty led research projects funded by the Foundation to Promote Scholarship and Teaching (FPST) with students from the program. Six students presented their research at the 58<sup>th</sup> Annual Associated Schools of Construction International Conference in Atlanta, Georgia.

Audrey Corcoran and Zachary Wakefield, under the supervision of Dr. Celik, got accepted to present their work at the 58<sup>th</sup> Annual Associated Schools of Construction International

Conference in April 2022. The title of their presentation is “*A Systematic Review of Blockchain Technology and Its Applications in the Construction Industry.*”

Under the supervision of Dr. Celik, Natalie Manson presented virtually at ASEE Annual Conference and Exposition in July 2021. The title of their presentation was “*Assessing the Effectiveness of Active Learning Approaches in Advancing Student Understanding of Construction Scheduling in a Virtual Environment.*”

Alec Kalogeropoulos and Michael Paniati worked with Dr. Amine Ghanem on a research project titled “*Study of Bridge Management Programs in the Northeast*”. The objective of this project was to analyze the criteria currently being used to determine the selection order of bridge rehabilitation projects in the state of Rhode Island. Specifically, to compare the criteria being used in Rhode Island with the criteria of other Northeastern States that have better overall bridge conditions. The end goal of this study is to be able to provide the Rhode Island Department of Transportation with a recommendation of new criteria/weights that might improve their method in bridge rehabilitation or replacement classification process. Their abstract got accepted in the ASC international conference where they will present their findings in April 2022 in Atlanta Georgia

#### **CONSTRUCTION MANAGEMENT PROGRAM MISSION AND OBJECTIVES**

The CM program’s mission is to “*advance the body of construction knowledge through instruction, research and service, and through resourceful graduates who possess the moral foundation and technical skills to lead the profession.*”

Table 10 lists RWU CM program objectives that are developed by program constituencies in an effort to accomplish the program’s mission. These objectives were most recently updated in 2015 and have published in the Roger Williams University Undergraduate Catalog in 2022, on the School of Engineering, Computing and Construction Management’s and the CM program’s web sites as well as in a number of CM promotional materials. The Construction Management Program Objectives are consistent with the goals of the University and promote the mission and values of RWU.

<b>Table 10. CM Program Objectives</b>
<p><b>FACULTY AND STAFF:</b> Recruit and retain exceptional and diverse faculty and staff to support program, school, and university objectives.</p>
<p><b>EDUCATIONAL:</b> Three to five years after graduation, we expect that our graduates:</p> <ul style="list-style-type: none"> <li>▪ Demonstrate exemplary cutting edge technical knowledge and skills.</li> <li>▪ Value the concept of life-long learning and continue to grow intellectually while keeping informed of new concepts and developments in the construction process.</li> <li>▪ Are recognized as regional, national, and international construction industry leaders.</li> <li>▪ Always display the highest standards of ethical conduct.</li> </ul>
<p><b>SERVICE:</b> Advance the construction management profession by becoming actively involved in professional associations and societies, serving in professional and community volunteer positions, and acting as a role model for future generations of constructors.</p>
<p><b>ALUMNI:</b> Grow and maintain an engaged network of alumni to support and advance program mission and goals.</p>
<p><b>STUDENTS:</b> Recruit and retain a committed, qualified, passionate and diverse body of students.</p>
<p><b>CULTURE:</b> Embrace a culture of professionalism, innovation, collaboration, and tolerance.</p>
<p><b>BRANDING:</b> Maintain a reputation within the local, national and international communities as a leading academic provider of construction education.</p>
<p><b>FACILITIES &amp; RESOURCES:</b> Maintain convenient, well equipped, and state-of-the-art facilities and resources to support learning and research.</p>

## CONSTRUCTION MANAGEMENT PROGRAM OUTCOMES

Construction Management program outcomes correspond to the knowledge, skills and behavior that we expect our construction graduates to possess at the time of their graduation. These outcomes are established and periodically updated based on constituency input. In 2015, the CM program adopted American Council for Construction Education (ACCE) Student Learning Outcomes (SLO) as the Program Learning Outcomes (PLO). The outcomes for construction management program that we expect our graduates to possess at graduation are:

1. Create written communications appropriate to the construction discipline.
2. Create oral presentations appropriate to the construction discipline.
3. Create a construction project safety plan
4. Create construction project cost estimates.
5. Create construction project schedules.
6. Analyze professional decisions based on ethical principles.
7. Analyze construction documents for planning and management of construction processes.
8. Analyze methods, materials, and equipment used to construct projects.
9. Apply construction management skills as a member of a multi-disciplinary team.
10. Apply electronic-based technology to manage the construction process.
11. Apply basic surveying techniques for construction layout and control.
12. Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.
13. Understand construction risk management.
14. Understand construction accounting and cost control.
15. Understand construction quality assurance and control
16. Understand construction project control processes.
17. Understand the legal implications of contract, common, and regulatory law to manage a construction project.
18. Understand the basic principles of sustainable construction.
19. Understand the basic principles of structural behavior.
20. Understand the basic principles of mechanical, electrical and piping systems.

These program outcomes are related to the construction management program educational objectives as presented in Tables 11 thru 21. Construction Management Educational Objectives are linked to Construction Management Program Outcomes.

### Assessment of Program Educational Objectives

Below is a detailed assessment of all program objectives. These objectives and their metrics along with our mission statement were published in 2015 after a full year of extensive strategic planning process in collaboration with the program faculty, administration, students, industry advisory board and the alumni.

