New Academic Degree Program Request to Establish

Institution _____ University of North Carolina at Charlotte _____

Degree Program Title (e.g., M.A. in Biology) _____ B.S. in Construction Engineering _____

Reviewed and Approved By (Provide Name and title only. No signature required in this section.)

Review	Name	Title
Faculty Senate Chair (Or appropriate body)	Xiaoxia Newton	Faculty President
Graduate Council (If applicable)	N/A	N/A
Graduate/Undergraduate Dean (If applicable)	N/A	N/A
Academic College/School Dean	Robert Keynton	Dean W.S. Lee College of Engineering
Department Head/Chair	Glenn E. Moglen, Lingguang Song	Chair, Civil and Environmental Engineering; Chair, Engineering Technology and Construction Management
Program Director/Coordinator	N/A	

New Academic Program Process

New academic programs are initiated and developed by faculty members. The Request to Establish a New Academic Degree Program must be reviewed and approved by the appropriate individuals listed above before submission to the UNC System Office for review.

Please provide a succinct, yet thorough response to each section. Obtain signatures from the Chancellor, Provost, and Chief Financial Officer, and submit the proposal via the PREP system to the UNC System Vice President for Academic Program, Faculty, and Research, for review and approval by the UNC System Office. If the Request to Establish is approved by UNC System Office staff, it will be submitted the proposal for review and approval by the UNC Board of Governors

UNC Institution Name	University of North Carolina at Charlotte
Joint Degree Program (Yes or No)? If so, list partner.	No
Degree Program Title (e.g., M.A. in Biology)	B.S. in Construction Engineering
CIP Code and CIP Title (May be found at National Center for Education Statistics)	14.3301 Construction Engineering
Require UNC Teacher Licensure Specialty Area Code (Yes or No). If yes, list suggested UNC Specialty Area Code(s).	No
Proposed Delivery Mode (campus, online, or site-based distance education). Add maximum % online, if applicable.	Campus
Will this program be offered by an outside provider such as an Online Program Manager (OPM) or Project Kitty Hawk (PKH)? If yes, list the provider.	No
If requesting site-based delivery, indicate address(es), city, county, state, and maximum % offered at site.	N/A
Proposed Term to Enroll First Students (e.g., Fall 2023)	Fall 2026

Do the following sections of your previously submitted and approved Request for Preliminary Authorization to Develop a New Academic Degree Program document require any change or updated information? If yes, note the items and explain.

Category	Yes or No	Explanation (if applicable)
SACSCOC Liaison Statement	No	
Review Status (campus bodies that reviewed and commented on Letter of Intent)	No	
Program Summary	No	
Student Demand	No	
Access and Affordability	No	
Societal and Labor Market Demand	No	
Doctoral Specific Questions	No	

I. Program Summary

a. Describe the proposed program, including the overall rationale for its development. Include a discussion of how this program supports the specific mission of the institution and of the broader UNC System. Why is this program a necessary addition for the institution?

The engineering and construction industry is not only the pillar of economic development and competitiveness, but it also enhances the quality of life for citizens by improving infrastructure, creating jobs, and fostering a vibrant, sustainable built environment. Construction is a major contributor to the United States' economy, employes over eight million workers, and produces $2.1 trillion worth of structures each year. In North Carolina, construction activities account for $28 billion, or 4.4%, of the state's gross domestic product. For the Charlotte metropolitan area, infrastructure construction projects are integral to the area's growth and its position as a key economic center in the region. It supports the influx of new residents and businesses to the city, ensuring that it remains a top choice to live and work.

The proposed interdisciplinary program in Construction Engineering equips students with not only civil engineering knowledge but also construction management knowledge and techniques to ensure construction projects are delivered efficiently, safely, and within budget. Unlike civil engineering with a focus on design and construction management which has a focus on management and logistics, construction engineering educational programs allow students to be fluent in both the engineering world and the business of construction. The construction engineering job market has a particularly strong outlook for the next decade, and as many as 75% of job postings requested a bachelor's degree or above. This demand has attracted students around the country to pursue their degrees in construction engineering, however, there is still a gap between the job market need and existing student enrollment. For states with a job market of comparable size, North Carolina's job-to-enrollment ratio is two times the average ratio, indicating a significant enrollment gap for the state. In addition, our current construction industry advisory board was surveyed in fall 2023, and 35 board companies confirmed the unfilled talent need and offered their unanimous support to the creation of the Construction Engineering degree program at UNC Charlotte (see Request for Preliminary Authorization for their support letter). In summary, the proposed program is necessary given the strong market needs and the gap for construction engineering talent in North Carolina, particularly the Charlotte metropolitan area.

The proposed program aligns with the State, UNC System, and UNC Charlotte's mission and strategic plan through promoting guiding commitments such as academic excellence, economic mobility, and community engagement. The North Carolina General Assembly recognizes the importance of STEM programs as drivers of economic investment, expansion, and employment throughout the State. Engineering N.C.'s Future has invested $35 million in key engineering schools and an additional $90 million for capital improvements in selected institutions, including UNC Charlotte. The proposed Construction Engineering program is aligned with the program goal of "… expanding enrollment opportunities … to enable more students to pursue an education in engineering fields." The program aims to transform lives, communities, and industries by providing students with essential skills and knowledge for their career success, and through their professional services to the state and beyond, improving our infrastructures and communities. Furthermore, UNC Charlotte's highly accessible and affordable education will attract a broad student body and the engagement of community partners, supporting the institution's commitment to address economic mobility and local-to-global impact. UNC Charlotte leads in serving other underserved populations for its high percentage of adult learners and veterans in comparison with institutions in the region, including North Carolina, South Carolina, Tennessee, and Virginia. This directly contributes to myFutureNC's mission to dramatically increase attainment of industry-valued credentials and postsecondary degrees among adult and veteran learners. With continuous improvement, the proposed program is expected to increasingly contribute to the institution's mission and enhance its impact on

students, the community, and the broader field of construction engineering.

The program will complement UNC Charlotte's existing degree programs in Civil Engineering and Construction Management, bridging the gap between civil engineering design and field execution. This will also allow UNC Charlotte to become the only institution in North Carolina, or one of the 8% of accredited bachelor's degree programs nationally, to offer a comprehensive Construction Engineering and Management education program to address industry needs. In addition, the proposed program will further strengthen the long-standing collaboration on research between our faculty in civil engineering and construction management, leading to significant research funding and academic publication opportunities in the multidisciplinary research field of construction engineering, material science, sustainability, disaster resilience, and smart cities. The graduates will not only elevate UNC Charlotte's reputation as one of the nation's top urban research universities, but also stimulate economic development and industry growth in the region, the state, and beyond. Finally, the unique positioning of our innovative Construction Engineering and Management education and applied research program will increase fundraising opportunities, including scholarship endowments and naming of programs and facilities, thus growing philanthropic support for the university.

b. What are the key objectives of the program? What are the expected benefits for the student who graduates from the program? What are the expected public benefits (at the local, regional, state, or national level) of this program?

The primary objective of the proposed program is to prepare real-world ready graduates who not only immediately add value and deliver successful construction projects today but also lead industry evolution in the future. A construction engineering graduate possesses a focused knowledge of some Civil Engineering systems – those most related to the construction field. In addition, a Construction Engineering graduate has an expansive knowledge of all phases of the construction industry, including safety, quality, time, cost, and contract administration. By contrast, a Civil Engineering graduate possesses a broad knowledge of and ability to create designs pertaining to structures, geotechnical, environmental, and transportation systems. In short, a Construction Engineering graduate is fluent in both the engineering world and the business of construction.

The curriculum will provide students with civil engineering principles and construction management techniques so that they can transform design vision into reality in an efficient, safe, and economic way. The curriculum will also expose students to the latest technology trends and prepare them to lead and improve the ever-evolving industry practice. Students will acquire this set of knowledge and skill through engaging and hands-on learning activities as well as mandatory experiential learning including internships and/or co-ops. In addition to earning a degree, students will also be prepared to earn the Professional Engineer (PE) licensure and relevant industry-recognized credentials in construction management that are incorporated into the curriculum. Finally, graduates will have ample opportunities to advance their education to the Master's or Doctoral levels. Specifically, the education objectives for B.S. in Construction Engineering graduates three to five years after they have completed the program are listed below:

1. Graduates will be progressing successfully in their career and exhibiting leadership qualities.
2. Graduates will be demonstrating integrity and ethical behavior in all professional activities. Graduates will further demonstrate professionalism by obtaining professional licensure and industry-recognized credentials as appropriate for their chosen career, and by actively participating in professional activities.
3. Graduates will be demonstrating their technical ability to solve problems and/or manage engineering solutions from conception through implementation.
4. Graduates will be maintaining and expanding professional competencies and mastering emerging technologies by engaging in lifelong learning that includes graduate studies and professional education.

5. Graduates will strive to incorporate global, economic, environmental, societal, and governance impacts in their professional work, consistent with the principles of sustainable development.
6. Graduates will be committed to continued engagement and supporting the UNC Charlotte community, and will also seek opportunities to mentor future engineers.
7. Graduates will be engaging and collaborating with the communities in which they live and work.

Infrastructure systems such as buildings, roads, utilities, and factories are not only vital to economic development and public welfare, but also in addressing societal challenges, such as urbanization and climate change. The United States' infrastructure is rated an alarming grade of C- by the American Society of Civil Engineers (ASCE), while North Carolina is also facing a deteriorating infrastructure with an unmet public need due to a 10% jump in the state's population and a strong economic growth during the last decade. For example, driving on roads in need of repair in North Carolina costs each driver $500 per year, and the state's schools have an estimated capital expenditure gap of $660 million. These deficiencies impede North Carolina's ability to compete in an increasingly global marketplace. The largest-in-history United States infrastructure investment bill and other public and private construction spending is a huge opportunity for improving public safety, energy efficiency, sustainability, resilience, and overall United States competitiveness according to the White House, but we should not waste the investment. It is imperative that we not only "Build Back" but also "Build Back Better": latest and best practices in construction engineering must be fully utilized to prevent the industry from building the same inefficiency and waste into those new investments. Construction engineers play a critical role in delivering more robust project outcomes by integrating civil engineering and construction management expertise. Their interdisciplinary perspective is especially valued for addressing complex challenges, such as integrating modern technologies, adhering to sustainability practices, and managing large-scale projects with multiple stakeholders. They ensure that public infrastructure is safe, accessible, and functional, while also championing sustainable practices that protect the environment and promote resource efficiency at national, state, and local levels.

The proposed program will prepare graduates to be professionals for high-demand, well-paying jobs in North Carolina and beyond. Construction engineering careers show strong potential due to high and growing demand for graduates in both regional and national markets. According to the Bureau of Labor Statistics (BLS), North Carolina employs 32,900 civil engineers and construction managers, which ranks it the fourth largest market nationally and the second largest in the Southeastern United States. Between February 2021 and January 2024, employer demand grew an average monthly 0.8% regionally, indicating a healthy labor market with ample opportunities for graduates. The job outlook for civil engineering and construction management is projected to grow by 5% nationally over the next 10 years, while North Carolina's growth rate of 14% is three times the national average. North Carolina's booming construction industry is driven in large part by the expansion of the energy infrastructure and emerging renewable energy sectors. Construction engineers equipped with knowledge in digital transformation are among the top high-demand positions frequently requested by our industry partners, such as Duke Energy.

The median earning for construction engineering graduates is $102,200 five years after graduation according to the United States Department of Education's College Scorecard. Based on BLS data, North Carolina's median wage rate has been the second highest since 2020 and it is expected to exceed neighboring states by 2025. Employment opportunities for these graduates include project engineer, field engineer, project manager, structural engineer, and construction manager in a wide variety of industry sectors, such as engineering and construction (e.g., global E&C firms, Black & Veatch, AECOM, Jacobs, and Fluor), engineering services (e.g., Catalent, WSP Global, and Stantec), government agencies (e.g., the State of North Carolina), and clients (e.g., Amazon).

II. Program Planning and Unnecessary Duplication:

a. List all other public and private four-year institutions of higher education in North Carolina currently operating programs similar to the proposed new degree program, including their mode of delivery (use the 4-digit CIP as a guide). Show a four-year history of applications, acceptances, enrollments, and degrees awarded in similar programs offered at other UNC institutions (using the format below for each institution with a similar program). If data was not available, mark not available. Programs at UNC institutions may be found on the UNC System website.

There is currently one undergraduate degree program in the CIP Code 14.33 category in public and private four-year institutions of higher education in North Carolina, the B.S. Construction Engineering program offered by North Carolina State University. It should be noted that new first-year students are first enrolled in the college's "Engineering First-Year," and upon completion of required courses, students then can apply to be admitted to the Construction Engineering program. This explains the low acceptance and new enrollment in relation to the total program enrollment.

Institution	**North Carolina State University**			
Program Title	B.S. Construction Engineering			
Academic Year	2019-2020	2020-2021	2021-2022	2022-2023
Applications	11	15	21	19
Acceptances	4	3	5	1
New Enrollment	3	3	4	1
Total Enrollment	64	53	57	70
Total Degrees Awarded	13	15	15	16

b. Describe what was learned in consultation with other programs regarding their experience with student demand and job placement. Indicate how their experiences influenced your enrollment projections.

Four different data sources were collected and analyzed to gain insights into experiences of other similar programs with regards to student demand and job placement. First, the EAB market report (Appendix A) showed that between 2018 and 2022 academic years, the average annual growth rate for the nation is 3.9%, while a 22.79% annual growth was recorded in the region. Meanwhile, the North Carolina Community College System reported a 12% increase in enrollment over the last 5 years in civil and construction related programs. The above indicates a favorable landscape for new program launch and future growth potential.

Second, we reviewed all 22 accredited construction engineering programs offered in the United States. The average program enrollment is 74. Among comparable institutions that offer civil, construction engineering and management programs, construction engineering enrollment is on average 1.4% of their college and 0.24% of their institution. The above observations led to our forecast of an enrollment between 60 and 75 students for our proposed program. From a career perspective, the typical program-reported job placement rate upon graduation is above 90%, and the starting salary range for graduates are from $55k to $75k.

Third, we compared regional institutions who offer construction engineering programs, particularly from an affordability and access perspective. These institutions includes NC State, Virginia Tech, The Citadel, and Univ. of Tennessee. UNC Charlotte has the lowest tuition fee rates and net price after financial aid and the second lowest indebtedness and monthly debt repayment among the five institutions. UNC Charlotte also leads in socio-economic diversity with the highest percentage of adult learners, veterans, and students from low-income families. Along with the second highest acceptance rate, UNC Charlotte offers prospective students an affordable and accessible option for their academic pursuit.

Finally, we reached out to peer program administrators for their experience, and this group includes a mix of geographic location and institution profiles. These institutions include NC State, University of Alabama, Arizona State University, and Purdue University. In particular with NC State, a meeting was conducted in October 2024 with the administrators in the Department of Civil, Construction, and Environmental Engineering. The meeting provided an overview of UNC Charlotte's program proposal and enrollment projection. The NC State team shared their enrollment trend and graduate job placement in recent years, and the team also discussed potential collaboration opportunities. In summary, these conversations have confirmed stable student demand and strong job placement and salary rate for graduates, which have informed our enrollment projections for the proposed program.

c. Identify opportunities for collaboration with institutions offering related degrees and discuss what steps have been or will be taken to actively pursue those opportunities where appropriate and advantageous.

The proposed program will further expand our collaboration in the construction field with other institutions in the region not only on research but also on curriculum and student success. Our faculty has been in regular exchange of curriculum design and program development ideas with regional institutions such as NC State University, East Carolina University, Western Carolina University, and Virginia Tech. For example, UNC Charlotte collaborated with Western Carolina University and the Associated School of Construction (ASC) in offering two faculty training camps on virtual design and construction and cost estimating on UNC Charlotte campus during summer 2024, attracting over 100 members from around the country. From a student perspective, once graduated, students can choose to advance their education to the graduate level in civil engineering or construction management at those institutions. As an example of collaboration on the national level, we plan to join as an academic member of the Construction Industry Institute hosted by the University of Texas at Austin. This collaboration will provide us with education access and expose our students to the seventeen best practices widely adopted by leading engineering and construction organizations, thus increasing graduates' marketability.

d. Present documentation that the establishment of this program would not create unnecessary program duplication. In cases where other UNC institutions provided similar online, site-based distance education, or off-campus programs, directly address how the proposed program meets unmet need.

The establishment of this new program will not create unnecessary program duplication due to its unique positioning in terms of local market demand, student supply, affordability and access, and curriculum. First, there is still a significant unfilled talent need in the construction industry. According to a survey conducted by the Associated General Contractors of America (AGC), as many as 80% of construction businesses are reported to struggle to find skilled workers to ensure efficient, quality, and safe delivery of construction projects. Based on BLS data and current Construction Engineering student enrollment data, North Carolina's job-to-enrollment ratio is two times the average ratio of states with a comparable construction market size, indicating a 50% estimated enrollment gap for the state even with the existing construction engineering program at NC State. Locally,

Charlotte is the largest construction job market in the state, accounting for about one-third of the state's job market. Our construction industry advisory board also confirmed the significant talent needed in the great Charlotte area evidenced by their unanimous support of the new Construction Engineering program (see the board support letter in Request for Preliminary Authorization).