<b>Table 11. CM Program Objective #1, Metrics and Targets</b>															
<b>FACULTY AND STAFF</b>															
<b>Objective #1: Recruit and retain exceptional, qualified, and diverse faculty and staff to support program, school, and University objectives.</b>															
<b>Metrics Associated w/Objective</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>												
At least 80% of graduating seniors report to be satisfied or very satisfied with the helpfulness of the CM staff	Senior Exit Survey	Yes	4.03/5 81%												
At least 80% of graduating seniors report to be satisfied or very satisfied with the helpfulness of CM faculty.	Senior Exit Survey	Yes	4.19/5 84%												
CM faculty and staff demographics are representative of other programs in ASC Region 1	Region 1 Programs Analysis	Yes	<table border="1"> <thead> <tr> <th><u>RWU</u></th> <th><u>Reg. 1</u></th> </tr> </thead> <tbody> <tr> <td>M 67%</td> <td>M 65%</td> </tr> <tr> <td>F 33%</td> <td>F 21%</td> </tr> <tr> <td>B 17%</td> <td>B 3%</td> </tr> <tr> <td>A 0%</td> <td>A 8%</td> </tr> <tr> <td>H 0%</td> <td>H 3%</td> </tr> </tbody> </table>	<u>RWU</u>	<u>Reg. 1</u>	M 67%	M 65%	F 33%	F 21%	B 17%	B 3%	A 0%	A 8%	H 0%	H 3%
<u>RWU</u>	<u>Reg. 1</u>														
M 67%	M 65%														
F 33%	F 21%														
B 17%	B 3%														
A 0%	A 8%														
H 0%	H 3%														
At least one academic conference or presentation or journal paper published by 80% of FT tenured or tenure-track faculty.	Faculty Survey	Yes	100%												
At least one academic conference presentation or publication co-authored by at least one FT faculty and an undergraduate student.	Faculty Survey	Yes	75%												
50% of FT faculty conducted at least one consulting activity for the construction industry or research with industry support or faculty internship.	Faculty Survey	Yes	100%												
<b>Action Item(s):</b>	No action items necessary														

<b>Table 12. Program Objective #2, Metrics and Targets</b>			
<b>EDUCATIONAL</b>			
Three to five years after graduation, we expect that our graduates:			
<b>Objective #2: Demonstrate exemplary cutting-edge technical knowledge and skills</b>			
<b>Metrics Associated w/Objective</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
At least 80% of graduating seniors answer the following question as somewhat agree or strongly agree: CM program increased my technical knowledge and skills	Senior Exit Survey	Yes	97.5%
At least 80% of alumni (5 years out) answer the following question as satisfied or very satisfied: The RWU CM program helped me to demonstrate exemplary cutting-edge technical knowledge and skills	Alumni Survey	Yes	100%
CM Program Learning Outcomes (PLO) assessment indicates 100% of PLO's to be satisfactory or lists specific action plans to address any PLO's that are indicated as weaknesses	PLO Assessment	Yes	100%
At least 80% of the employer's report interns: <ul style="list-style-type: none"> <li>- Technical knowledge as outstanding or satisfactory</li> <li>- Estimating skills as outstanding or satisfactory</li> <li>- Scheduling skills as outstanding or satisfactory</li> <li>- CAD or Revit skills as outstanding or proficient</li> <li>- Excel skills as outstanding or proficient</li> </ul>	Employer Internship Survey	Yes No <sup>1</sup> No <sup>1</sup> Yes No <sup>1</sup>	80% 70% 60% 90% 60%
<b>Action Item(s):</b>	1. Need to find out from the employers what specific estimating, scheduling, and Excel tasks they were not good at and make the appropriate adjustments to the curriculum		

<b>Table 13. Program Objective #3. Metrics and Targets</b>			
<b>EDUCATIONAL</b>			
Three to five years after graduation, we expect that our graduates:			
<b>Objective #3:</b> <i>Value the concept of lifelong learning and continue to grow intellectually while keeping informed of new concepts and developments in the construction process</i>			
<b>Metrics Associated w/Objective</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
At least 80% of graduating seniors answer the following question as somewhat agree or strongly agree: The CM Program has got me interested in lifelong learning or continuing education.	Senior Exit Survey	No <sup>1</sup>	64.87%
At least 80% of alumni (5 years out) answer the following question as agree or strongly agree: The RWU CM Program helped me recognize the value of the concept of lifelong learning and continue to grow intellectually while keeping informed of new concepts and developments in the construction process.	Alumni Survey	Yes	100%
At least 50% of CM seniors sit for the AC Level 1 exam	Exam Attendance	No <sup>2</sup>	Only 2 took the exam
At least of 20% of alumni (5 years out) report to have received a graduate degree or certificate.	Alumni Survey	Yes	28.5%
<b>Action Item(s):</b>	1. PC will work with the clubs to bring in guest speakers to reinforce the value of continuing education. 2. Exam will be required next cycle; not sure as of yet how/where that will be implemented		

<b>Table 14. Program Objective #4, Metrics and Targets</b>			
<b>EDUCATIONAL</b>			
Three to five years after graduation, we expect that our graduates:			
<b>Objective #4:</b> <i>Are recognized as regional, national, and international leaders in the construction industry</i>			
<b>Metrics Associated w/Objective</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
At least 80% of graduating seniors answer the following question as agree or strongly agree: The CM Program has increased my enthusiasm to become a leader in the construction industry	Senior Exit Survey	Yes	97.5%
At least 80% of alumni (5 years out) answer the following question as agree or strongly agree: The RWU CM Program helped me obtain the skills necessary to become a regional, national, or international leader in the construction industry	Alumni Survey	Yes	100%
At least 5% of all RWU alumni with a profile in LinkedIn is holding an executive or higher position in the construction industry	LinkedIn Data	Yes	9%
At least 1% of all RWU alumni with a profile in LinkedIn has worked or is working in a construction related area outside the US	LinkedIn Data	Yes	1.06%
At least one RWU CM alumni was nominated as the current academic years' CMPAB Distinguished Person of the Year Award	CM Coordinator	No <sup>1</sup>	Nominee carried over from previous year
<b>Action Item(s):</b>	1. PC will seek nominations from CM faculty		

<b>Table 15. Program Objective #5, Metrics and Targets</b>			
<b>EDUCATIONAL</b>			
Three to five years after graduation, we expect that our graduates:			
<b>Objective #5: Always display the highest standards of ethical conduct</b>			
<b>Metrics Associated w/Objective</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
At least 80% of graduating seniors answer the assessment question for PLO #6 (Ethical Principles) as agree or strongly agree	Senior Exit Survey	Yes	92.5%
At least 80% of graduating seniors answer the following question as agree or strongly agree: It is as important to be ethical as it is to follow the law.	Senior Exit Survey	Yes	100%
CM Program Learning Outcome (PLO) assessment indicates PLO #6 to be satisfactory OR lists specific action plans to address any PLOs that are indicated as weaknesses.	PLO Assessment	Yes	---
At least 80% of alumni (5 years out) answer the following question as agree or strongly agree: The RWU CM Program helped me to always display the highest standards of ethical conduct.	Alumni Survey	Yes	100%
Capstone course assessment report indicates that the direct assessment of its ethics CLO is equal to or higher than 80%	Capstone Ethics Outcome	Yes	Paper grade average = 84%
<b>Action Item(s):</b>	No actions necessary		

<b>Table 16. Program Objective #6, Metrics and Targets</b>			
<b>SERVICE</b>			
Three to five years after graduation, we expect that our graduates:			
<b>Objective #6:</b> <i>Advance the construction management profession by becoming actively involved in professional associations and societies, serving in professional or community volunteer positions, and acting as a role model for future generations of constructors</i>			
<b>Metrics Associated w/Objective</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
At least 80% of graduating seniors answer the following question as agree or strongly agree: The CM Program has motivated me to join a relevant professional society	Senior Exit Survey	No <sup>1</sup>	47.5%
At least 50% of alumni answer the following question as “YES”: Are you actively involved in professional associations or societies or serving in professional or community volunteer positions?	Alumni Survey (5-years out)	Yes	57%
At least 5% of all CM alumni with a profile on LinkedIn to list “skilled volunteering” or “board service” as an interest.	Linked Data	Yes	8%
100% of FT faculty are active members of at least one construction related professional organization	Faculty Survey	Yes	100%
100% of CM students received Feinsein Service-Learning credit prior to graduation	Transcripts	Yes	100%
At least on CM student group was involved with construction related community service	Student Club Reports	Yes	3 clubs
<b>Action Item(s):</b>	1. Faculty will reinforce the importance of professional association participation and volunteerism		

<b>Table 17. Program Objective #7, Metrics and Targets</b>															
<b>STUDENTS</b>															
Three to five years after graduation, we expect that our graduates:															
<b>Objective #7:</b> <i>Recruit and retain a committed, qualified, passionate, and diverse body of students</i>															
<b>Metrics Associated w/Objective</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>												
At least 80% of graduating seniors answer the following question as good or very good: Please rate the quality of the CM student body.	Senior Exit Survey	Yes	95%												
Diversity statistics of CM students are comparable to RWU or RI race/ethnic/gender data	Registrar/Institutional Research	No <sup>1</sup>	<table border="1"> <tr> <td><u>CM</u></td> <td><u>RWU</u></td> </tr> <tr> <td>M 89%</td> <td>M 47%</td> </tr> <tr> <td>F 11%</td> <td>F 53%</td> </tr> <tr> <td>B</td> <td>B</td> </tr> <tr> <td>A</td> <td>A</td> </tr> <tr> <td>H</td> <td>H</td> </tr> </table>	<u>CM</u>	<u>RWU</u>	M 89%	M 47%	F 11%	F 53%	B	B	A	A	H	H
<u>CM</u>	<u>RWU</u>														
M 89%	M 47%														
F 11%	F 53%														
B	B														
A	A														
H	H														
Maintain a minimum of 90%, 6-year graduation rate	Census Data/Transcripts	Yes	---												
At least 10% of all graduating CM students participated in student competitions	Senior Exit Survey	No <sup>2</sup>	5%												
Average GPA of all CM students who started at RWU in the fall semester and were still enrolled by spring semester is at least 2.75.	Transcripts	Yes	---												
At least 80% of all CM freshmen declare construction management major as their first choice of major.	Freshmen Survey	Yes	84%												
<50% of incoming freshmen are placed into MATH 117	Registration Roster	Yes	43%												
<b>Action Item(s):</b>	1. Faculty to help recruit a more diverse student body 2. Many more students this year that are interested														