Second, Charlotte and the surrounding counties provide a steady supply of both traditional and transfer students. Transfer enrollment has historically been over 45% for our engineering programs and regional community college enrollment in related programs has enjoyed a steady increase in recent years. The proposed program also offers students an education option with unparalleled affordability and accessibility. UNC Charlotte is among the Top 100 public universities in the United States, yet it offers one of the most affordable tuition rates in the region. Its in-state tuition and fee rate is the lowest among all regional institutions who offer a Construction Engineering program, while the institution has the most diverse student population.

Finally, in addition to civil engineering principles, the proposed curriculum distinguishes itself from peer programs due to its heavy focus on construction science and experiential learning through a mandatory internship. This aligns with our goal to prepare real-world-ready graduates for today and tomorrow. For example, the construction engineering curriculum at NC State includes one course covering all subjects related to estimating, planning, and control, while our proposed curriculum devotes 3 courses to ensure graduates have more balanced engineering and construction science knowledge. Furthermore, our proposed curriculum requires mandatory internships to ensure the industry-readiness of our graduates. The Charlotte location plays a critical role in fulfilling the above goals, for example the metropolitan provides ample internship opportunities, allowing students to study and work simultaneously year-round and benefiting them on both experiential learning and college affordability.

e. Admission. List the following:
    i. Admissions requirements for proposed programs (indicate minimum requirements and general requirements).

First-Year Admission:
All students must meet the UNC Charlotte requirements for admission for undergraduate students. In addition to the general admission criteria, engineering majors are expected to meet the following requirements:

- A grade of C or better in all high school math courses based on final high school transcript
- Completion of Pre-Calculus, although Calculus is preferred
- A math course in the last year of high school prior to graduation (grade 12 or 13 depending on the high school)

Transfer Admission:
The William States Lee College of Engineering reviews transfer applicants on a comprehensive, holistic basis. This includes, but is not limited to, grades earned at other institutions and at UNC Charlotte. Criteria include:

- UNC Charlotte general Transfer Admission Requirements: 24 transferable hours from a regionally accredited institution; Eligible to return to last institution attended; Demonstrated math proficiency at college or high school level.
- Minimum transfer GPA of 2.5
- Completion of Calculus equivalent (MAT 271 at North Carolina community colleges) prior to admission.

Internal Change of Majors:

Internal change of majors within the College of Engineering must have a minimum GPA of 2.5. Students who do not meet the GPA requirement may be admitted upon the recommendation of the chair of the major department.

All students must meet the UNC Charlotte requirements for admission for undergraduate students. Students who wish to be engineering majors but do not meet the requirements will be admitted to UNC Charlotte as an undeclared student in the University College. These students may be considered for admission to the College of Engineering as sophomores by completing the first-year engineering plan of study with a 2.5 cumulative GPA.

i. Documents to be submitted for admission (listing)

First-Year Students:
First-year admission is competitive, based upon an overall evaluation of the high school record, with particular emphasis on advanced courses in math and science. First-Year students may either select a major at the time of their application or may choose to be Engineering-undeclared. All First-Year College of Engineering students will take a common set of courses called the Common First Year. Towards the end of their first year, having completed all progression requirements, students will declare or confirm their Engineering Major for the second through fourth years. This selection may be the major they initially indicated or any other engineering major for which they meet the progression requirements.

Transfer Students:
All transfer students will be evaluated for placement into a departmental program or the Common First Year program based on the evaluation of their transfer credits (consistent with the North Carolina articulation agreements).

- Meet university admission requirements
- Minimum GPA: 2.50
- Pre-Major/Prerequisite Courses: Calculus I course (equivalent to MATH 1241), with a grade of C or above
- Transferable Credit Hours: Minimum of 24

Transfers from an ABET-accredited engineering program who do not meet the GPA requirement may be admitted upon the recommendation of the chair of the major department.

f. Degree requirements. List the following:
    i. Total hours required. State requirements for Major, Minor, General Education, etc.
    ii. Other requirements (e.g., residence, comprehensive exams, thesis, dissertation, clinical or field experience, “second major,” etc.).

The Construction Engineering degree requires 120 credit hours. To enhance student learning and real-world readiness, the curriculum includes a mandatory internship experience, i.e., CNGR3401 Internship. Details of the proposed degree plan can be found in Attachment C.

g. Enrollment. Estimate the total number of students that would be enrolled in the program during the first year of operation and in each delivery mode (campus, online, site, etc.)

	Campus	Online	Site	Full-Time	Part-Time
Year 1	30	n/a	n/a	27	3
Year 3	42	n/a	n/a	37	5
Year 5	60	n/a	n/a	53	7

h. For graduate programs only, please also answer the following:

Grades required	n/a
Amount of transfer credit accepted	
Language and/or research requirements	
Any time limits for completion	

i. For all programs, provide a degree plan showing the sequence of courses to be taken each year. List courses by title and number and indicate those that are required. Include an explanation of numbering system. Indicate new courses proposed. A possible format is offered below as an example. If your institution uses a different format that provides the required information, it may be submitted instead.

	Course No.	Course Title	Required (Y/N)	New (Y/N)	Brief Description (If New Course)
Year 1	ENGR 1300	Exploring Engineering and Technology with Success	Y	N	
	ENGR 1301	Foundations of Math and Science for Engineers	Y	N	
	ENGR 1302	Logic and Computational Problem Solving	Y	N	
	MATH 1241	Calculus I	Y	N	
	Gen Ed 1	Gen Ed Theme Course 1	Y	N	
	Gen Ed 2	Gen Ed Theme Course 2	Y	N	
	ENGR 1303	Engineering Visualization and Graphical Communications	Y	N	
	MATH 1242	Calculus II	Y	N	
	PHYS 2101	Physics for Science and Engineering 1	Y	N	
	PHYS 2101	Physics for Science and Engineering Lab	Y	N	
	WRDS 1103	Writing and Inquiry in Academic Contexts	Y	N	
Year 2	ETCE 1222	Construction Materials	Y	N	
	CEGR 2102	Engineering Economics	Y	N	
	MEGR 2141	Engineering Mechanics I (Statics)	Y	N	
	MATH 2241	Calculus III	Y	N	
	CHEM 1251	Chemistry I	Y	N	

	CHEM 1251	Chemistry I Lab	Y	N	
	ETCE 1211	Construction Surveying	Y	N	
	ETCE 1211	Construction Surveying Lab	Y	N	
	MEGR 2144	Solid Mechanics	Y	N	
	MATH 2171	Differential Equations	Y	N	
	PHYS 2102	Physics II or CHEM 1252 Chemistry II	Y	N	
	ETCE 2163	Construction Materials & Structures Lab	Y	N	
	CEGR 2111	Intro to Construction Engineering	Y	Y	A comprehensive overview of construction engineering, fundamental concepts, principles, and practices in the field
Year 3	CMET 2221	Construction Means & Methods	Y	N	
	CMET 2105	Plan Reading	Y	N	
	CMET 2105	Plan Reading Lab	Y	N	
	CEGR 3143	Hydraulics & Hydrology	Y	N	
	CEGR 3278	Geotechnical Eng	Y	N	
	CEGR 3258	Geotech Lab	Y	N	
	CEGR 3122	Structural Analysis	Y	N	
	CMET 3123	Cost Estimating 1	Y	N	
	Elective	ETCE/CEGR Elective	Y	N	
	Gen Ed 3	Gen Ed Theme Course 3	Y	N	
	STAT 3128	Probability and Statistics for Engineers	Y	N	
	CMET 1680	Construction Safety	Y	N	
	ACCT 2121	Accounting 1	Y	N	
	CNGR 3401	Internship	Y	Y	Provide students with office and field experiences in the Construction Engineering field
Year 4	CMET 3150	Construction Law & Contracts	Y	N	
	CMET 3224	Construction Project Admin	Y	N	
	CMET 3126	Project Planning & Scheduling	Y	N	
	Elective	ETCE/CEGR Elective	Y	N	
	ENGR 3295	Professional Development	Y	N	
	CNGR 4272	Capstone Project	Y	Y	Synthesize and apply the comprehensive knowledge and skills acquired throughout the program to a real-world project
	Elective	ETCE/CEGR Elective	Y	N	
	Gen Ed 4	Gen Ed Theme Course 4	Y	N	
	CTCM 2530	Critical Thinking & Communication	Y	N	

III. Faculty

a. (For undergraduate and master's programs) List the names, ranks and home department of faculty members who will be directly involved in the proposed program. The official roster forms approved by SACSCOC may be submitted. For master's programs, state or attach the criteria that faculty must meet in order to be eligible to teach graduate level courses at your institution.

Please see faculty roster in the table below.

1 **NAME** **(HOME DEPT)** CEE: Civil & Environmental Eng. ETCM: Engineering Tech. & Construction Management	2 **COURSES TAUGHT** **Including Term, Course Number & Title, Credit Hours (D, UN, UT, G) [Dual]** Note – for substantive change prospectuses/applications, list the courses *to be taught*, not historical teaching assignments	3 **ACADEMIC DEGREES & COURSEWORK** Relevant to Courses Taught, Including Institution & Major List specific graduate coursework, if needed	4 **OTHER QUALIFICATIONS & COMMENTS** **Related to Courses Taught**
Abu El Ala, Ahmed (CEE)	CEGR 3258, CEGR 3278	Ph.D., Civil Eng., Univ. of Missouri, M.S. Civil Eng., Zagazig Univ., Egypt, B.S., Zagazig Univ., Egypt	
Almakhadmeh, Wala'a (CEE)	CEGR 2102	Ph.D., Civil Eng., Concordia Univ Canada., MEng., Civil Eng., Concordia Univ., Canda, B.Sc. Civil Env., Jordan Univ. of Science and Technology, Jordan	
Braxtan, Nicole (CEE)	MEGR 2141, MEGR 2144, CEGR 3122	Ph.D., Structural Eng., Lehigh Univ., M.S., Civil Eng., Princeton Univ., B.S., Civil and Environmental Eng., Rutgers	
Brizendine, Anthony (ETCM)	ETGR 2101, ETGR 2102, ETGR 3695	Ph.D., Civil Eng., West Virginia Univ.; M.S., Civil Eng., Virginia Tech.; B.S., Civil Eng. Tech., Bluefield State College	Registered Professional Engineer, Virginia
Cavalline, Tara (ETCM)	ETCE 1222	Ph.D., Infrastructure & Envir. Sys., UNC Charlotte; M.S. and B.S., Civil Eng., Pennsylvania State Univ.	Registered Professional Engineer, North Carolina, South Carolina, Georgia, and Pennsylvania
Chen, Don (ETCM)	CMET 2135	Ph.D., Civil Eng., Iowa State Univ.; M.S., Civil Eng., Iowa State Univ.; B.S., Civil Eng., Tongji Univ., China	LEED Accredited Professional (AP)
Chen, Shen-En (CEE)	MEGR 2141, MEGR 2144, CEGR 3122	Ph.D, M.S., and B.S., Civil Eng., West Virginia Univ.	Registered Professional Engineer, West Virginia

1	2	3	4
NAME **(HOME DEPT)** CEE: Civil & Environmental Eng. ETCM: Engineering Tech. & Construction Management	**COURSES TAUGHT** **Including Term, Course Number & Title, Credit Hours (D, UN, UT, G) [Dual]** Note – for substantive change prospectuses/applications, list the courses *to be taught*, not historical teaching assignments	**ACADEMIC DEGREES & COURSEWORK** Relevant to Courses Taught, Including Institution & Major List specific graduate coursework, if needed	**OTHER QUALIFICATIONS & COMMENTS** **Related to Courses Taught**
Chen, Yuting (Tina) (ETCM)	CMET 1680	Ph.D., Civil Eng., Univ. of Toronto; Master, Construction Management, Tongji Univ.; B.S., Cost Estimating & Control, Shandong Jianzhu Univ. China	
Dietz, Gretchen (ETCM)	CMET 1400, CMET 2105/2105L, ETCE 3242	Ph.D., Envir. Eng., Univ. of Florida; B.S., Civil Eng., Univ. of Mount Union	
Goff, Wayne (ETCM)	CMET 3224, CMET 3123, CMET 4126, CMET 4130, CMET 4272	M.S., Construction Management; B.S., Engineering & Operations Tech., Western Carolina Univ.	
Keen, Olya (CEE)	CEGR 3143	Ph.D., Envir. Eng., Univ. of Colorado, M.S., Envir. Eng., Univ. of South Florida, B.S., Civil Eng., Univ. of South Florida	Registered Professional Engineer, North Carolina
Khire, Milind (CEE)	CEGR 3258, CEGR 3278	Ph.D., Civil and Envir. Eng., Univ. of Wisconsin, M.S., Civil and Arch. Eng., University of Miami, B.S., Civil and Sanitary Eng., University of Bombay, India	Registered Professional Engineer, Michigan and Texas
Moglen, Glenn (CEE)	CEGR 3143	Ph.D, Civil and Envir., Eng., Massachusetts Inst. of Tech., M.S., Civil Eng., Colorado State Univ., B.S., Civil Eng., Univ. of Maryland	Registered Professional Engineering, Maryland
Ogunro, Vincent (CEE)	CEGR 3258, CEGR 3278	Ph.D. and M.S., Civil Eng., INSA, France., B.S., Civil Eng., Univ. of Ife, Nigeria	

1 **NAME** **(HOME DEPT)** CEE: Civil & Environmental Eng. ETCM: Engineering Tech. & Construction Management	2 **COURSES TAUGHT** **Including Term, Course Number & Title, Credit Hours (D, UN, UT, G) [Dual]** Note – for substantive change prospectuses/applications, list the courses *to be taught*, not historical teaching assignments	3 **ACADEMIC DEGREES & COURSEWORK** Relevant to Courses Taught, Including Institution & Major List specific graduate coursework, if needed	4 **OTHER QUALIFICATIONS & COMMENTS** **Related to Courses Taught**
Orozco, Carlos (ETCM)	ETGR 2101, ETGR 2102, ETCE 4266	Ph.D., Civil Eng., M.S., Civil Eng., Carnegie Mellon Univ.; B.S., Civil Eng., Univ. Nacional de Colombia, Colombia	Registered Professional Engineer, Colombia
Pilkington, Stephanie (ETCM)	ETCE 3163, ETCE 3264, ETCE 4165	Ph.D. and M.S., Civil & Envir. Eng., Colorado State Univ.; B.S., Civil & Envir. Eng., Virginia Tech	
Rasanen, Ryan (CEE)	CEGR 3258, CEGR 3278	Ph.D and M.S., Civil Eng., University of Washington, B.S., Geological Eng., Univ. of North Dakota	
Roberts, Nicole (ETCM)	ETCE 1104, ETCE 2410	Ph.D. and M.S., Civil Eng., Clemson Univ.; B.S., Civil Eng. Tech., South Carolina State Univ.	
Saunders, William (CEE)	CEGR 3143	Ph.D., M.S., and B.S., Civil. Eng.,Univ. of North Carolina at Charlotte	Registered Professional Engineer, North Carolina
Sears, Alison (ETCM)	ETCE 1211, ETCE 3131, ETCE 4251, ETCE 4272, ETCE 4350	Ph.D., Civil & Envir. Eng., West Virginia Univ.; B.S., Civil Eng., Mining Eng., West Virginia Univ.	
Shoghli, Omidreza (ETCM)	CMET 2135, CEMT 3224	Ph.D., Civil Eng., Virginia Tech; M.S. and B.S., Civil Eng., Iran Univ. of Science and Technology	
Smithwick, Jake (ETCM)	CMET 2221	Ph.D. and M.S., Construction Management; M.P.A., Public Administration, Arizona State Univ.	
Song, Lingguang (ETCM)	CMET3123, CMET 3126 equivalent	Ph.D., Civil Eng., Univ. of Alberta, Canada; M.S. and B.S., Civil Eng., Tianjin Univ., China	

1	2	3	4
NAME **(HOME DEPT)** CEE: Civil & Environmental Eng. ETCM: Engineering Tech. & Construction Management	**COURSES TAUGHT** **Including Term, Course Number & Title, Credit Hours (D, UN, UT, G) [Dual]** Note – for substantive change prospectuses/applications, list the courses *to be taught*, not historical teaching assignments	**ACADEMIC DEGREES & COURSEWORK** Relevant to Courses Taught, Including Institution & Major List specific graduate coursework, if needed	**OTHER QUALIFICATIONS & COMMENTS** **Related to Courses Taught**
Tempest, Brett (CEE)	CEGR 3225	Ph.D. Univ. of North Carolina at Charlotte, B.S. Univ. of North Carolina	Registered Professional Engineer, North Carolina
Warren, Kimberly (CEE)	CEGR 3258, CEGR 3278	Ph.D. and M.S., Civil Eng., North Carolina State Univ., B.S., Civil Eng., Virginia Tech	
Weggel, David (CEE)	MEGR 2141, MEGR 2144, CEGR 3122	Ph.D., Civil Eng., Univ. of Texas at Austin, M.S. and B.S., Civil Eng., Drexel Univ.	Registered Professional Engineer, Texas
Whelan, Matthew (CEE)	MEGR 2141, MEGR 2144, CEGR 3122	Ph.D., Civil and Envir. Eng., Clarkson Univ., M.S., Civil Eng., Clarkson Univ., B.S., Civil and Envir. Eng., Clarkson Univ.	Registered Professional Engineer, North Carolina
Yarbrough, David (ETCM)	ETCE 3271, ETGR 3222	M.S., Engineering, UNC Charlotte; B.S., Industrial Eng., Georgia Institute of Technology	Registered Professional Engineer, North Carolina; LEED AP

b. (For doctoral programs) List the names, ranks, and home department of each faculty member who will be directly involved in the proposed program. The official roster forms approved by SACSCOC may be submitted. Provide complete information on each faculty member's education, teaching and research experience, research funding, publications, and experience directing student research including the number of theses and dissertations directed.

N/A

c. Estimate the need for new faculty for the proposed program over the first four years. If the teaching responsibilities for the proposed program will be absorbed in part or in whole by the present faculty, explain how this will be done without weakening existing programs, and how the current teaching responsibilities of those faculty will be covered.

There are no new faculty needed for the proposed program during the first four years. The program takes advantage of existing engineering and construction courses and labs that have already been offered as a part of our B.S. Civil Engineering, B.S.E.T. Civil Engineering Technology, and B.S. Construction Management. Only two new courses or 5% of the curriculum will be introduced. The forecasted growth from 30 to 60 students for the first 5 years will modestly increase the existing class size. In addition to currently employed teaching assistants (TA) and graders by the two departments, funding for two full-time equivalent assistantships is reserved for the TA/grader hiring needed to support the faculty. We also plan to engage adjunct faculty, i.e., industry experts with extensive experience, in teaching course subjects that require specialized knowledge or practical experience. For example, we are teaming up our full-time faculty in construction with practicing construction lawyers to deliver the construction law course. Two adjunct faculty positions are budgeted for the program initially and it will gradually increase to four toward Year 5. The team of full-time faculty and adjunct faculty supported by TAs/graders are expected to provide the same quality learning experience to our current and new students without work overload.

d. Explain how the program will affect faculty activity, including course load, public service activity, and scholarly research.

Our current faculty-to-student ratio of 15:1, indicating an excellent level of resources and growth potential. The addition of adjunct faculty and student assistants will ensure full-time faculty's dedication in teaching, research, and service despite the increased student enrollment due to the proposed program. Tenure-track and tenured faculty will maintain a typical teaching load of 4 courses per year, or 40% of their effort. No teaching load increase means that faculty will continue to focus the rest of their effort toward research and service. Meanwhile, they will interact with adjunct faculty to gain fresh perspectives and updates on industry trends, which can spark new research collaborations, industry-sponsored programs, and a better alignment of academic programs with industry needs.

Additional administrative workloads associated with the proposed program are program coordination and program assessment and accreditation. A program director and an associate program director will be recruited from teaching faculty from the two departments involved, and they will be supported by the two department

chairs and committees on financial operation and curriculum. For program assessment and accreditation, two current program assessment directors, Dr. Kimberly Warren and Dr. Alison Sears, will be engaged to establish the program plan, and a new assessment director will be appointed to help support the proposed program. The above additional administrative workload is compensated, which is included in the proposed program financial planning.

IV. Delivery Considerations. Provide assurances of the following (not to exceed 250 words per lettered item):

a. *Access* (online, site-based distance education, and off-campus programs). Students have access to academic support services comparable to services provided to on-campus students and appropriate to support the program, including admissions, financial aid, academic advising, delivery of course materials, and placement and counseling.

N/A

b. *Curriculum delivery* (online and site-based distance education only). The distance education technology to be used is appropriate to the nature and objectives of the program. The content, methods and technology for each online course provide for adequate interaction between instructor and students and among students. What is the impact of online delivery on student access to the program, and what strategies are in place to support students who have internet limitations?

N/A

c. *Faculty development* (online and site-based distance education only). Faculty engaged in program delivery receive training appropriate to the distance education technologies and techniques used.

N/A

d. *Security* (online and site-based distance education only). The institution authenticates and verifies the identity of students and their work to assure academic honesty/integrity. The institution assures the security of personal/private information of students enrolled in online courses.

N/A

V. Library

a. Provide a statement as to the adequacy of present library holdings for the proposed program to support the instructional and research needs of this program (this should be developed in consultation with the University Librarian).

Present library holdings are adequate to support teaching, learning, and research for the proposed program. UNC Charlotte's J. Murry Atkins Library online catalog shows holdings in the construction engineering field, including over 4,100 printed books, an additional 4,700 e-books, 920 journals, and over 100,000 conference proceedings and papers. Students also have access to relevant publication databases such as ASCE Digital Library, Web of Science, ScienceDirect, ASTM Standards, and many others. The library also holds an extensive collection of academic disciplines relevant to construction engineering, such as architecture and business.

b. If applicable, state how the library will be improved to meet new program requirements for the next four years. The explanation should discuss the need for books, periodicals, reference material, primary source material, etc. What additional library support must be added to areas supporting the proposed program?

The current library resources are adequate, and no additional resources are requested. Should such a need arise, faculty and students can contact the engineering librarian directly for options, including purchase. For ongoing subscriptions, the librarian will work with academic departments to prioritize and make requests of the library and university to support the new resource needs.

c. Discuss the use of other institutional libraries (outside of your institution) in delivery of the program.

For items not owned or currently available at the university library, the Interlibrary Loan (ILL) services are available to faculty and students to borrow from other libraries for free or deliver electronic scans of book chapters and journal articles for their instructional and research needs.

d. For doctoral programs, provide a systematic needs assessment of the current holdings to meet the needs of the program.

Education and research in the interdisciplinary field of Construction Engineering overlaps with engineering, construction, architecture, and business and management. These interfacing disciplines are well established at UNC Charlotte in the William States Lee College of Engineering, David R. Ravin School of Architecture, and Belk College of Business. Adequate library holdings already exist, and no additional resources are requested.

VI. Facilities and Equipment

a. Describe the effect of this new program on existing facilities and indicate whether they will be adequate, in year one, five, and ten of the program's operation.
   i. Will any new square footage be required at any point in the first ten years of the program's operation? If so, please provide an overview of requirements, timeline, projected costs, and projected funding sources.
   ii. Will any existing square footage require repair, renovation, or retrofit? If so, please provide an overview of requirements, timeline, projected costs, and projected funding sources.

The existing facilities will be adequate, no repair/renovation/retrofit necessary, and no new square footage is anticipated for Year one, five, and ten of the program's operation. This is because the proposed program will share both curriculum and laboratory facilities with existing Civil Engineering, Civil Engineering Technology and Construction Management programs, such as construction material testing, surveying, structures, hydraulics labs, and computer applications.

b. Describe the effect of this new program on existing technology, information technology, and services and indicate whether they will be adequate, in year one, five, and ten of the program's operation.

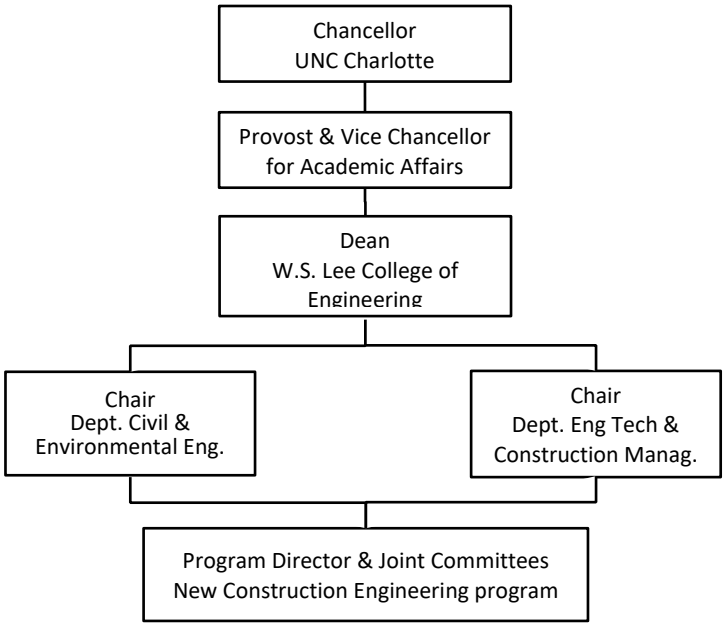
Like the above, existing technology, information technology, and services will be adequate, in year one, five, and ten of the program's operation.

VII. Administration

a. Describe how the proposed program will be administered, giving the responsibilities of each department, division, school, or college. Explain any inter-departmental or inter-unit administrative plans. Include an organizational chart showing the "location" of the proposed new program.

Due to its interdisciplinary nature, the proposed Construction Engineering program is jointly proposed and will be jointly administered by the Department of Civil and Environmental Engineering (CEE) and the Department of Engineering Technology and Construction Management (ETCM) at UNC Charlotte. The inter-departmental collaboration will maximize resource utilization for the expansion of our education and research enterprise, leading to enrollment and research growth that benefit both departments involved. The joint model has gained support and buy-in from the college and the department faculty. The proposed partnership is built on trust, transparency, and shared governance as demonstrated in the organization chart below. Joint committees will be formed to oversee curriculum, financial operation, program development, and accreditation to ensure the development of a high-quality program, consistent with existing programs currently administered by the two departments.

Organizational Chart for New Construction Engineering Program



The joint CEE and ETCM team will share decision-making rights, responsibilities (e.g., teaching, advising, and facilities), as well as revenues (e.g., enrollment credit) on an equal basis, adjusted as necessary based on each department's contribution. An annual review will be conducted at the conclusion of each spring semester to assess all elements of the program. With continuous improvement in mind, all elements of the Construction Engineering

program (e.g., revenue sharing, operational procedures, etc.) in need of modification will be discussed, potential remedies identified, and solutions chosen by the joint team.

b. For joint programs only, include documentation that, at minimum, the fundamental elements of the following institutional processes have been agreed to by the partners:
    i. Admission process
    ii. Registration and enrollment process for students
    iii. Committee process for graduate students
    iv. Plan for charging and distributing tuition and fees
    v. Management of transcripts and permanent records
    vi. Participation in graduation
    vii. Design of diploma

N/A

VIII. Additional Program Support

a. Will additional administrative staff, new master's program graduate student assistantships, etc. be required that were not previously identified in the Request for Preliminary Authorization? If so, please describe each item, state the estimated new dollars required at steady state after four years, and state the source of the new funding and resources required.

Resource needs have been identified in the Request for Preliminary Authorization without changes.

IX. Accreditation and Licensure

a. Where appropriate, describe how all licensure or professional accreditation standards will be met, including required practicums, internships, and supervised clinical experiences.

A Professional Engineer (PE) is an engineer licensed by a state board of registration to practice engineering. The PE license is the engineering profession's highest standard of competence. This professional standard will be met through the successful completion of the degree plan of the Construction Engineering program. Internships, practicums, and supervised clinical experiences are not requirements for licensure. The College of Engineering currently provides support for its students pursuing the Fundamentals of Engineering exam, the first step towards PE licensure. These services will also support future Construction Engineering students interested in pursuing licensure.

b. Indicate the names of all accrediting agencies normally concerned with programs similar to the one proposed. Describe plans to request professional accreditation.

The accrediting agency for the proposed Construction Engineering program is the Accreditation Board for Engineering and Technology, Inc. (ABET). To request professional accreditation with ABET, the new program must meet several eligibility requirements as outlined in the ABET manual, including:

1. Meet ABET's Definition of a Program
The proposed program meets the ABET program definition that is "an integrated, organized experience that culminates in the awarding of a degree." The program has program educational objectives, student outcomes, a curriculum, faculty, and facilities, as described in the accreditation criteria.

2. Be Housed in a Degree-Granting Institution
UNC Charlotte meets the requirement given its status as "verifiable and recognized governmental, national, or regional authority to confer degrees."

3. Have at Least One Graduate
Programs requesting an initial accreditation review must have at least one graduate prior to the academic year when the on-site review occurs. Upon conferring the first degree, the proposed program will notify ABET to initiate the initial accreditation.

4. Name Must Meet ABET Requirements
The proposed program meets this requirement that the program name "must be descriptive of the program's content and be stated exactly the same way on the graduate's transcript and in the institution's literature."

5. Be Accreditable Under at Least One ABET Accreditation Commission
The proposed program will be assigned to the Engineering Accreditation Commission (EAC). Programs accredited by EAC are those leading to the professional practice of engineering. All engineering programs requesting ABET review must include the word "engineering" in the program name.

6. Some Programs Must Undergo a Readiness Review
ABET requires an additional step of preliminary Self-Study Report and Readiness Review before formal Request of Evaluation, if an institution has no currently ABET-EAC-accredited programs. Our B.S. in Civil Engineering is actively accredited by ABET EAC, thus this additional step is not required.

c. If the new degree program meets the SACSCOC definition for a substantive change, what campus actions need to be completed by what date in order to ensure that the substantive change is reported to SACSCOC on time?

N/A.

d. If recipients of the proposed degree will require licensure to practice, explain how program curricula and title are aligned with requirements to "sit" for the licensure exam. List what state(s) the institution has determined the program meets professional licensure requirements for and how that information will be communicated to students and prospective students.

Licensure is not required for entry-level civil engineers. However, civil engineers typically must be licensed if they provide services directly to the public. The proposed program, once accredited, will qualify all its graduates for the licensure exam. The program curriculum will prepare all necessary knowledge and professional skills to "sit" for the initial licensure exam, the Fundamentals of Engineering Exam. This is a national exam and is the first step in the process to becoming a professional licensed engineer.

X. Evaluation Plans

a. What student learning outcomes will be met by the proposed program and how will student proficiency be measured? These items may be updated as necessary to meet student and program needs.

Program Student Learning Outcomes	Measurement Instrument	Criteria for Proficiency (score, percentage, level of performance, etc.)
Students will effectively communicate complex construction engineering concepts, designs, and project documentation through clear, concise, and professional writing.	CNGR 4272 Capstone Project report and CNGR 3401 Internship project report, evaluated against a detailed rubric assessing organization, technical accuracy, clarity, use of terminology, and adherence to formatting standards.	80% of students that receive a score of 70% or higher
Students will deliver effective oral presentations that convey construction engineering principles, project details, and technical information to diverse audiences.	CNGR 4272 Capstone Project presentation evaluated on an individual student basis against a detailed rubric assessing content accuracy, delivery, organization, audience engagement, and use of visual aids	80% of students that receive a score of 70% or higher
Students will apply critical thinking skills to identify, analyze, and solve complex construction engineering problems.	CTCM 2530 Critical Thinking & Communication term project, requiring students to analyze a case study and apply critical thinking to solve construction-related problems involving risk assessment and decision-making	80% of students that receive a score of 70% or higher
Students will demonstrate a comprehensive understanding of construction engineering principles and their application to real-world projects.	CNGR 4272 Capstone Project completes a design project that includes structural analysis, materials selection, and overall construction strategies.	80% of students that receive a score of 70% or higher
Students will develop the knowledge and skills necessary to manage construction projects effectively, including the management of time (planning, scheduling, and control), cost (estimating and risk), field operations (materials, equipment, and methods), contract, safety, quality, and sustainability.	CNGR 4272 Capstone Project completes a construction management plan that includes estimating, planning, scheduling, project control, safety, quality, and value engineering.	80% of students that receive a score of 70% or higher

b. The plan and schedule to evaluate the proposed new degree program prior to the completion of its fourth year of operation (to include types of measurement, frequency, and scope of program review).

Upon meeting the initial eligibility requirements, the new program will undergo the ABET accreditation evaluation, a five-step process:

1. Complete the Readiness Review by October 1. This step is not required for our program as mentioned in the

above section.
2. The program submits the Request for Evaluation by January 31 of the year of the program's On-Site Visit.
3. The program completes and submits the Self-Study Report by July 1.
4. The On-Site Visit takes place September – December.
5. Due Process and the Accreditation Decision occurs between the week after the visit and August 31.

Student learning outcomes will be assessed according to the table above and will be accessed on a semester basis.

XI. Supporting Fields

a. Discuss the number and quality of lower-level and cognate programs in operation at the institution for supporting the proposed degree program.