<b>Table 18. Program Objective #8, Metrics and Targets</b>			
<b>ALUMNI</b>			
Three to five years after graduation, we expect that our graduates:			
<b>Objective #8:</b> <i>Grow and maintain an engaged network of alumni to support and advance program mission and objectives</i>			
<b>Metrics Associated w/Objective</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
At least 80% of graduating seniors answer the following question as somewhat agree or strongly agree: I am planning to support and advance the program mission and objectives after graduation	Senior Exit Survey	No <sup>1</sup>	72.52%
At least 80% of alumni answer the following question as “YES”: Have you had any direct engagement with the CM program or a faculty member since graduation?	Alumni Survey	No <sup>2</sup>	14.29%
At least 50% of the PLO mentors are graduates of the CM program	Not utilized this cycle	No <sup>3</sup>	45%
At least 30% of the CMPAB members are alumni of the program	CMPAB Membership List	Yes	71%
The number of CM Annual Alumni Banquet attendees exceed 80% of the number of students registered in the program as of the preceding Fall semester	Banquet attendance	No <sup>4</sup>	56%
The number of donations to the CMPAB scholarship and the CM programmatic Gift Fund increased compared to the previous year	RWU Advancement Data	Yes	Yes
<b>Action Item(s):</b>	1. Need to find out “why” more graduating seniors are not planning on supporting the program 2. Request more resources for alumni outreach 3. The CMPAB PLOM initiative is being re-vamped 4. Size of the banquet is capped by the current space being rented		

<b>Table 19. Program Objective #9, Metrics and Targets</b>			
<b>CULTURE</b>			
Three to five years after graduation, we expect that our graduates:			
<b>Objective #9:</b> <i>Embrace a culture of professionalism, innovation, collaboration, and tolerance</i>			
<b>Metrics Associated w/Objective</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
At least 20% of graduating seniors answer the following question as "YES": Did you participate in a short or long-term study abroad program or any other academic activities abroad during your education at RWU?	Senior Exit Survey	No <sup>1</sup>	2.5%
At least 80% of graduating seniors answer the following question as somewhat agree or strongly agree: RWU CM community encourages and welcomes individuals with different opinions	Senior Exit Survey	Yes	85%
At least 80% of alumni (5 years out) answer the following questions as somewhat agree or strongly agree: The RWU CM community encouraged and welcomed individuals with different opinions	Alumni Survey	Yes	85%
At least 80% if employers report their interns: <ul style="list-style-type: none"> <li>- As completely dependable or dependable above average</li> <li>- Quite poised and confident or has appropriate self-assurance</li> <li>- Always on time</li> <li>- Exceptionally well-accepted or works well with others</li> </ul>	Employer Internship Survey	Yes Yes Yes Yes	90% 90% 90% 100%
At least 5% of all CM graduating students participated in faculty led student research outside of class	Faculty Survey	No <sup>2</sup>	0%
CM club arranged at least 4 guest speakers/workshops and the attendance at these events included at least 25% of all CM students	CM Club Report	Yes	5 speakers came to present
<b>Action Item(s):</b>	1. Covid-19 shut down the study abroad programs 2. Faculty to look into other research venues/opportunities		

<b>Table 20. Program Objective #10, Metrics and Targets</b>			
<b>BRANDING</b>			
Three to five years after graduation, we expect that our graduates:			
<b>Objective #10:</b> <i>Maintain a reputation within the local, national, and international communities as a leading academic provider of construction education</i>			
<b>Metrics Associated w/Objective</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
At least 80% of graduating seniors answer the following question as somewhat likely or extremely likely: How likely are you to recommend the CM program to others	Senior Exit Survey	Yes	95%
At least 80% of alumni (5 years out) answer the following question as somewhat agree or strongly agree: I believe the CM program is a leading academic provider of construction education	Alumni Survey	Yes	100%
Social media account followers increased by 50% as compared to the previous AY	Social Media Accounts Data	No <sup>1</sup>	≈ 35%
At least 80% of all CM freshmen report RWU as their first choice	Freshmen Survey	No <sup>2</sup>	79%
All student teams competing in competitions placed in the top three	CM Club Report	No <sup>3</sup>	Only 1 team
At least 2 faculty (or faculty led students) to present CM related work at a peer reviewed international conferences	Faculty Survey	Yes	3 faculty
<b>Action Item(s):</b>	1. Work with faculty to identify more ways to get more activity in the various CM social media accounts 2. PC to identify the other first choices 3. This metric is too aggressive and somewhat unrealistic.		

<b>Table 21. Program Objective #11, Metrics and Targets</b>			
<b>FACILITIES</b>			
Three to five years after graduation, we expect that our graduates:			
<b>Objective #11: Maintain convenient, well equipped, and state-of-the-art facilities and resources to support learning and research</b>			
<b>Metrics Associated w/Objective</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
At least 80% of graduating seniors answer the following question as satisfied or very satisfied: Please rate the overall quality of SECCM classrooms and labs	Senior Exit Survey	Yes	97.5%
At least 80% of alumni (5 years out) answer the following question as satisfied or very satisfied: Please rate the quality of the SECCM rcloud.	Alumni Survey	Unknown <sup>1</sup>	Question not asked on survey
100% of CM faculty answer the following statement with somewhat agree or strongly agree: I am satisfied with the SECCM facilities	Faculty Survey	No <sup>2</sup>	75%
No CNST lab section exceeds 16 students and no CNST lecture section exceeds 36 students and no CNST course with a computer software related outcome exceeds 24 students	Registrar	No <sup>3,4</sup>	CNST 201 lecture sections exceeded 36 students; courses with software exceeded 24 students
<b>Action Item(s):</b>	<ol style="list-style-type: none"> <li>1. Make sure the question is included in the next cycle</li> <li>2. Need more detail/specific reasons as to why we are not meeting this metric</li> <li>3. Submit lower course caps to Dean and/or open more sections</li> <li>4. Submit for CAPEX funding for SELB upgrades</li> </ol>		