There are four lower-level and cognate programs that will support the proposed degree program and include:

1. Mathematics and Statistics Department
    - Calculus I
    - Calculus II
    - Calculus III
    - Differential Equations
    - Probability and Statistics for Engineers
2. Chemistry Department
    - Chemistry I with lab
    - Chemistry II with lab
3. Physics and Optical Science Department
    - Physics for Science and Engineering and lab
    - Physics II and lab
4. Turner School of Accountancy
    - ACCT 2121 Accounting 1

b. Are other subject-matter fields at the proposing institution necessary or valuable in support of the proposed program? Is there needed improvement or expansion of these fields? To what extent will such improvement or expansion be necessary for the proposed program?

At UNC Charlotte, the General Education program is organized around four competencies: Communication, Quantitative/Data, Critical Thinking and Global and Local Themes as listed below. There is no needed improvement or expansion in these fields.

- Communication
    - WRDS 1103 Writing and Inquiry in Academic Contexts
- Quantitative/Data
    - Math and statistics courses as described in the section a) above
    - Natural Sciences, e.g., Chemistry and Physics courses as described in the section a) above
- Critical Thinking
    - CTCM 2530 Critical Thinking & Communication
- Global and Local Themes courses
    - Social Sciences: 1 elective on global theme and 1 elective on local theme

- Arts/Humanities: 1 elective on global theme and 1 elective on local theme

XII. Costs, Funding, and Budget

Adding a new degree program will cost the institution some amount of money and will potentially generate new revenues. Calculating the costs and identifying the funding sources associated with implementation of a new program requires several institutional offices (e.g., academic affairs, finance, institutional research, enrollment management) to collaborate to present an accurate estimate.

a. Complete and attach the *UNC System Academic Program Planning Financial Worksheet* showing all costs required and revenues generated for each of the first five years of the program. Provide a budget narrative for each year addressing the following:

   i. UNC Academic Program Costs

   Faculty costs include all faculty assigned to the proposed program, including faculty serving as program directors, coordinators, department chairs, etc., funded in the 101 instructional budget code. If an existing faculty member is reassigned to the program, the salary is reflected as a reallocated cost. New faculty salaries need to be competitive for the discipline, and figures should include all applicable fringe (e.g., retirement, medical). If the proposed program will hire new faculty, it is a new cost.

   Graduate Assistant costs are identified either as new or reallocated, as appropriate, and should include all stipends, tuition remission, and benefits, as applicable.

   EHRA Non-Faculty positions include non-instructional academic support costs directly associated with running the program, including amounts associated with the Dean's office, research support, etc. This should include salaries and all applicable fringe.

   SHRA Non-Faculty positions includes all positions specific costs associated with the new program. This includes the additional staff needed to organize applications, prepare for the proposed program, and for general administration of the proposed program. New staff or purchases of new equipment should be adequate to support the stated goals and enrollments for the proposed program. Other program costs identified in the proposal should be realistic.

The proposed B.S. in Construction Engineering program curriculum takes advantage of existing engineering and construction courses and labs that are already offered as a part of our B.S. Civil Engineering, B.S.E.T. Civil Engineering Technology, and B.S. Construction Management. Only two new courses or 5% of the curriculum will be developed. There are no new general education courses required for the proposed curriculum. As a result, no new tenure/tenure-track faculty lines, new lab equipment, or new facility is requested for the initial program offering.

The forecasted enrollment growth and the two new courses will modestly increase faculty teaching load. To efficiently handle the increased load, adjunct faculty and TAs/graders are required, and if enrollment increases as expected, one new non-tenure-track teaching faculty is recommended. This includes funding for 2 full-time equivalent TAs each year for the five years, and 2 adjunct faculty members for the first two years, then increases to 4 for Years 3 through 5.

The forecasted stable program enrollment would represent less than a 10% increase in our current total enrollment. Along with no change to curriculum, faculty position, and facilities, we estimate that no new SHRA

non-faculty positions are required. Similarly, the two existing academic advisors in Civil Engineering and Construction Management will be cross-trained and share the new workload. Meanwhile, starting fall 2025, the college's common first year curriculum and related support from the college advising team will reduce advisors' workload by about 15%. Thus, no EHRA non-faculty position is proposed for the first three and half years, and if enrollment increases as expected, one dedicated Academic Advisor is recommended to enhance student advising service. Two faculty members, one from CEE department and one from ETCM department, will be appointed as Program Director and Associate Program Director who will co-lead the Construction Engineering program. And similarly, a new coordinator for student learning and assessment will be appointed who will manage ABET and SACSCOC accreditation efforts. In addition, to support the program marketing and recruiting needs, a total budget of $40,000 is allocated. In summary, the total estimated new costs of the program are $1.72M over the initial five years, as detailed in the attached Academic Program Planning Financial Worksheet.

ii. UNC Academic Program Revenues
Funding sources may include enrollment growth formula funding, other state appropriation, regular tuition, tuition differential, general fees, special fees, reallocation of existing resources, federal funding, and other funding (such as awarded grants or gifts). The total projected revenue from the above categories should allow the proposed program to become self-sufficient within five years.

When estimating funding for new programs, institutions should take into account that students switching programs do not generate additional enrollment growth formula funds. For example, if a program projects enrollment of 20 students, by 12 of them switched into the program from an existing program at the institution, then only 8 of the students would generate additional formula funding.

Reallocation of Existing Resources includes the salary of faculty reassigned who may be partially or wholly reallocated to the new program. Explain how the current teaching obligations of those faculty are reallocated and include any faculty replacement costs as program costs in the budget. If substantial funds are reallocated, explain how existing undergraduate and graduate programs will be affected.

Federal Funding (In-hand only) refers to federal monies from grants or other sources currently in hand. Do not include federal funding sought but not secured. If anticipated federal funding is obtained, at that time it can be substituted for funds designated in other funding categories. Make note within the text of the proposal of any anticipated federal funding. Provide evidence of sustainability after federal funds have been exhausted.

Our analysis predicts a total enrollment of 60 students in Year 5, with an estimated 20 major-change students from our existing programs, for a net increase of 40 students. Using the current rates, the total revenue from tuition and fees over five years is computed as $1.72M, as detailed in the attached UNC System Academic Program Planning Financial Worksheet.

b. Based on the institutions' estimate of available existing resources or expected non-state financial resources that will support the proposed program (e.g., federal support, private sources, tuition revenue, etc.), please describe the following:

i. How does the institution budget and allocate enrollment growth revenues? Is this

program expected to generate new enrollment growth for the institution? If so, how will funds be allocated to the proposed program or be used to further other institutional priorities?

Enrollment growth is expected from the addition of this program. Increases in Student Credit Hours (SCH) are reviewed by the Dean's office and examined within the context of the UNC System Office funding formula and University priorities when determining allocation of enrollment growth funds and general tuition and fees. Funds received at the department level will be used to support teaching, student services, and recruiting and outreach in proportion to the enrollment growth.

ii. Will the institution seek other additional state appropriations (both one-time and recurring) to implement and sustain the proposed program? If so, please elaborate.

No.

iii. Will the institution require differential tuition supplements or program-specific fees? If so, please elaborate.
    1. State the amount of tuition differential or program-specific fees that will be requested.
    2. Describe specifically how the campus will spend the revenues generated.
    3. Describe the anticipated impact of the tuition differential or program-specific fee are expected to impact student access.

The major fee currently in place in the W.S. Lee College of Engineering is $300 per year. We will request an equivalent fee for this new program. We will invest this generated revenue to support student success, including maintaining and upgrading lab equipment.

c. Provide a description of how the program can be implemented and sustained If enrollment increase funding, differential tuition, or other state appropriations noted in the budget templates are not forthcoming.

This program is not dependent on differential tuition or special state appropriations. Since the faculty, courses, equipment, and facilities are in place, the program can be initiated without additional resources in those areas. Program expansion would be slowed in the absence of enrollment growth funding to fully support the anticipated demand.

XIII. Additional Information. Include any additional information deemed pertinent to the review of this new degree program proposal.

N/A

XIV. Attachments. Attach *the UNC System Academic Program Planning Worksheet* as the first attachment following this document, the final approved Request for Preliminary Authorization as the second attachment, followed by any other relevant documents.

Attachment A: UNC System Academic Program Planning Worksheet
Attachment B: Request for Preliminary Authorization
Attachment C: Academic Plan of Study for BS in Construction Engineering

XV. Signatures. This proposal to establish a new program has been reviewed and approved by the appropriate campus committees and authorities and has my support.

Position Title	Signature	Date
Chancellor	DocuSigned by: Sharon Gaber 2FF1496738C7414...	02/19/2025 | 10:05 AM EST
Provost	DocuSigned by: Jennifer Troyer CB79653C3A82433...	02/19/2025 | 9:41 AM EST
Chief Financial Officer	DocuSigned by: Richard Amon 03B88EFF44BD4C5...	02/19/2025 | 8:24 AM EST

(Only complete below for partner institution if this is a joint degree program proposal)

Position Title	Signature	Date
Chancellor	N/A	
Provost	N/A	
Chief Financial Officer	N/A	

Attachment A

UNC System Academic Program Planning Worksheet

	Current Program Sources (if applicable)	Rate	Year 0 (Start Up)	1st Year	2nd year	3rd Year	4th Year	5th Year	TOTALS
1	General Fund Appropriation								$ -
2	NC Promise Appropriation								$ -
3	*Resident Enrollment (FTE)*			17	17	17	17		
4	Regular Resident Tuition (Annual Rate)	$ 3,812	$ -	$ 64,804	$ 64,804	$ 64,804	$ 64,804	$ -	$ 259,216
5	*Nonresident Enrollment (FTE)*			3	3	3	3		
6	Regular Nonresident Tuition (Annual Rate)	$ 19,065	$ -	$ 57,195	$ 57,195	$ 57,195	$ 57,195	$ -	$ 228,780
7	Tuition Differential (Annual Rate)		$ -	$ -	$ -	$ -	$ -	$ -	$ -
8	Special Fees	$ 300	$ -	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ -	$ 24,000
9	External Funding (In-Hand Only)								$ -
10	Other Funding (Identify)								$ -
11	**Total Current Sources**		$ -	$ 127,999	$ 127,999	$ 127,999	$ 127,999	$ -	$ 511,996
	Proposed New Program Sources								
12	*Incremental Resident SCH, ENGR*			110	176	262	332	336	
13	Enrollment Funding Appropriation, CIP 14	$ 860	$ -	$ -	$ 47,300	$ 122,980	$ 188,340	$ 255,420	$ 614,040
	Incremental Resident SCH, ENGR			-	80	148	208	208	
	Enrollment Funding Appropriation, CIP 15	$ 369	$ -	$ -	-	14,760	42,066	$ 65,682	$ 122,508
	Incremental Resident SCH, Non-ENGR			190	244	282	344	384	
	Enrollment Funding Appropriation, Non-ENGR	$ 269	$ -	$ -	25,555	58,373	70,747	$ 84,197	$ 238,872
14	*Resident Enrollment (FTE)*			9	14	19	26	34	
15	Regular Resident Tuition (Annual Rate)	$ 3,812	$ -	$ 32,402	$ 51,843	$ 71,284	$ 97,206	$ 129,608	$ 382,344
16	NC Promise Appropriation (Resident)		$ -	$ -	$ -	$ -	$ -	$ -	$ -
17	*Nonresident Enrollment (FTE)*			1	2	3	5	6	
18	Regular Nonresident Tuition (Annual Rate)	$ 19,065	$ -	$ 19,065	$ 45,756	$ 62,915	$ 85,793	$ 114,390	$ 327,918
19	NC Promise Appropriation (Nonresident)		$ -	$ -	$ -	$ -	$ -	$ -	$ -
20	Tuition Differential (Annual Rate)		$ -	$ -	$ -	$ -	$ -	$ -	$ -
21	Special Fees	$ 300	$ -	$ 2,850	$ 4,800	$ 6,600	$ 9,000	$ 12,000	$ 35,250
22	External Funding (In-Hand Only)								$ -
23	Other Funding (Identify)								$ -
24	**Total New Sources**		$ -	$ 54,317	$ 175,254	$ 336,912	$ 493,152	$ 661,297	$ 1,720,932
25	**Total Proposed Program Sources**		$ -	$ 182,316	$ 303,253	$ 464,911	$ 621,151	$ 661,297	$ 2,232,928

Comments

Proposed New Program Sources	1st Year	2nd year	3rd Year	4th Year	5th Year	TOTALS
Enrollment Funding Appropriation	$0	$72,855	$196,113	$301,153	$405,299	$975,420
Regular Resident Tuition (Annual Rate)	$32,402	$51,843	$71,284	$97,206	$129,608	$382,344
Regular Resident Tuition (Annual Rate)	$19,065	$45,756	$62,915	$85,793	$114,390	$327,918
Special Majors Fees	$2,850	$4,800	$6,600	$9,000	$12,000	$35,250
Total New Sources	$54,317	$175,254	$336,912	$493,152	$661,297	$1,720,932
Proposed New Program Uses	**1st Year**	**2nd year**	**3rd Year**	**4th Year**	**5th Year**	**TOTALS**
Graduate Student Support w/ GASP	$0	$60,469	$65,361	$65,361	$65,361	$256,552
New Faculty Lines	$0	$0	$0	$0	$63,165	$63,165
New Staff (Advisor and Co-op)	$0	$0	$20,532	$81,060	$81,060	$182,652
PTT Part Time Fac Holding	$27,159	$27,159	$47,010	$47,010	$47,010	$195,347
SPT Admin Stipends	$0	$0	$27,553	$27,553	$27,553	$82,659
Non Personnel Operating	$0	$0	$0	$17,592	$38,500	$56,092
Marketing	$0	$0	$8,000	$8,000	$8,000	$24,000
Central University/AA (50%)	$27,159	$87,627	$168,456	$246,576	$330,649	$860,466
Total New Program Uses	$54,317	$175,254	$336,912	$493,152	$661,297	$1,720,932
Projected Balance	$0	$0	$0	$0	$0	$0

Chief Financial Officer

Name Richard Amon

Date

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Richard Amon

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		Year 0 (Start Up)	1st Year	2nd year	3rd Year	4th Year	5th Year	TOTALS
	Current Program Uses (if applicable)							
1	Tenure/Tenure-Track Faculty		$ 121,999	$ 121,999	$ 121,999	$ 121,999		**$ 487,996**
2	Non Tenure-Track Faculty							**$ -**
3	Graduate Student Support							**$ -**
4	Non-Faculty Positions							**$ -**
5	Student Support (Scholarships)							**$ -**
6	Libraries							**$ -**
7	Supplies and Materials		6,000	6,000	6,000	6,000		**$ 24,000**
8	Travel, Communications, and Fixed Charges							**$ -**
9	Equipment and Technology							**$ -**
10	Facility Repair and Renovation							**$ -**
11	Other (Identify)							**$ -**
12	**Total Current Uses**	**$ -**	**$ 127,999**	**$ 127,999**	**$ 127,999**	**$ 127,999**	**$ -**	**$ 511,996**
	Proposed New Program Uses							
13	Tenure/Tenure-Track Faculty	-						**$ -**
14	Non Tenure-Track Faculty	-					63,165	**$ 63,165**
15	Graduate Student Support including GASP	-		60,469	65,361	65,361	65,361	**$ 256,552**
16	Non-Faculty Positions (Advisor II)	-			20,532	81,060	81,060	**$ 182,652**
	Non-Faculty Positions (Co-Op Coordinators)							**$ -**
17	Student Support (Scholarships)	-						**$ -**
18	Libraries	-						**$ -**
19	Supplies and Materials	-				10,092	15,000	**$ 25,092**
20	Travel, Communications, and Fixed Charges	-					8,500	**$ 8,500**
21	Equipment and Technology	-				7,500	15,000	**$ 22,500**
22	Facility Repair and Renovation	-						**$ -**
23	Facility New Construction or Expansion	-						**$ -**
24	Other (Identify)							
	PTT Part Time Fac Holding		27,159	27,159	47,010	47,010	47,010	
	SPT Admin Stipends				27,553	27,553	27,553	
	Marketing	-			8,000	8,000	8,000	**$ 24,000**
	University/Division (50%)	-	27,159	87,627	168,456	246,576	330,649	**$ 860,466**
25	**Total New Uses**	**$ -**	**$ 54,317**	**$ 175,254**	**$ 336,912**	**$ 493,152**	**$ 661,297**	**$ 1,720,932**
26	**Total Proposed Program Uses**	**$ -**	**$ 182,316**	**$ 303,253**	**$ 464,911**	**$ 621,151**	**$ 661,297**	**$ 2,232,928**
	Comments	Source Totals	54317	175254.2	336911.9	493151.5	661297	1720931.6
	COEN will support Special Payments for Program Director and ABET Coordinator and marketing costs for 1st and 2nd year	ected Balance	$ -	$ 0	$ (0)	$ (0)	$ -	$ (0)

Chief Financial Officer

Name Richard Amon

Date 02/19/2025 | 8:24 AM EST

Signature

DocuSigned by:

Richard Amon

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Attachment B

Request for Preliminary Authorization

New Academic Degree Program Request for Preliminary Authorization

Institution ____ University of North Carolina at Charlotte _____

Degree Program Title _____B.S. in Construction Engineering _____

Reviewed and Approved By (Provide Name and title only. No signature required in this section.)

Review	Name	Title
Chief Financial Officer	Richard Amon	Vice Chancellor for Business Affairs
Faculty Senate Chair (Or appropriate faculty body)	Xiaoxia Newton	Faculty President
Graduate Council (If applicable)	N/A	N/A
Graduate/Undergraduate Dean (If applicable)	N/A	N/A
Academic College/School Dean	Robert Keynton	Dean W.S. Lee College of Engineering
Department Head/Chair	Glenn E. Moglen, Lingguang Song	Chair, Civil and Environmental Engineering; Chair, Engineering Technology and Construction Management
Program Director/Coordinator	N/A	

New Academic Proposal Process

New academic programs are initiated and developed by faculty members. The Request for Preliminary Authorization must be reviewed and approved by the appropriate individuals listed above before submission to the UNC System Office for review.

Please provide a succinct, yet thorough response to each section. Obtain signatures from the Chancellor and Provost and submit the proposal via the PREP system to the UNC System Vice President for Academic Programs, Faculty, and Research, for review and approval by the UNC System Office. If the Request for Preliminary Authorization is approved, the institution may begin work on the formal Request to Establish a New Academic Degree Program.

NOTE: If an institution is requesting preliminary authorization for a degree program at a higher level than

their current Carnegie Classification (e.g., a Master's institution proposing a doctoral degree), then a request for a mission review must first be submitted to the UNC Board of Governors Committee on Educational Planning, Programs, and Policies, through the Senior Vice President for Academic Affairs. If approved by the Board, then the institution may proceed with the Request for Preliminary Authorization.

UNC Institution Name	University of North Carolina at Charlotte
Joint Degree Program (Yes or No)? If so, list partner institution.	No
Degree Program Title (e.g., M.A. in Biology)	B.S. in Construction Engineering
CIP Code and CIP Title (May be found at National Center for Education Statistics)	14.3301 Construction Engineering
Require UNC Teacher Licensure Specialty Area Code (Yes or No). If yes, list suggested UNC Specialty Area Code(s).	No
Proposed Delivery Mode (campus, online, or site-based distance education). Add maximum % online, if applicable.	Campus
Will this program be offered by an outside provider such as an Online Program Manager (OPM) or Project Kitty Hawk (PKH)? If yes, list the provider.	No
Proposed Term to Enroll First Students (e.g., Fall 2023)	Fall 2026

I. SACSCOC Liaison Statement: *(Provide a brief statement from the University SACSCOC liaison regarding whether the new program is or is not a substantive change.)*

The proposed new B.S. in Construction Engineering program will be a total of 120 credit hours with 3 new courses, resulting in 95% existing courses and 5% new courses. Therefore, this new program is not substantive and does not require SACSCOC notification or approval.

II. Program Summary: (*Briefly describe the proposed program and summarize the overall rationale.*) Maximum of 1,000 words.

Include the following in your narrative:

a. How this program supports specific university and UNC System missions.
b. Collaborative opportunities with other UNC institutions as appropriate.
c. Ways in which the proposed program is distinct from others already offered in the UNC System.

Information on other programs may be found on the UNC System website, and all similar programs should be listed here (use the 4-digit CIP as a guide).

d. How does the program align with the UNC System and institutional strategic plan?

The University of North Carolina at Charlotte (UNC Charlotte) proposes to add a Bachelor of Science degree program in Construction Engineering. Construction engineering is a branch of engineering that focuses on the design, planning, construction, and management of construction projects. It combines principles from civil engineering with construction management techniques to ensure projects are completed efficiently, safely, and within budget. Due to its interdisciplinary nature, the program is jointly proposed by the Department of Civil and Environmental Engineering and the Department of Engineering Technology and Construction Management. As further described in Section III, the program will complement our existing programs in Civil Engineering, Civil Engineering Technology, and Construction Management, allowing UNC Charlotte to become the only institution in North Carolina that offers a comprehensive Construction Engineering and Management education to meet the construction industry needs. The program will obtain accreditation from the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology Inc. (ABET). The 120-hour curriculum uses existing courses in engineering fundamentals, civil engineering, and construction management, with two new courses to be developed (or 5% of the curriculum). It will be delivered by our 44 existing faculty members supplemented by industry experts as adjunct faculty. Given our existing resources, the new program does not require new faculty, staff position, or lab facilities. Thus, the program is expected to maintain a positive cash flow during the first five years.

The proposed program is designed first and foremost for North Carolina students and the construction industry. The labor market for construction engineers in North Carolina ranks #4 in the United States, and it is projected to grow three times faster than the national average. Regionally, North Carolina has the largest total employment in construction among neighboring states. Encouraged by the active job market and excellent pay, students are actively pursuing degrees in Construction Engineering. According to the attached EAB market insights report on Construction Engineering (Appendix A), the degree completion in this field grew 75% between 2017 and 2022 in the region that includes North Carolina, South Carolina, Tennessee, and Virginia. However, there is still a gap between job market need and existing student enrollment, as elaborated in Section V below. For states with a job market of comparable size, North Carolina's job-to-enrollment ratio is two times the average ratio. In the State of North Carolina, there is only one existing Construction Engineering program which is housed in the College of Engineering at North Carolina State University. Even with this existing program enrollment, there would still be a 50% estimated enrollment gap for North Carolina. In summary, the proposed program is necessary given the strong market needs and the gap for construction engineering talent in North Carolina, particularly the Charlotte metropolitan area.

The proposed new Construction Engineering program at UNC Charlotte is distinct from the existing programs in the region, including North Carolina, South Carolina, Virginia, and Tennessee, for its local job market, student supply, affordability, curriculum, program success and resources, and strong industry support.

- Charlotte's Job Market: Charlotte is the largest construction job market in North Carolina, accounting for about one-third of the state's job market and is 56% larger than Raleigh, ranked second. In addition to jobs

for graduates, Charlotte provides internship opportunities, allowing students to study and work simultaneously year-round.

- Student Demand: UNC Charlotte is the largest urban university in North Carolina. Charlotte is the second most populous city in the Southeastern United States, ensuring a steady supply of both traditional and transfer students. 87% of our current students are residents and about 34% are from the Charlotte metro area. Attending UNC Charlotte allows study, internship, full-time career, and home to be nearby, providing both convenience, cost-savings, and effective hands-on learning.
- Affordability: UNC Charlotte is among the Top 100 public universities in the United States, yet it offers one of the most affordable tuition rates. Its in-state tuition and fee rate is the lowest among all regional institutions listed in Table 2 that offer a Construction Engineering program, including institutions in North Carolina, South Carolina, Virginia, and Tennessee. It makes higher education more accessible, lowers debt burden, and attracts an economically diverse student population. Furthermore, UNC Charlotte has the highest percentage of adult and veteran students in the region (see Table 2).
- Curriculum: In addition to civil engineering principles, the proposed curriculum distinguishes itself from peer programs due to its heavy focus on construction science, emerging technologies (e.g., digital transformation), and experiential learning through a mandatory internship. This aligns with our goal to prepare real-world-ready graduates for today and tomorrow.
- Program Success and Resources: UNC Charlotte has the largest ABET-accredited engineering technology programs in the Southeastern United States and ranks 11th nationally (ASEE). Our Civil Engineering program ranked #28 in the nation, and it is accredited by ABET EAC. With 44 faculty members, our current faculty-to-student ratio of 15:1, suggesting an excellent growth potential due to available resources.
- Strong Industry Support: Our existing construction industry advisory board includes over 75 engineering and construction companies. The recommendation of adding a Construction Engineering undergraduate degree program received unanimous support based on a survey of the board member companies conducted in fall 2023 (see letter of support in Appendix B). Furthermore, the board holds two construction career fairs annually attracting local and national contractors offering both full-time and internship opportunities. The board supports program development through its four standing committees for curriculum, scholarship, internship, and capstone projects. The Charlotte construction industry also offers excellent opportunities to engage industry experts in teaching as adjunct faculty to support both curriculum delivery and cost efficiency.

The proposed program aligns with the State, UNC System, and UNC Charlotte's mission and strategic plan through promoting guiding commitments such as academic excellence, economic mobility, and community engagement. The North Carolina General Assembly recognizes the importance of STEM programs as drivers of economic investment, expansion, and employment throughout the State. Engineering N.C.'s Future has invested $35 million in key engineering schools and an additional $90 million for capital improvements in selected institutions, including UNC Charlotte. The proposed Construction Engineering program is aligned with the program goal of "… expanding enrollment opportunities … to enable more students to pursue an education in engineering fields." The program aims to transform lives, communities, and industries by providing students with essential skills and knowledge, aligning with the mission of transformative impact through accessible and affordable education. It will attract a diverse student body and invite broader engagement of community partners, supporting the institution's commitment to address local and global infrastructure challenges,

economic mobility, and local-to-global impact. With continuous improvement, the program is expected to significantly contribute to the institution's mission and enhance its impact on students, the community, and the broader field of construction engineering.

III. Student Demand*: (Provide evidence of student enrollment demand, including external estimates. Discuss the extent to which students will be drawn from a pool of students not previously served by the institution. Maximum length 1,000 words.)*

The attached EAB market insights report on Construction Engineering (Appendix A) confirmed a growing student demand and suggested a favorable competitive landscape for new program launch. Between the 2018 and 2022 academic years, the average annual degree completion growth rate for the region was 22.8%, compared to 3.9% for the nation, signaling growing student demand and a particularly strong trend in the region. During the same period, the number of institutions reporting completions grew by 12.5% on average annually in the region, indicating a favorable regional competitive landscape as student demand grew faster than competition. Considering the potential population of college transfer students, the North Carolina Community College System recorded a 12% increase in enrollment over the last five years in construction engineering-related associated degree programs, including Civil Engineering Technology, Construction Management, and Building Construction. In summary, the region's encouraging education market growth offers an excellent opportunity to launch the proposed program at UNC Charlotte, which, in turn, provides North Carolina residents an additional option for pursuing their Construction Engineering education.

UNC Charlotte currently offers three undergraduate degree programs for the engineering and construction industry. For students who are interested in a career focused on design and planning, they may choose civil engineering or civil engineering technology as a major, while for others who would like to focus on the managerial and logistical aspects of construction, a construction management major is the right choice. However, for a successful project from project design to execution, construction engineers are required to bridge the gap between civil engineering and construction management. Construction engineers bring a blend of engineering and management expertise to take the designs and plans created by civil engineers and implement them correctly on-site, ensuring the integrity, quality, and safety of structures. The departments within the William States Lee College of Engineering at UNC Charlotte frequently receive inquiries from prospective students as well as businesses in the Charlotte community desiring a construction engineering program. The proposed program fills the market gap by offering the degree option that students desire and is in strong demand from the engineering and construction industry. Furthermore, as discussed further in Section IV below, UNC Charlotte has the lowest in-state tuition and fee rate and the second highest acceptance rate among five regional institutions who offer a construction engineering program. Within the UNC system, the proposed program's tuition and fee rate for North Carolina residents is more than 30% lower than that of the existing program at North Carolina State University. The highly affordable program will increase student socio-economic diversity, lower the debt burden, and offer more students from families with limited financial resources to pursue higher education. In addition, the high acceptance rate along with a higher percentage of adult learners and veterans in the Charlotte area also opens the door for more students to pursue their engineering degrees.

To develop a realistic estimate of student demand range for the Construction Engineering program at UNC Charlotte, three projection methods were applied: 1) based on the enrollment of peer programs in the United States, 2) based on enrollment of peer institutions who offer civil engineering, construction engineering, and construction management programs, similar to what UNC Charlotte is envisioning, and 3) based on an analysis of job market and program enrollment in comparable states.

First, there are 22 ABET-accredited Construction Engineering programs in the United States; their average program enrollment is 74. Out of the 22 programs, 14 institutions offer Construction Engineering along with Civil Engineering, while the remaining 8 institutions offer all three programs: Civil Engineering, Construction Engineering, and Construction Management. The latter case resembles the plan at UNC Charlotte; thus, we use the 8-institution dataset to further refine our estimate. Several statistical measures were explored to account for variations in program enrollments due to significant differences in the size of the institutions offering this degree program. Table 1 below lists these 8 institutions and their construction engineering enrollment as a proportion of the enrollment of the program's parent college and university respectively. With a projected growth in the W.S. Lee College of Engineering undergraduate enrollment to 3000 students and UNC Charlotte's current total enrollment of 29,615, the projected enrollment is 41 students (1.4% of the college) and 70 students (0.24% of the university).

Table 1: Program enrollment as a % of college and university enrollment

	Con. Eng. Enrollment	**As % of College**	**As % of University**
University of Nebraska Lincoln	55	1.6%	0.21%
Purdue University	121	1.1%	0.26%
Virginia Tech	171	1.7%	0.47%
Arizona State University	95	0.4%	0.13%
Georgia Southern University	93	2.2%	0.35%
University of New Mexico	14	0.7%	0.06%
North Dakota State University	35	1.6%	0.26%
San Diego State University	59	1.7%	0.17%
Average	***80***	***1.4%***	***0.24%***

Finally, from a job market perspective, we analyzed each state's Construction Engineering program enrollment in relation to the size of the construction job market (civil engineer and construction manager jobs) for states that have a comparable job market size as North Carolina, including Alabama, Arizona, Georgia, Michigan, South Carolina, Virginia, and Wisconsin. The predicted enrollment for the State of North Carolina is 190, and considering North Carolina State University's current enrollment of 98, the remaining unmet need of 92 students creates an opportunity for the proposed program.

In summary, depending on the forecasting methods, the projection may range from 40 to over 90 students. The strong regional market demand and the competition advantage discussed in Section II present opportunities to grow the proposed program. Thus, the enrollment range at Year 5 is estimated to be between 60 and 75 students, and for financial planning purposes, an enrollment of 60 students is used.

IV. Access, Affordability, and Student Success: (*Provide an analysis of the impact of the program on student access and affordability. Maximum length 1,200 words. Include information from College Scorecard. May also include census postsecondary outcomes data, etc.)*

a. Analysis of the impact of the proposed program on student access, including key metrics identified in the UNC System Strategic Plan and statewide initiatives (such as myFutureNC https://www.myfuturenc.org/).
b. Analysis of student debt levels for similar programs and programs at the same academic level at the institution.
c. Provide an analysis of indebtedness, repayment, and relationship to potential earnings.

The proposed program provides students with excellent affordability, a reasonable debt level, and a very high potential earning after graduation. This is evidenced by a comparative analysis of national and regional data collected from the United States Department of Education's College Scorecard. A detailed side-by-side comparison of the other four regional institutions that currently offer a Construction Engineering program is presented in Table 2.

Table 2: A comparison of cost, economic diversity, indebtedness, and earning among regional peer institutions

	UNC Charlotte	**NC State**	**Virginia Tech**	**The Citadel**	**U Tennessee**
Approx. Distance to Charlotte (miles)	0	167	173	207	230
Acceptance Rate	80%	47%	57%	99%	68%
A. Tuition & Fee Rate (engineering college-level data)					
Tuition & Fee (resident)	$7,320	$10,861	$17,948	$ 15,348	$ 17,322
Tuition & Fee (non-resident)	$22,574	$34,909	$40,764	$ 40,148	$ 36,766
Average Net Price = Attend. Cost – Fin. Aid	$15,018	$16,563	$20,292	$21,619	$19,400
B. Socio-Economic Diversity (university-level data)					
% Students Receive Pell Grant	36%	20%	15%	20%	22%
% Family Income (Lowest quintile $0-30k)	35%	24%	18%	24%	31%
% Adult Learner (age 25+)	10%	5%	2%	10%	4%
% Veteran	0.23%	0.21%	No data	No data	0.16%
C. Indebtedness (civil/construction engineering major data)					
Indebtedness (after graduation)	$22,000	$24,876	$26,349	$23,481	$21,000
Debt Repayment (monthly)	$233	$264	$279	$249	$223

UNC Charlotte demonstrates a strong commitment to access and affordability. It has the lowest resident and

non-resident tuition fees and the lowest average net price after financial aid among the regional institutions (Table 2 Subsection A), making it the most affordable option for both in-state and out-of-state students. For residents in the Charlotte metro area, a combination of the low resident tuition rate and the convenient location leads to even more cost savings. This competitive rate can attract a larger pool of applicants, particularly those who are cost-conscious or come from lower-income families. This is especially important for the community served by UNC Charlotte, characterized by a high-level of student socio-economic diversity (i.e., high financial aid need, and low family income level as shown in Table 2 Subsection B). It can significantly reduce the financial burden on students and their families and make higher education more accessible.