### Assessment of CM Program Outcomes

*Note: For PLO assessment from the senior exit survey, proficiency is defined as a mean and median score of 4.0 or above on a 5-point scale (i.e., 80%) where 5 means proficiency achieved and 1 means proficiency not achieved.*

<b>Table 22. PLO #1: Metrics, Targets, and Assessment Tools</b>			
<b>Outcome #1:</b>			
<i>Create written communications appropriate to the construction discipline</i>			
<b>Metrics Associated w/Outcome</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
80% of graduating seniors report that they are proficient in creating written documents appropriate to the construction discipline	Senior Exit Survey	Yes	82.51%
100% of CM students successfully complete at least two writing courses	Transcript	Yes	Required
At least 50% of all CM courses require "creating written communications appropriate to the construction discipline"	Course Syllabi	Yes	CNST 100, 200, 201, 321, 445, 455, 450, 480
CNST 480: Capstone Project, Ethics, and New Technology has adopted this outcome as a CLO	Capstone Syllabus, Final Grades, Term Project Grading Rubric	Yes	Individual papers required for ethics and new technologies
100% of employers who take a survey will report rising senior interns' written communication to be either concise, factual, effective, or outstanding	Employer Internship Survey	Yes	100%
<b>Action Item(s):</b>	No actions necessary		

<b>Table 23. PLO #2: Metrics, Targets, and Assessment Tools</b>			
<b>Outcome #2:</b> <i>Create oral presentations appropriate to the construction discipline</i>			
<b>Metrics Associated w/Outcome</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
80% of graduating seniors report that their RWU education has prepared them proficiently in communication skills for the workplace	Senior Exit Survey	Yes	97.5%
100% of employers who respond to the Internships survey will report CM rising senior interns to be either clearly communicating ideas or very articulate	Employer Internship Survey	No <sup>1</sup>	90%
100% of seniors will have the opportunity in construction classes to make an oral presentation at least twice a semester during their senior year	CAR's	Yes	CNST 445 & 480
100% of all freshmen, sophomore, and juniors will have the opportunity to make an oral presentation in a construction class at least once per year	CAR's	Yes	100%
CNST 480: Capstone will adopt this outcome as a CLO, and in its assessment report will list this CLO to be satisfactory based on at least one direct and on indirect measure of assessment <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	Capstone Syllabus, Final project grading rubric, course grades	Unknown <sup>2</sup>	No assessment, individual presentations are not done in Capstone <sup>2</sup>
<b>Action Item(s):</b>	1. Need to give students more opportunities to present in a wider range of classes 2. All presentations are by teams which does not meet the accreditation requirements		

<b>Table 24. PLO #3: Metrics, Targets, and Assessment Tools</b>			
<b>Outcome #3:</b> <i>Create a construction project safety plan</i>			
<b>Metrics Associated w/Outcome</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
80% of graduating seniors rate their preparation for the safety in the workplace to be proficient	Senior Exit Survey	Yes	85%
CNST 480: Capstone will adopt this outcome as a CLO, and in its assessment report will list this CLO to be satisfactory based on at least one direct and on indirect measure of assessment <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	Final Exam questions and end of course survey	Yes	D: 4.25 I: 4.15
At least 30% of all construction courses will include a construction project safety related CLO	Course Syllabi CAR's	Yes	CNST 100, 200, 201, 250, 445
<b>Action Item(s):</b>	No actions necessary		

<b>Table 25. PLO #4: Metrics, Targets, and Assessment Tools</b>			
<b>Outcome #4:</b> <i>Create construction project cost estimates</i>			
<b>Metrics Associated w/Outcome</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
80% of graduating seniors rate their preparation for the workplace proficient regarding this outcome	Senior Exit Survey	Yes	90%
CNST 480: Capstone will adopt this outcome as a CLO, and in its assessment report will list this CLO to be satisfactory based on at least one direct and on indirect measure of assessment <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	Final Exam questions and end of course survey	Yes	D: 4.30 I: 4.15
CNST 321: Advanced Building Estimating will adopt this outcome as one of its CLO's and report the overall average of all associated CLO's to be satisfactory based on at least one direct and one indirect measure of assessment <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	Final Exam questions and end of course survey, term project	Yes	D: 4.45 I: 4.55
90% of employers who respond to the Internship survey will report rising senior interns to be either moderately knowledgeable or very knowledgeable in estimating	Employer Internship Survey	No <sup>1</sup>	80%
<b>Action Item(s):</b>	1. Need to find out from employers what specific areas we should target within the curriculum		

<b>Table 26. PLO #5: Metrics, Targets, and Assessment Tools</b>			
<b>Outcome #5:</b> <i>Create construction project schedules</i>			
<b>Metrics Associated w/Outcome</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
80% of graduating seniors rate their preparation for the workplace proficient regarding this outcome	Senior Exit Survey	Yes	85%
CNST 480: Capstone will adopt this outcome as a CLO, and in its assessment report will list this CLO to be satisfactory based on at least one direct and on indirect measure of assessment	Final exam question(s), course survey	Yes	D: 4.03 I: 4.25
CNST 450: Construction Planning and Scheduling will adopt this outcome in its CLO's and report the overall average of all associated CLO's to be satisfactory based on at least one direct and one indirect measure <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	CAR: average of final exam and term project grades	Yes	D: 4.15 I: 4.36
90% of employers who respond to the Internship survey will report rising senior interns to be either moderately knowledgeable or very knowledgeable in scheduling	Employer Internship Survey	No <sup>1</sup>	40%
<b>Action Item(s):</b>	1. Look at what is being taught in CNST 260 and CNST 450 and work with course instructor(s) to improve knowledge of the basics of construction scheduling		

<b>Table 27. PLO #6: Metrics, Targets, and Assessment Tools</b>			
<b>Outcome #6:</b> <i>Analyze professional decisions based on ethical principles</i>			
<b>Metrics Associated w/Outcome</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
80% of graduating seniors rate their preparation for the workplace proficient regarding this outcome	Senior Exit Survey	Yes	92.5%
90% of graduating seniors agree or strongly agree that it is as important to be ethical as it is to follow the law	Senior Exit Survey	Yes	100%
100% of graduating seniors will have reviewed and analyzed an ethics case that focuses on professional and ethical responsibility	Course Syllabi CAR's	Yes	In class exercise
CNST 480: Capstone will adopt this outcome as a CLO, and in its assessment report will list this CLO to be satisfactory based on at least one direct and on indirect measure of assessment <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	Capstone Syllabus, Final project grading rubric, course grades	Yes	Emmer D: 4.35 I: 4.50
At least 25% of all CNST courses will include an ethics related CLO which will be assessed using at least one direct and one indirect measure	CAR's	Yes	CNST 100, 321, 445, 480
Alumni rate their preparation for the workplace proficient regarding this outcome	Alumni Survey	Yes	100%
100% of surveyed alumni agree or strongly agree this it is as important to be ethical as it is to follow the law	Alumni Survey	Yes	100%
<b>Action Item(s):</b>	No actions necessary		

<b>Table 28. PLO #7: Metrics, Targets, and Assessment Tools</b>			
<b>Outcome #7:</b>			
<i>Analyze construction documents for planning and management of construction processes</i>			
<b>Metrics Associated w/Outcome</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
80% of graduating seniors rate their preparation for the workplace proficient; agree or strongly agree	Senior Exit Survey	Yes	92.5%
At least 50% of all CNST classes will include a course learning outcome related to this PLO in the syllabus.	CARs	Yes	CNST 100, 116, 130, 200, 201, 321, 445, 450
CNST 480: Capstone will adopt this outcome as a CLO, and in its assessment report will list this CLO to be satisfactory based on at least one direct and on indirect measure of assessment <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	Final exam question(s), end of course survey	Yes	Emmer D: 4.15 I: 4.35
<b>Action Item(s):</b>	No actions necessary		

<b>Table 29. PLO #8: Metrics, Targets, and Assessment Tools</b>			
<b>Outcome #8:</b> <i>Analyze methods, materials, and equipment used to construct projects</i>			
<b>Metrics Associated w/Outcome</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
80% of graduating seniors rate their preparation for the workplace proficient regarding this outcome	Senior Exit Survey	Yes	87.5%
At least 25% of all CNST classes will include a course learning outcome related to this PLO in the syllabus.	CAR's	Yes	CNST 130, 200, 201, 250, 455
CNST 480 –Capstone Project, Ethics and New Technology will adopt this outcome as a CLO, and its assessment report will list this CLO to be satisfactory based on at least one direct and one indirect assessment report <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	Capstone Syllabus, Final project grading rubric, course grades	Yes	D: 4.15 I: 4.55
100% of employers who respond to the Internship Survey will report CM rising senior interns to be either “In tune with the requirements” or “Outstanding” in technical skills.	Employer Internship Survey	No <sup>1</sup>	90%
<b>Action Item(s):</b>	1. Faculty agreed this metric is overly aggressive and needs to be adjusted		

<b>Table 30. PLO #9: Metrics, Targets, and Assessment Tools</b>			
<b>Outcome #9:</b> <i>Apply construction management skills as a member of a multi-disciplinary team</i>			
<b>Metrics Associated w/Outcome</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
80% of graduating seniors rate their preparation for the workplace proficient regarding this outcome	Senior Exit Survey	Yes	90%
100% of work eligible CM students will hold at least one construction related employment, internship or co-op during their studies at RWU, prior to graduation.	Senior Exit Survey	Yes	100%
CNST 445 Construction Project Management and Safety will adopt this outcome into its CLOs and report the overall average of all associated CLOs to be satisfactory based on at least one direct and one indirect assessment <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	CAR IPD assignments 1, 2, 3 Final Assignment	Yes	Celik D: 4.25 I: 4.40
At least three student-led teams will participate in a construction related student competition	CM Club Report	Yes	DBIA, ASC
100% of employers who respond to the Internship Survey will report CM rising senior interns to be either "Gets along with others", "Works well with others" or "Exceptionally well accepted".	Employer Internship Survey	Yes	100%
At least 10% of all Construction Management seniors will participate in a student team competition where their performance will be externally judged and assessed	CM Club Report Capstone Presentations	No <sup>1</sup>	≈ 3%
<b>Action Item(s):</b>	1. Faculty to encourage more student participation		