From a student debt perspective, undergraduate graduates at UNC Charlotte have a median indebtedness (i.e. median total debt after graduation) of $21,500. The median indebtedness for public 4-year schools for the United States and North Carolina are $21,000 and $22,300 respectively. Specifically for the civil/construction engineering field of study, the median indebtedness is $22,000 for UNC Charlotte civil engineering graduates as well as all civil engineering graduates in the United States At the regional level (Table 2 Subsection C), UNC Charlotte has the second lowest indebtedness as well as monthly debt repayment amount, which is important for graduates' long-term financial stability, career choices, and overall quality of life.

UNC Charlotte graduates have a median earning of $57,300, while it is $53,600 for United States 4-year institutions as of 2024. For construction engineers, the median earning is $102,200, five years after graduation, according to College Scorecard. As a reference, $104,900 is reported for construction manager jobs by the United States Bureau of Labor Statistics (BLS). As an illustration, considering the monthly debt payment for UNC Charlotte civil engineering graduates at $233, repaying this loan for a graduate earning a starting salary of approximately $55,000 is about 5.1% of their annual salary, or 2.7% for a professional earning the median salary of $102,200, making this proposed program a high return-on-investment option for students.

The proposed program is fully aligned with UNC System Strategic Plan for access and affordability and future's education mission as summarized below. This also reflects the university's efforts to support students from lower-income families.

- Access, Goal #1: increase access for underserved population including adult learners and veterans
  myFutureNC mission: dramatically increase attainment of industry-valued credentials and postsecondary degrees.
  Engineering N.C.'s Future goal: expanding enrollment opportunities … to enable more students to pursue an education in engineering fields.
  - UNC Charlotte's leadership in serving underserved population can be evidenced by its high percentage of adult learners and veterans served in comparison with regional institutions (Table 2 Subsection B). 39% of the population in Mecklenburg or an average 58% in surrounding counties completed high school but does not have a bachelor's degree. Broader access will encourage these residents to pursue higher education and improve pathways for both transfer and nontraditional students.
- Affordability, Goal #6: increase affordability
  - UNC Charlotte offers the most affordable Construction Engineering program options in the region as discussed previously.

- Student success, Goal #2: increase 4-year graduation rate and undergraduate degree efficiency
    - Our goal of 4-year graduation rates and degree efficiency will be supported through the coordinated effort of student support from the William States Lee College of Engineering, School of Professional Studies, the Office of Adult Students and Extended Services, Veterans Services Office, the University Center for Academic Excellence, and the University Career Center.

Currently there is only one program choice in North Carolina for resident students seeking a Construction Engineering degree, the above analysis suggests that the proposed program will increase both access and affordability in the state's most populous and diverse metropolitan region.

V. Societal and Labor Market Demand: *(Provide evidence of societal demand and employability of graduates from each of the following source types. Must include external estimates. Maximum length 1,000 words)*

a. Labor market information (projections, job posting analyses, and wages)
    i. Specific to North Carolina (such as ncworks.gov, nctower.com, or outside vendors such as Burning Glass).
    ii. Available from national occupational and industry projections (such as the United States Bureau of Labor Statistics).
b. Projections from professional associations or industry reports (including analysis)
c. Other (alumni surveys, insights from existing programs, etc.)

A Construction Engineering graduate possesses a focused knowledge of some Civil Engineering systems – those most related to the construction field. In addition, a Construction Engineering graduate has an expansive knowledge of all phases of the construction industry, including safety, quality, time, cost, and contract administration. By contrast, a Civil Engineering graduate possesses a broad knowledge of and ability to create designs pertaining to structures, geotechnical, environmental, and transportation systems. Furthermore, a Civil Engineering Technology graduate is primarily focused on technical applications of civil engineering concepts in construction, surveying, and materials testing in the field. In short, a Construction Engineering graduate is fluent in both the engineering world and the business of construction. The proposed curriculum will provide students with civil engineering principles and construction management techniques so they can transform design vision into reality in an efficient, safe, and economic way.

From an employment perspective, due to their specialization in engineering-driven construction execution, structural analysis, and safety and quality compliance, Construction Engineering graduates are well-suited for roles such as Project Engineer or Field Engineer. In comparison, our Construction Management graduates, with their focus on project management and construction logistics, commonly serve as Construction Managers or Assistant Project Managers. Our Civil engineering graduates, specializing in design and infrastructure planning, often work as Design Engineers or Structural Engineers. Meanwhile, our Civil Engineering Technology graduates primarily take on field-focused roles such as Surveyor or Materials Testing Technician. In summary, the proposed program in construction engineering addresses the industry's need for project and field engineers, who specialize in delivering engineering-driven construction execution.

Societal demand and employability of graduates for the proposed program can be demonstrated through employment data from various sources, especially BLS employment data as well as the attached EAB market insights report. From an education requirement perspective, a bachelor's degree or above is specifically requested by 75% of job postings. A broad set of job titles are available to Construction Engineering graduates, among the top titles are project engineer, field engineer, project manager, structural engineer, and construction manager. Top employers in the region are found in a wide range of industry sectors, including engineering and construction (e.g., global E&C firms, Black & Veatch, AECOM, Jacobs, and Fluor), engineering services (e.g., Catalent, WSP Global, and Stantec), government agencies (e.g., the State of North Carolina), and clients (e.g., Amazon).

Construction engineering careers show strong potential due to high and growing demand for graduates in both regional and national markets. According to the Bureau of Labor Statistics (BLS) national job outlook, North Carolina employs 32,900 civil engineers and construction managers, which ranks it the fourth largest market nationally and the second largest in the Southeastern United States. The job outlook for civil engineering is projected to grow by 5% nationally over the next 10 years, while North Carolina's growth rate is 14% according to Projections Central[1] (sponsored by the United States Department of Labor), which is three times the national average. Over the next decade, employment in top relevant occupations for construction engineering professionals is projected to outpace overall employment growth (9.50%), indicating growing employment opportunities for program graduates.

EAB reported that between February 2021 and January 2024, employer demand grew an average monthly 0.8% regionally, indicating a healthy labor market with ample opportunities for program graduates due to a moderate-to-high number of job postings. Since 2021, North Carolina's total employment in the construction industry has exceeded that of neighboring states, including Georgia, South Carolina, Virginia, and Tennessee. Within the State of North Carolina, Charlotte is the largest market for construction related jobs and is 56% larger than second-ranking Raleigh market. In addition, North Carolina's booming construction industry is driven in large part by the expansion of the energy infrastructure and emerging renewable energy sectors. Construction engineers, project managers, and civil engineers equipped with knowledge in digital transformation are among the top high-demand positions frequently requested by our industry partners, such as Duke Energy.

College Scorecard reported a median wage of $102,200 for Construction Engineering graduates five years after graduation. North Carolina's median wage rate has been the second highest since 2020 and it is expected to exceed neighboring states by 2025.

Our current construction industry advisory board was surveyed during the week of November 6, 2023 on their opinion about the new Construction Engineering offering at UNC Charlotte. A brief description of the program objectives and curriculum was provided to the board companies, and they were asked whether UNC Charlotte should or should not offer such a program (i.e., yes or no). The survey showed unanimous support from the board to introduce the new Construction Engineering program. In summary, the above analysis suggests that a new undergraduate degree program at UNC Charlotte is a logical response to the strong societal demand for

[1] Projects Central, a sponsored by the UNITED STATES Department of Labor, https://projectionscentral.org/longterm

construction engineers at both the national, regional, and local levels.

VI. Costs, Funding, and Budget (*Maximum length 1,200 words)*

Adding a new degree program will cost the institution some amount of money and will potentially generate new revenues. Calculating the costs and identifying the funding sources associated with implementation of a new program requires several institutional offices (e.g., academic affairs, finance, institutional research, enrollment management) to collaborate to present an accurate estimate.

a. Complete and attach the *UNC System Academic Program Planning Financial Worksheet* showing all costs required and revenues generated for each of the first five years of the program. Provide a budget narrative for each year addressing the following:

   i. UNC Academic Program Costs

   Faculty costs include all faculty assigned to the proposed program, including faculty serving as program directors, coordinators, department chairs, etc. funded in the 101 instructional budget code. If an existing faculty member is reassigned to the program, the salary is reflected as a reallocated cost. New faculty salaries need to be competitive for the discipline, and figures should include all applicable fringe (e.g., retirement, medical). If the proposed program will hire new faculty, it is a new cost.

   Graduate Assistant costs are identified either as new or reallocated, as appropriate, and should include all stipends, tuition remission, and benefits, as applicable.

   EHRA non-faculty positions include non-instructional academic support costs directly associated with running the program, including amounts associated with the Dean's office, research support, etc. This should include salaries and all applicable fringes.
   SHRA non-faculty positions include all positions specific costs associated with the new program. This includes the additional staff needed to organize applications, prepare for the proposed program, and for general administration of the proposed program. New staff or purchases of new equipment should be adequate to support the stated goals and enrollments for the proposed program. Other program costs identified in the proposal should be realistic.

The proposed B.S. in Construction Engineering program curriculum takes advantage of existing engineering and construction courses and labs that are already offered as a part of our B.S. Civil Engineering, B.S.E.T. Civil Engineering Technology, and B.S. Construction Management. Only two new courses or 5% of the curriculum will be developed. There is no new general education course required for the proposed curriculum. As a result, no new tenure/tenure-track faculty lines, new lab equipment, or new facility is requested for the initial program offering.

The forecasted enrollment growth and the two new courses will modestly increase faculty teaching load. To efficiently handle the increased load, adjunct faculty and TAs/graders are required, and if enrollment increases as

expected, one non tenure-track teaching faculty is recommended. The above includes funding for 2 full-time equivalent TAs Year 2 to 5, and 2 adjunct faculty members for the first two years, then increases to 4 for Years 3 through 5.

The forecasted stable program enrollment would represent less than a 10% increase in our current total enrollment. Along with no change to curriculum, faculty position, and facilities, we estimate that no new SHRA non-faculty positions are required. Similarly, the two existing academic advisors in Civil Engineering and Construction Management will be cross-trained and share the new workload. Meanwhile, starting fall 2025, the college's newly redesigned and streamlined common first year curriculum and related support from the college advising team will reduce advisors' workload by about 15%. Thus, no EHRA non-faculty position is proposed for the first three and half years, and if enrollment increases as expected, one dedicated Academic Advisor is recommended to enhance student advising service. Two faculty members, one from CEE department and one from ETCM department, will be appointed as Program Director and Associate Program Director who will lead the Construction Engineering program. And similarly, a new coordinator for student learning and assessment will be appointed who will manage ABET and SACSCOC accreditation efforts. In addition, to support the program marketing and recruiting needs, a total budget of $40,000 is allocated. Finally, when additional funds are allocated to the program, we plan to hire an internship/co-op coordinator to support both construction engineering and construction programs where internship is a mandatory requirement. In summary, the total estimated new costs of the program are $1.72M over the initial five years, as detailed in the attached Academic Program Planning Financial Worksheet.

ii. UNC Academic Program Revenues

Funding sources may include enrollment growth formula funding, other state appropriation, regular tuition, tuition differential, general fees, special fees, reallocation of existing resources, federal funding, and other funding (such as awarded grants or gifts). The total projected revenue from the above categories should allow the proposed program to become self-sufficient within five years.

When estimating funding for new programs, institutions should take into account that students switching programs do not generate additional enrollment growth formula funds. For example, if a program projects enrollment of 20 students, but 12 of them switched into the program from an existing program at the institution, then only 8 of the students would generate additional formula funding.

Reallocation of Existing Resources includes the salary of faculty reassigned who may be partially or wholly reallocated to the new program. Explain how the current teaching obligations of those faculty are reallocated and include any faculty replacement costs as program costs in the budget. If substantial funds are reallocated, explain how existing undergraduate and graduate programs will be affected.

Federal Funding (In-hand only) refers to federal monies from grants or other sources currently in hand. Do not include federal funding sought but not secured. If anticipated federal funding is obtained, at that time it can be substituted for funds designated in other funding categories. Make note within the text of the proposal of any anticipated federal funding. Provide evidence of sustainability after federal funds have been exhausted.

Our analysis predicts a total enrollment of 60 students at Year 5, with an estimated 20 major-change students from our existing programs, for a net increase of 40 students. Using the current rates, the total revenue from tuition and fees over five years is computed as $1.72M, as detailed in the attached UNC System Academic Program Planning Financial Worksheet. As the program grows, major fees will be used to support teaching, student services, and recruiting and outreach efforts. The tuition and appropriation revenues are determined at an institutional level. The numbers reflected may or may not reflect an actual change in the university budget.

b. Based on the institution's estimate of available existing resources or expected non-state financial resources that will support the proposed program (e.g., federal support, private sources, tuition revenue, etc.), please describe the following:

    i. How does the institution budget and allocate enrollment growth revenues? Is this program expected to generate new enrollment growth for the institution? If so, how will funds be allocated to the proposed program or be used to further other institutional priorities?

The proposed program is expected to generate new enrollment growth for UNC Charlotte. Increases in enrollment as well as Student Credit Hours (SCH) are reviewed by the Dean's office and examined within the context of the UNC System Office funding formula and University priorities when determining allocation of enrollment growth funds and general tuition and fees. Funds received at the department level will be used to support teaching, student services, and recruiting and outreach in proportion to the enrollment growth.

    ii. Will the institution seek other additional state appropriations (both one-time and recurring) to implement and sustain the proposed program? If so, please elaborate.

        No.

    iii. Will the institution require differential tuition supplements or program-specific fees? If so, please elaborate.
        1. State the amount of tuition differential or program-specific fees that will be requested.
        2. Describe specifically how the campus will spend the revenues generated.

The major fee currently in place in the W.S. Lee College of Engineering is $300 per year. We will request an equivalent fee for this new program. We will invest this generated revenue to support student success, including maintaining and upgrading lab equipment.

c. Provide a description of how the program can be implemented and sustained If enrollment increase funding, differential tuition, or other state appropriations noted in the budget templates are not forthcoming.

This program is not dependent on differential tuition or special state appropriations. Since the faculty, courses, equipment, and facilities are in place, the program can be initiated without additional resources in those areas.

Program expansion would be slowed in the absence of enrollment growth funding to fully support the anticipated demand.

d. If this is an online program offered in partnership with an OPM, describe the nature of the relationship, length of contract, funding model (e.g., revenue share, fee for service), and plans for sustainability beyond the initial contract period.

Not applicable.

VII. For Research Doctoral Programs Only:

Describe the following (maximum length 1,000 words):

a. The research and scholarly infrastructure in place (including faculty) to support the proposed program.
b. Any aspects of financing the proposed new program not included in the above section.
c. State the number, amount, and source of proposed graduate student stipends and related tuition benefits that will be required to initiate the program.

Not applicable.

VIII. For Professional Practice Doctoral Programs Only:

Describe the following (maximum length 1,000 words):

a. Discussion of external requirements, including professional licensure or accreditation requirements related to the proposed program. If the program is designed or will be marketed to lead to professional licensure, which state(s) has the institution determined the program meets professional licensure requirements for?
b. The academic and professional infrastructure in place (including faculty) to support the proposed program.
c. Any aspects of financing the proposed new program not included in the above section.
d. State the number and source of required clinical/practical placements, if applicable. Determine whether it is the students' or the institution's responsibility to secure clinical/practical placements and discuss how that expectation will be communicated to students and prospective students. Describe how the institution will ensure that proposed clinical/practical sites are appropriate.

Not applicable.

IX. Contact: (List the names, titles, e-mail addresses and telephone numbers of the person(s) responsible for planning the proposed program.)

Position Title	Name	E-mail Address	Telephone
Professor, **Department Chair,** **Civil & Environmental Engineering**	Glenn E. Moglen, Ph.D., P.E.	gmoglen@charlotte.edu	704-687-1219
Professor, **Department Chair,** **Engineering Technology & Construction Management**	Lingguang Song, PhD.	Lsong2@charlotte.edu	704-687-5057

Signatures. This Request for Preliminary Authorization has been reviewed and approved by the appropriate institutional committees and authorities and has my support.