<b>Table 31. PLO #10: Metrics, Targets, and Assessment Tools</b>			
<b>Outcome #10:</b> <i>Apply electronic based technology to manage the construction process</i>			
<b>Metrics Associated w/Outcome</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
CNST 480 –Capstone Project, Ethics and New Technology will adopt this outcome as a CLO, and its assessment report will list this CLO to be satisfactory based on at least one direct and one indirect assessment report	New technology paper grade average, course survey	Yes	Emmer D: 4.05 I: 4.10
80% of graduating seniors rate their preparation for the workplace proficient regarding this outcome	Senior Exit Survey	Yes	87.5%
80% of employers who respond to the Internship Survey will report CM rising senior interns to be either “Extremely” or “Moderately” proficient regarding software program proficiency	Employer Internship Survey	Yes	90%
At least 50% of all CNST classes will include a course learning outcome related to this PLO in the syllabus.	CARs	Yes	CNST 116, 260, 302, 321, 450, 455, 475, 480
All estimating and scheduling courses will include at least one electronic based technology related CLO in the course syllabus. CLO will be assessed by at least one direct and one indirect assessment method. <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	CARs	Yes	CNST 260 D: 4.25 I: 4.45 CNST 450 D: 4.05 I: 4.25
<b>Action Item(s):</b>	No actions necessary		

<b>Table 32. PLO #11: Metrics, Targets, and Assessment Tools</b>			
<b>Outcome #11:</b> <i>Apply basic surveying techniques for construction layout and control</i>			
<b>Metrics Associated w/Outcome</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
80% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.	Senior Exit Survey	No <sup>1</sup>	67.53%
At least two CNST courses will include a CLO related to this PLO in the syllabus.	CARs	Yes	CNST 116, 302
CNST 302 –Surveying will adopt this outcome. CLO will be assessed by at least one direct and one indirect assessment method. <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	CARs Final Course Grade Average	No <sup>2</sup>	D: 3.6 I: 4.2
<b>Action Item(s):</b>	1. Introduce more in-class practice problems		

<b>Table 33. PLO #12: Metrics, Targets, and Assessment Tools</b>			
<b>Outcome #12:</b> <i>Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process</i>			
<b>Metrics Associated w/Outcome</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
80% of graduating seniors rate their preparation for the workplace proficient regarding this outcome	Senior Exit Survey	Yes	92.5%
At least 25% of all CNST classes will include a CLO related to this PLO in the syllabus.	CARs	Yes	CNST 100, 130, 445, 480
At least 10% of all graduating seniors will participate in a student competition.	CM Club Report Capstone competition	No <sup>1</sup>	7.7%
80% of CM students report to have participated in at least one interdisciplinary workshop in collaboration with a non-CM program such as architecture, engineering, business, etc. prior to graduation	Senior Exit Survey	Yes	90%
CNST 445 –Project Management and Safety will adopt this outcome into its CLOs and report the overall average of all associated CLOs it to be satisfactory based on at least one direct and one indirect assessment. <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	CARs Lab Grades	Yes	Celik D: 4.15 I: 4.20
<b>Action Item(s):</b>	1. Have the student clubs generate more interest at club events.		

<b>Table 34. PLO #13: Metrics, Targets, and Assessment Tools</b>			
<b>Outcome #13:</b> <i>Understand construction risk management</i>			
<b>Metrics Associated w/Outcome</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
CNST 480 –Capstone Project, Ethics and New Technology will adopt this outcome as a CLO, and its assessment report will list this CLO to be satisfactory based on at least one direct and one indirect assessment report. <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	Final exam question(s), course survey	Yes	Emmer D: 3.94 I: 3.85
80% of graduating seniors rate their preparation for the workplace proficient regarding this outcome	Senior Exit Survey	Yes	87.5%
At least 25% of all CNST classes will include a CLO related to this PLO in the syllabus.	CAR's	Yes	CNST 100, 321, 445, 480
<b>Action Item(s):</b>	No actions necessary		

<b>Table 35. PLO #14: Metrics, Targets, and Assessment Tools</b>			
<b>Outcome #14:</b> <i>Understand construction accounting and cost control</i>			
<b>Metrics Associated w/Outcome</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
80% of graduating seniors rate their preparation for the workplace proficient regarding this outcome	Senior Exit Survey	No <sup>1</sup>	77.5%
At least 20% of all CNST classes will include a CLO related to this PLO in the syllabus.	Syllabus	Yes	CNST 116, 250, 321, 475
CNST 475 –Construction Project Control will adopt this outcome into its CLOs and report the overall average of all associated CLOs to be satisfactory based on at least one direct and one indirect assessment. <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	CAR	Yes	D: 4.25 I: 4.15
<b>Action Item(s):</b>	1. May need to re-word this question or have a follow-up question as to why		

<b>Table 36. PLO #15: Metrics, Targets, and Assessment Tools</b>			
<b>Outcome #15:</b> <i>Understand construction quality assurance and control</i>			
<b>Metrics Associated w/Outcome</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
80% of graduating seniors rate their preparation for the workplace proficient regarding this outcome	Senior Exit Survey	Yes	87.5%
CNST 480 –Capstone Project, Ethics and New Technology will adopt this outcome as a CLO, and its assessment report will list this CLO to be satisfactory based on at least one direct and one indirect assessment report <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	Final exam question(s), course survey	Yes	D: 4.05 I: 3.92
At least 25% of all CNST classes will include a course learning outcome related to this PLO in the syllabus.	Syllabus	Yes	CNST 200, 302, 445, 475, 480
<b>Action Item(s):</b>	No actions necessary		

<b>Table 37. PLO #16: Metrics, Targets, and Assessment Tools</b>			
<b>Outcome #16:</b> <i>Understand construction project control processes</i>			
<b>Metrics Associated w/Outcome</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
80% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.	Senior Exit Survey	Yes	87.5%
CNST 475 –Construction Project Control will adopt this outcome into its CLOs and report the overall average of all associated CLOs it to be satisfactory based on at least one direct and one indirect assessment. <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	CAR Average of final grades	Yes	D: 4.35 I: 4.20
3. At least 20% of all CNST classes will include a CLO related to this PLO in the syllabus.	Syllabus	No <sup>1</sup>	CNST 450, 445, 475
<b>Action Item(s):</b>	1. Need to find one more course where this CLO appropriately fits into		

<b>Table 38. PLO #17: Metrics, Targets, and Assessment Tools</b>			
<b>Outcome #17:</b> <i>Understand the legal implications of contract, common, and regulatory law to manage a construction project</i>			
<b>Metrics Associated w/Outcome</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
80% of graduating seniors rate their preparation for the workplace proficient regarding this outcome	Senior Exit Survey	No <sup>1</sup>	75%
At least 25% of all CNST classes will include a CLO related to this PLO in the syllabus.	Syllabus	Yes	CNST 100, 130, 321, 445
100% of all CM students will successfully complete at least one legal elective course prior to graduation.	Transcripts	Yes	LS-220, BUSN 305
CNST 445 –Project Management and Safety will adopt this outcome into its CLOs and report the overall average of all associated CLOs to be satisfactory based on at least one direct and one indirect assessment. <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	CAR Law assignment grade average	Yes	D: 4.05 I: 4.12
<b>Action Item(s):</b>	1. May need to add a follow-up “why” question		

<b>Table 39. PLO #18: Metrics, Targets, and Assessment Tools</b>			
<b>Outcome #18:</b> <i>Understand the basic principles of sustainable construction</i>			
<b>Metrics Associated w/Outcome</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
80% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.	Senior Exit Survey	Yes	87.5%
At least 5% of graduating seniors will report to have been actively involved with the RWU USGBC Student Group.	Senior Exit Survey	NA	Club is inactive
At least 20% of all CNST classes will include a CLO related to this PLO in the syllabus.	CAR	No <sup>1</sup>	18.75%
The RWU USGBC Student Group will sponsor at least one educational activity focusing on sustainable construction. The activity will be open to all CM students with no restrictions on eligibility to attend.	Club Report	NA	Club is inactive
CNST 445 –Project Management and Safety will adopt this outcome into its CLOs and report the overall average of all associated CLOs it to be satisfactory based on at least one direct and one indirect assessment. <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	CAR Average grade of SUST Lab and forum	No <sup>2</sup>	Forum was not conducted
<b>Action Item(s):</b>	1. PC will ensure the majority of courses will include a related CLO 2. Need to find an architectural faculty to help out		

<b>Table 40. PLO #19: Metrics, Targets, and Assessment Tools</b>			
<b>Outcome #19:</b> <i>Understand the basic principles of structural behavior</i>			
<b>Metrics Associated w/Outcome</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
80% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.	Senior Exit Survey	Yes	90%
At least 20% of all CNST classes will include a CLO related to this PLO in the syllabus.	Syllabus	Yes	CNST 200, 201, 204, 304
CNST 204 –Construction Statics will adopt this outcome into its CLOs and report the overall average of all associated CLOs it to be satisfactory based on at least one direct and one indirect assessment. <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	CAR Average of CLO's	Yes	D: 3.77 I: 3.98
CNST 304 –Applied Structures will adopt this outcome into its CLOs and report the overall average of all associated CLOs it to be satisfactory based on at least one direct and one indirect assessment. <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	CAR Average of CLO's	Yes	D: 3.98/5 I: 3.83/5
<b>Action Item(s):</b>	No actions necessary		

<b>Table 41. PLO #20: Metrics, Targets, and Assessment Tools</b>			
<b>Outcome #20:</b> <i>Understand the basic principles of mechanical, electrical, and piping systems</i>			
<b>Metrics Associated w/Outcome</b>	<b>Where Measured</b>	<b>Met</b>	<b>Comments</b>
80% of graduating seniors rate their preparation for the workplace proficient regarding this outcome.	Senior Exit Survey	Yes	95%
At least 10% of all CNST classes will include a CLO related to this PLO in the syllabus.	Syllabus	Yes	CNST 130, 201, 455
CNST 455 –Mechanical / Electrical Design will adopt this outcome into its CLOs and report average of the semester project grades to be satisfactory based on at least one direct and one indirect assessment. <i>Satisfactory means a mean and/or median score of 3.75 or above on a 5-point scale on direct and 4 or above on indirect assessment.</i>	CAR Term Project Grades	Yes	Emmer D: 4.55 I: 4.45
<b>Action Item(s):</b>	No actions necessary		

### Assessment of Previously Implemented Program Changes & Recommendations

- Creation of more CM elective courses
  - o Two new courses are under development
    - Building Deconstruction, Demolition, & Materials Reuse
    - Interdisciplinary Entrepreneurship in the Built Environment
- Addition of more CM courses allowed for the minor
  - o The course list for the minor was updated to include all of the CM elective courses

### Discussion of Recommended Program Changes

- Update misc. course requirements and submit in Curriculog
- Provide more opportunity for faculty and students to conduct funded research
- Develop more collaborative projects with CS and Engineering