Position Title	Signature	Date
Chancellor	DocuSigned by: Sharon Gaber 2FF1496738C7414...	02/12/2025 | 8:58 AM EST
Provost	DocuSigned by: Jennifer Troyer CB79653C3A82433...	02/11/2025 | 4:41 PM EST

(Only complete below for partner institution if this is a joint degree program proposal)

Position Title	Signature	Date
Chancellor	n/a	
Provost	n/a	

	Current Program Sources (if applicable)	Rate	Year 0 (Start Up)	1st Year	2nd year	3rd Year	4th Year	5th Year	TOTALS
1	General Fund Appropriation								$ -
2	NC Promise Appropriation								$ -
3	*Resident Enrollment (FTE)*			17	17	17	17		
4	Regular Resident Tuition (Annual Rate)	$ 3,812	$ -	$ 64,804	$ 64,804	$ 64,804	$ 64,804	$ -	$ 259,216
5	*Nonresident Enrollment (FTE)*			3	3	3	3		
6	Regular Nonresident Tuition (Annual Rate)	$ 19,065	$ -	$ 57,195	$ 57,195	$ 57,195	$ 57,195	$ -	$ 228,780
7	Tuition Differential (Annual Rate)		$ -	$ -	$ -	$ -	$ -	$ -	$ -
8	Special Fees	$ 300	$ -	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ -	$ 24,000
9	External Funding (In-Hand Only)								$ -
10	Other Funding (Identify)								$ -
11	**Total Current Sources**		$ -	$ 127,999	$ 127,999	$ 127,999	$ 127,999	$ -	$ 511,996
	Proposed New Program Sources								
12	*Incremental Resident SCH, ENGR*			110	176	262	332	336	
13	Enrollment Funding Appropriation, CIP 14	$ 860	$ -	$ -	$ 47,300	$ 122,980	$ 188,340	$ 255,420	$ 614,040
	Incremental Resident SCH, ENGR			-	80	148	208	208	
	Enrollment Funding Appropriation, CIP 15	$ 369	$ -	$ -	-	14,760	42,066	$ 65,682	$ 122,508
	Incremental Resident SCH, Non-ENGR			190	244	282	344	384	
	Enrollment Funding Appropriation, Non-ENGR	$ 269	$ -	$ -	25,555	58,373	70,747	$ 84,197	$ 238,872
14	*Resident Enrollment (FTE)*			9	14	19	26	34	
15	Regular Resident Tuition (Annual Rate)	$ 3,812	$ -	$ 32,402	$ 51,843	$ 71,284	$ 97,206	$ 129,608	$ 382,344
16	NC Promise Appropriation (Resident)		$ -	$ -	$ -	$ -	$ -	$ -	$ -
17	*Nonresident Enrollment (FTE)*			1	2	3	5	6	
18	Regular Nonresident Tuition (Annual Rate)	$ 19,065	$ -	$ 19,065	$ 45,756	$ 62,915	$ 85,793	$ 114,390	$ 327,918
19	NC Promise Appropriation (Nonresident)		$ -	$ -	$ -	$ -	$ -	$ -	$ -
20	Tuition Differential (Annual Rate)		$ -	$ -	$ -	$ -	$ -	$ -	$ -
21	Special Fees	$ 300	$ -	$ 2,850	$ 4,800	$ 6,600	$ 9,000	$ 12,000	$ 35,250
22	External Funding (In-Hand Only)								$ -
23	Other Funding (Identify)								$ -
24	**Total New Sources**		$ -	$ 54,317	$ 175,254	$ 336,912	$ 493,152	$ 661,297	$ 1,720,932
25	**Total Proposed Program Sources**		$ -	$ 182,316	$ 303,253	$ 464,911	$ 621,151	$ 661,297	$ 2,232,928

Comments

Proposed New Program Sources	1st Year	2nd year	3rd Year	4th Year	5th Year	TOTALS
Enrollment Funding Appropriation	$0	$72,855	$196,113	$301,153	$405,299	$975,420
Regular Resident Tuition (Annual Rate)	$32,402	$51,843	$71,284	$97,206	$129,608	$382,344
Regular Resident Tuition (Annual Rate)	$19,065	$45,756	$62,915	$85,793	$114,390	$327,918
Special Majors Fees	$2,850	$4,800	$6,600	$9,000	$12,000	$35,250
Total New Sources	$54,317	$175,254	$336,912	$493,152	$661,297	$1,720,932
Proposed New Program Uses	**1st Year**	**2nd year**	**3rd Year**	**4th Year**	**5th Year**	**TOTALS**
Graduate Student Support w/ GASP	$0	$60,469	$65,361	$65,361	$65,361	$256,552
New Faculty Lines	$0	$0	$0	$0	$63,165	$63,165
New Staff (Advisor and Co-op)	$0	$0	$20,532	$81,060	$81,060	$182,652
PTT Part Time Fac Holding	$27,159	$27,159	$47,010	$47,010	$47,010	$195,347
SPT Admin Stipends	$0	$0	$27,553	$27,553	$27,553	$82,659
Non Personnel Operating	$0	$0	$0	$17,592	$38,500	$56,092
Marketing	$0	$0	$8,000	$8,000	$8,000	$24,000
Central University/AA (50%)	$27,159	$87,627	$168,456	$246,576	$330,649	$860,466
Total New Program Uses	$54,317	$175,254	$336,912	$493,152	$661,297	$1,720,932
Projected Balance	$0	$0	$0	$0	$0	$0

Chief Financial Officer

Name Richard Amon

Date 02/11/2025 | 2:01 PM EST

DocuSigned by:

Richard Amon

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		Year 0 (Start Up)	1st Year	2nd year	3rd Year	4th Year	5th Year	TOTALS
	Current Program Uses (if applicable)							
1	Tenure/Tenure-Track Faculty		$ 121,999	$ 121,999	$ 121,999	$ 121,999		**$ 487,996**
2	Non Tenure-Track Faculty							**$ -**
3	Graduate Student Support							**$ -**
4	Non-Faculty Positions							**$ -**
5	Student Support (Scholarships)							**$ -**
6	Libraries							**$ -**
7	Supplies and Materials		6,000	6,000	6,000	6,000		**$ 24,000**
8	Travel, Communications, and Fixed Charges							**$ -**
9	Equipment and Technology							**$ -**
10	Facility Repair and Renovation							**$ -**
11	Other (Identify)							**$ -**
12	**Total Current Uses**	**$ -**	**$ 127,999**	**$ 127,999**	**$ 127,999**	**$ 127,999**	**$ -**	**$ 511,996**
	Proposed New Program Uses							
13	Tenure/Tenure-Track Faculty	-						**$ -**
14	Non Tenure-Track Faculty	-					63,165	**$ 63,165**
15	Graduate Student Support including GASP	-		60,469	65,361	65,361	65,361	**$ 256,552**
16	Non-Faculty Positions (Advisor II)	-			20,532	81,060	81,060	**$ 182,652**
	Non-Faculty Positions (Co-Op Coordinators)							**$ -**
17	Student Support (Scholarships)	-						**$ -**
18	Libraries	-						**$ -**
19	Supplies and Materials	-				10,092	15,000	**$ 25,092**
20	Travel, Communications, and Fixed Charges	-					8,500	**$ 8,500**
21	Equipment and Technology	-				7,500	15,000	**$ 22,500**
22	Facility Repair and Renovation	-						**$ -**
23	Facility New Construction or Expansion	-						**$ -**
24	Other (Identify)							
	PTT Part Time Fac Holding		27,159	27,159	47,010	47,010	47,010	
	SPT Admin Stipends				27,553	27,553	27,553	
	Marketing	-			8,000	8,000	8,000	**$ 24,000**
	University/Division (50%)	-	27,159	87,627	168,456	246,576	330,649	**$ 860,466**
25	**Total New Uses**	**$ -**	**$ 54,317**	**$ 175,254**	**$ 336,912**	**$ 493,152**	**$ 661,297**	**$ 1,720,932**
26	**Total Proposed Program Uses**	**$ -**	**$ 182,316**	**$ 303,253**	**$ 464,911**	**$ 621,151**	**$ 661,297**	**$ 2,232,928**
	Source Totals		54317	175254.2	336911.9	493151.5	661297	1720931.6
	ected Balance	$ -	$ 0	$ (0)	$ (0)	$ -	$ (0)	

Comments

COEN will support Special Payments for Program Director and ABET Coordinator and marketing costs for 1st and 2nd year

Chief Financial Officer

Name Richard Amon

Date 02/11/2025 | 2:01 PM EST

Signature

DocuSigned by:

Richard Amon

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Appendix A

EAB Market Insights report on Construction Engineering Program

EAB

EAB MARKET INSIGHTS

Market Pulsecheck for a Bachelor's-Level Construction Engineering Program

Completed for The University of North Carolina at Charlotte
March 2024

Research Associate

Grace Warner

Senior Research Manager

Katie Murphy

Table of Contents

Market Pulsecheck

1

Market Pulsecheck Overview

An evaluation of employer demand for graduates from the proposed bachelor's-level construction engineering program in regional and national markets, and of student demand for similar programs.

Analysis Includes:

- Job Posting Trends
- Top Occupations
- Top Titles
- Top Employers
- Top Industries
- Top Cities
- Education Levels
- Degree Completion Trends

This analysis considered demand in areas defined as:

- Regional Data: North Carolina, South Carolina, Tennessee, and Virginia
- National Data: United States

Options for Next Steps

Following this analysis, the requesting partner can:

- Contact your Strategic Leader to schedule a call with the EAB research team to review the report.
- Choose to discontinue the research, if the leadership is able to make a decision based on this analysis and other institutional research.
- Continue the analysis. A final report of the continued research will address credential design and curricular recommendations as well as the prospective student experience.

High and Growing Employer and Student Demand Indicate Opportunity for Program Graduates; However, Market Leaders May Pose as Strong Competition

Preliminary Program Outlook

Employer demand trends point to a healthy labor market with ample opportunities for program graduates in both regions due to a moderate-to-high number of job postings. Between February 2021 and January 2024, employer demand grew an average monthly 0.80% regionally and 0.83% nationally. Employers posted a moderate-to-high number of relevant job postings in the last year (26,317 regionally and 231,630 nationally). Further, demand for all bachelor's-level professionals declined in both markets, indicating a favorable outlook for bachelor's-level construction engineering graduates. Overall, an increasing need for program graduates coupled with a moderate-to-high number of job postings signals a large and growing labor market for construction engineering graduates.

Growing student demand suggests a favorable competitive landscape; however, strong competitors in the regional market may challenge new program launch. Between the 2017-2018 and 2021-2022 academic years, the number of reported completions increased by an average of 22.79% annually while the number of institutions reporting completions increased by an average 12.50% annually, indicating a favorable competitive landscape as student demand grew faster than competition. During the same period, two of the top three institutions increased their market share while Virginia Polytechnic Institute and State University held 69.89% of the market, solidifying their stance as the top competitor. However, the Citadel Military Institute of South Carolina began reporting completions over the analyzed period, jumping from not reporting completions to reporting 13 completions, indicating some room for successful program launch. Overall, a new program may face challenges in capturing student demand in a competitive market.

Increasing student demand bodes well for new program launch; however, increasing competition and the presence of market concentration indicate an increasingly challenging competitive landscape nationally. Between the 2017-2018 and 2021-2022 academic years, the number of reported completions increased by an average of 3.90% annually, while the number of institutions reporting completions increased by an average 6.89%, outpacing student demand and signaling a less favorable competitive landscape for new program launch. Further, the top 20% of institutions held 62.01% of the market, indicating market concentration and thus a challenging market. Growth in competition outpacing growth in student demand may hinder new program launch.

Labor Market Intelligence

Regional Data Analysis of Job Postings for Bachelor's-Level Construction Engineering Professionals

Employer demand trends suggest a high need for bachelor's-level construction engineering professionals. From February 2023 to January 2024, employers posted a moderate-to-high number of relevant job postings (26,317). From February 2021 to January 2024, employer demand for bachelor's-level construction engineering professionals increased by an average of 0.80% per month, while demand for all bachelor's-level professionals declined by 0.04% per month. Demand for bachelor's-level construction engineering professionals increasing faster than demand for all bachelor's-level professionals indicates a favorable labor market for program graduates.

0.80%

Average Monthly Demand Growth

February 2021 - January 2024, Regional Data

- Average monthly growth of 22 job postings.
- During the same period, demand for all bachelor's-level professionals declined 0.04%.

5,368 postings

Average Monthly Demand

February 2021 - January 2024, Regional Data

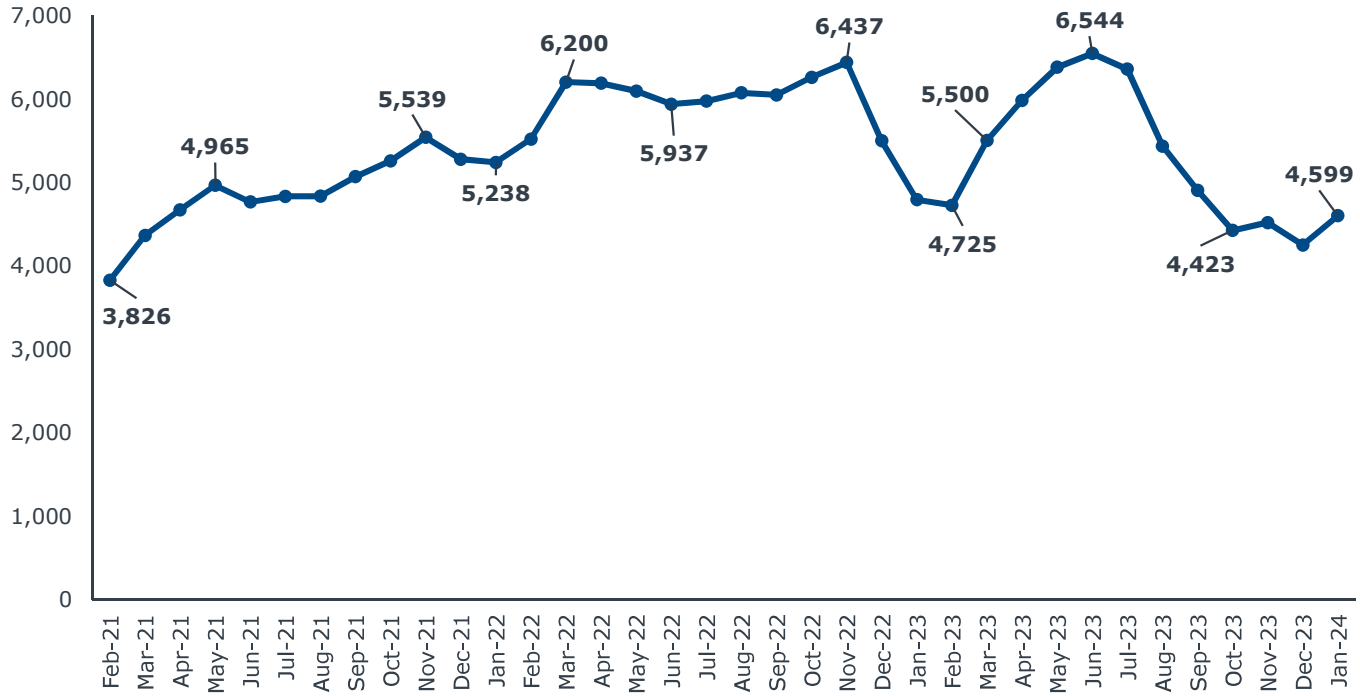
26,317 postings

Relevant Jobs Posted in the Past Year

February 2023 - January 2024, Regional Data

Job Postings for Bachelor's-Level Construction Engineering Professionals

February 2021 - January 2024, Regional Data



Source: EAB analysis. Lightcast.

Labor Market Intelligence

National Data Analysis of Job Postings for Bachelor's-Level Construction Engineering Professionals

Employer demand trends suggest a high and growing need for bachelor's-level construction engineering professionals. From February 2023 to January 2024, employers posted a moderate-to-high number of relevant job postings in the national market (231,630). From February 2021 to January 2024, employer demand for bachelor's-level construction engineering professionals increased by an average of 0.83% per month, equating to a growth of 200 job postings per month. During the same period, demand for all bachelor's-level professionals declined by 0.11% per month. Demand for bachelor's-level construction engineering professionals increased while demand for all bachelor's-level professionals decreased, signaling a strong labor market for program graduates.

0.83%

Average Monthly Demand Growth

February 2021 - January 2024, National Data

- Average monthly growth of 200 job postings.
- During the same period, demand for all bachelor's-level professionals declined 0.11%.

49,286 postings

Average Monthly Demand

February 2021 - January 2024, National Data

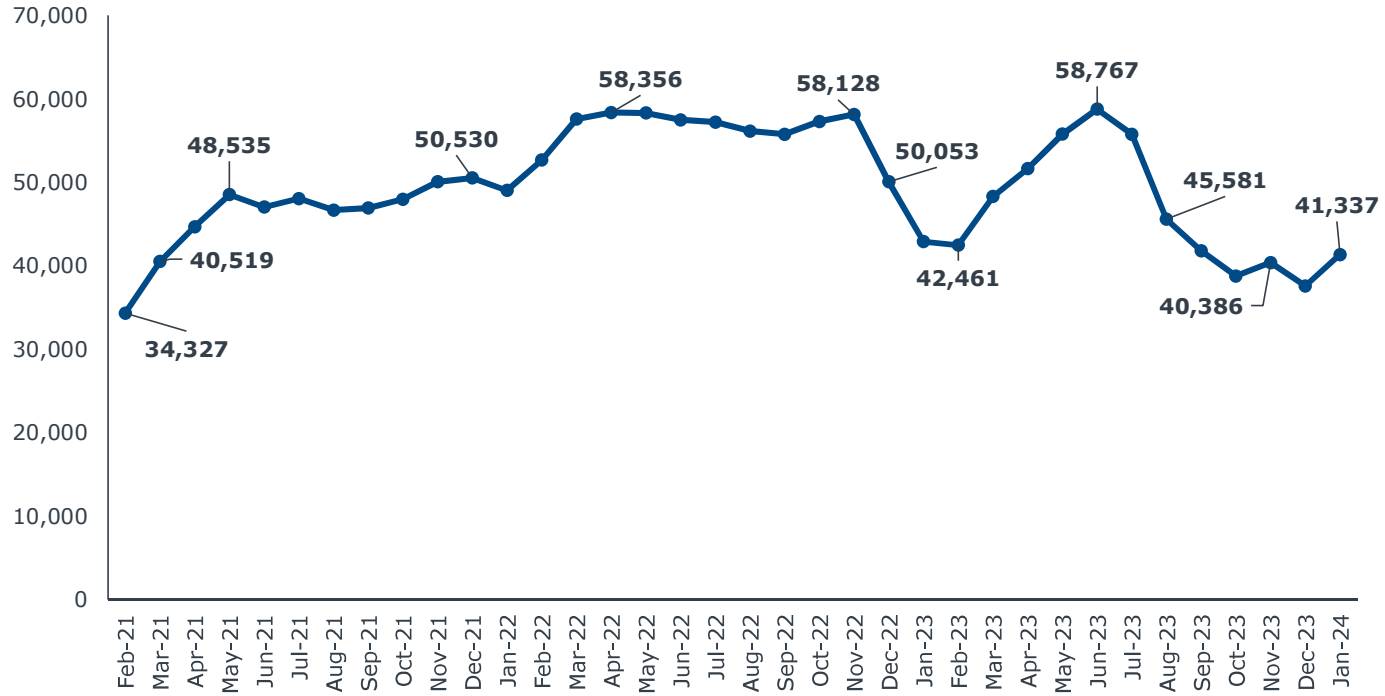
231,630 postings

Relevant Jobs Posted in the Past Year

February 2023 - January 2024, National Data

Job Postings for Bachelor's-Level Construction Engineering Professionals

February 2021 - January 2024, National Data



Source: EAB analysis. Lightcast.

Regional Data Analysis of Job Postings and Future Employment for Construction Engineering Professionals

Over the next decade, employment in four of the top five relevant occupations for construction engineering professionals is projected to outpace overall employment growth (9.50%), indicating growing employment opportunities for program graduates. Job titles listed under the occupation Managers, All Other include Construction Managers, Program Coordinators, and Program Managers.

While these occupations represent the most common occupations appearing in job postings for bachelor's-level construction engineering professionals, the projected employment data considers all jobs within an occupation at all degree levels.

Top Occupations Across Job Postings for Bachelor's-Level Construction Engineering Professionals

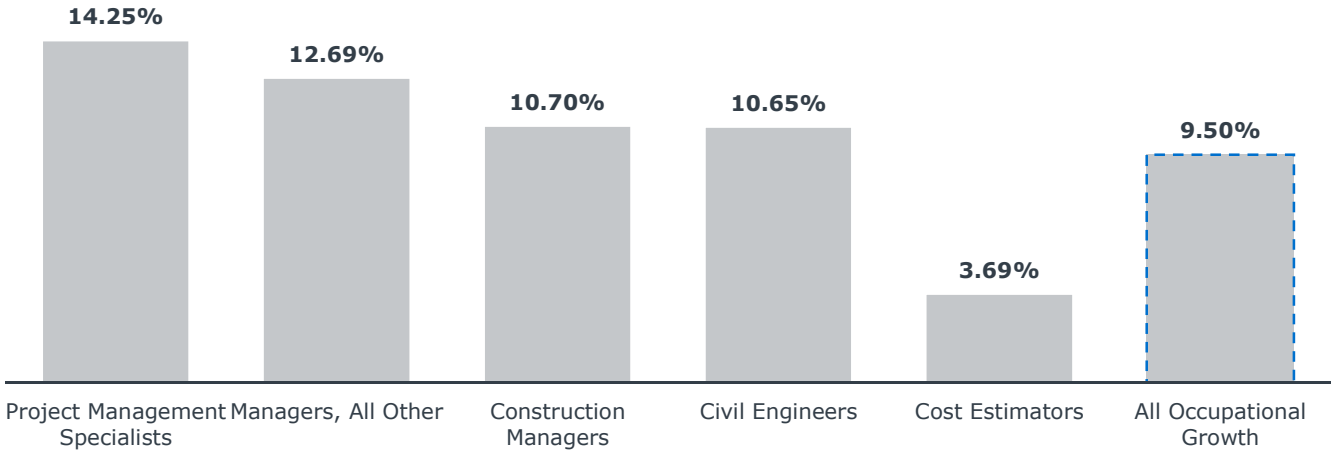
February 2023 - January 2024, Regional Data

n = 26,317 job postings

Occupation	Percent of Relevant Job Postings within Occupation	Number of Relevant Job Postings within Occupation
Construction Managers	22.10%	5,816
Civil Engineers	18.50%	4,868
Project Management Specialists	11.17%	2,939
Cost Estimators	6.07%	1,597
Managers, All Other	4.77%	1,255
Architectural and Engineering Managers	3.72%	979
First-Line Supervisors of Construction Trades and Extraction Workers	3.55%	933
Production, Planning, and Expediting Clerks	1.42%	373
Buyers and Purchasing Agents	1.15%	303
Industrial Production Managers	1.09%	288

Projected Employment in Top Occupations[1]

2023 - 2033, Regional Data



1) Top occupations refer to the occupations in which employers most often seek relevant professionals.

Source: EAB analysis. Lightcast.

National Data Analysis of Job Postings and Future Employment for Construction Engineering Professionals

Over the next decade, employment in four of the top five relevant occupations for construction engineering professionals is projected to outpace overall employment growth (10.13%), indicating increasing employment opportunities for program graduates.

While these occupations represent the most common occupations appearing in job postings for bachelor's-level construction engineering professionals, the projected employment data considers all jobs within an occupation at all degree levels.

Top Occupations Across Job Postings for Bachelor's-Level Construction Engineering Professionals

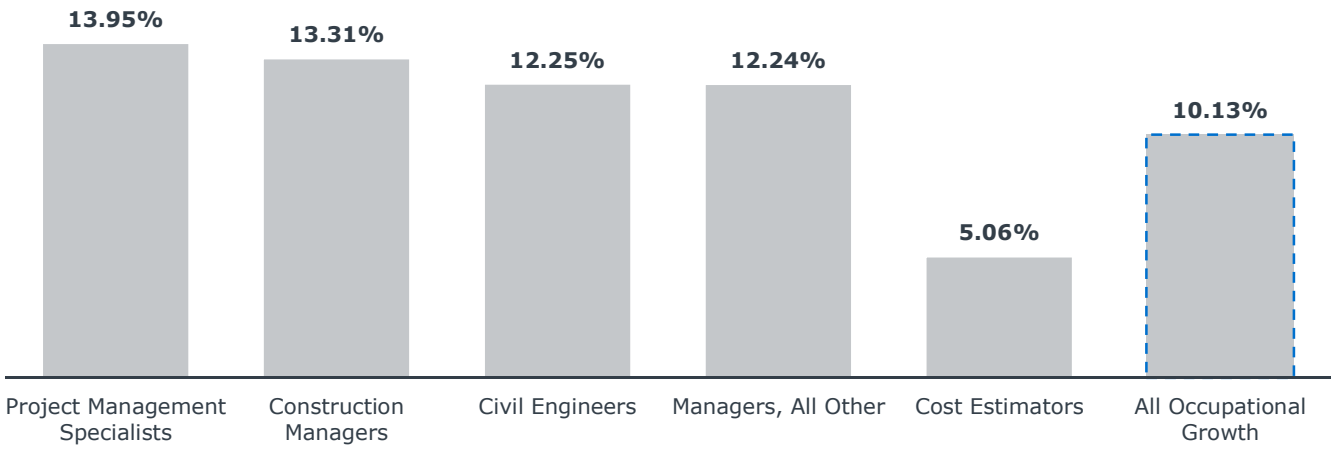
February 2023 - January 2024, National Data

n = 231,630 job postings

Occupation	Percent of Relevant Job Postings within Occupation	Number of Relevant Job Postings within Occupation
Construction Managers	21.81%	50,529
Civil Engineers	19.19%	44,457
Project Management Specialists	11.25%	26,067
Cost Estimators	6.48%	15,014
Managers, All Other	4.80%	11,123
Architectural and Engineering Managers	3.54%	8,195
First-Line Supervisors of Construction Trades and Extraction Workers	3.43%	7,945
Production, Planning, and Expediting Clerks	1.31%	3,025
Buyers and Purchasing Agents	1.20%	2,791
Industrial Production Managers	1.01%	2,349

Projected Employment in Top Occupations[1]

2023 - 2033, National Data



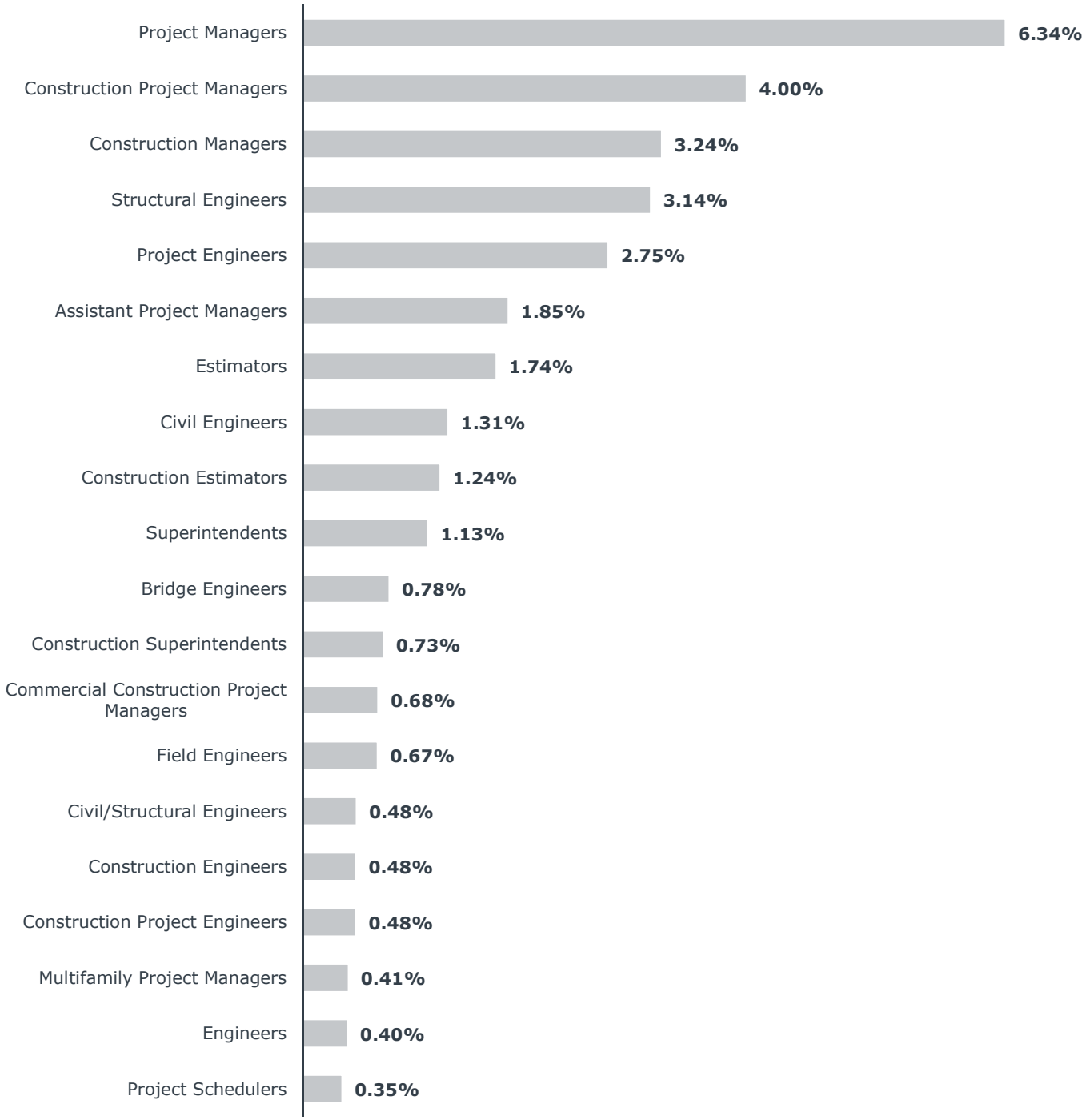
1) Top occupations refer to the occupations in which employers most often seek relevant professionals.

Source: EAB analysis. Lightcast.

Top Titles in Job Postings for Bachelor's-Level Construction Engineering Professionals

February 2023 - January 2024, Regional Data

n = 26,317 job postings

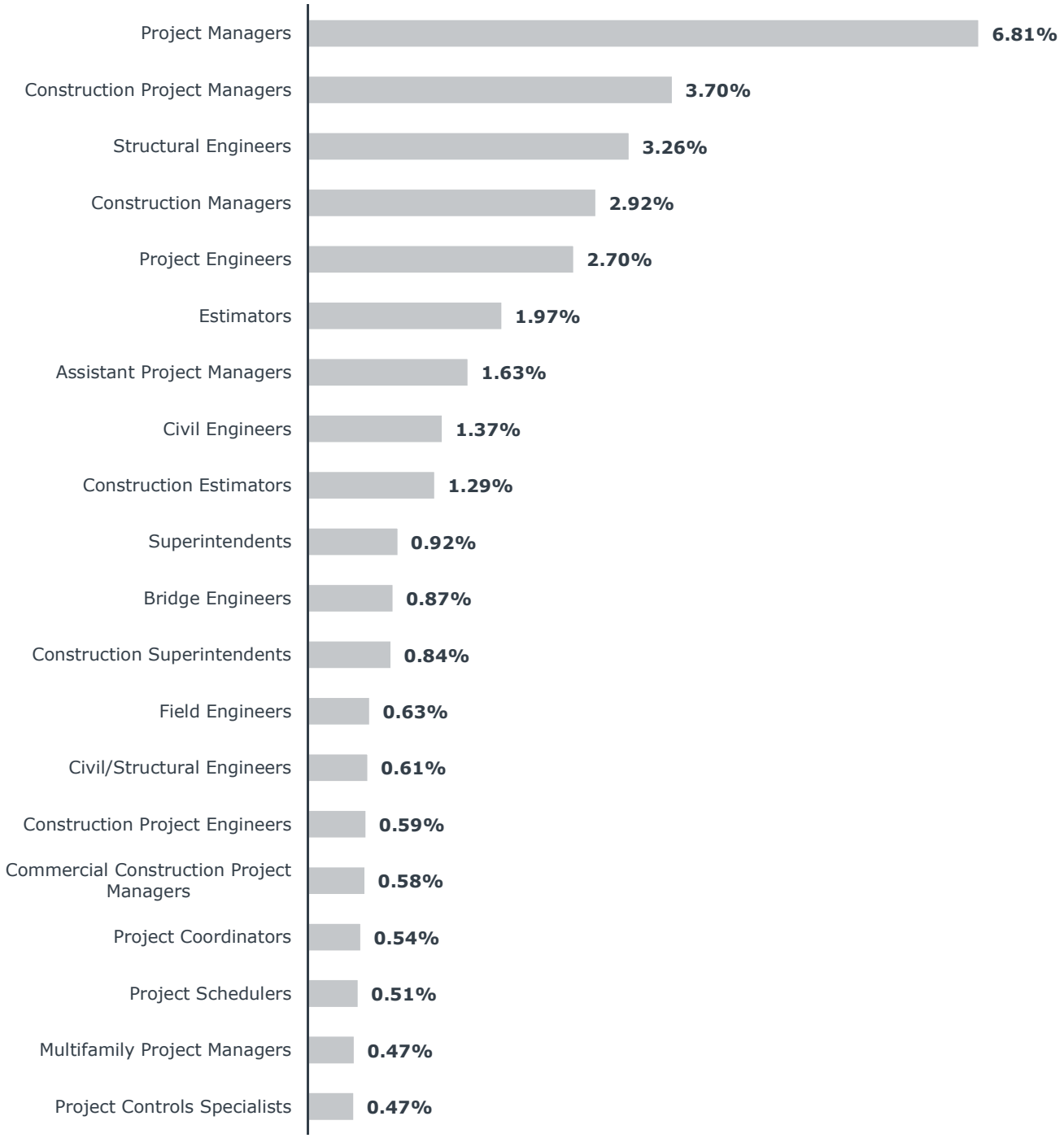


Source: EAB analysis. Lightcast.

Top Titles in Job Postings for Bachelor's-Level Construction Engineering Professionals

February 2023 - January 2024, National Data

n = 231,630 job postings

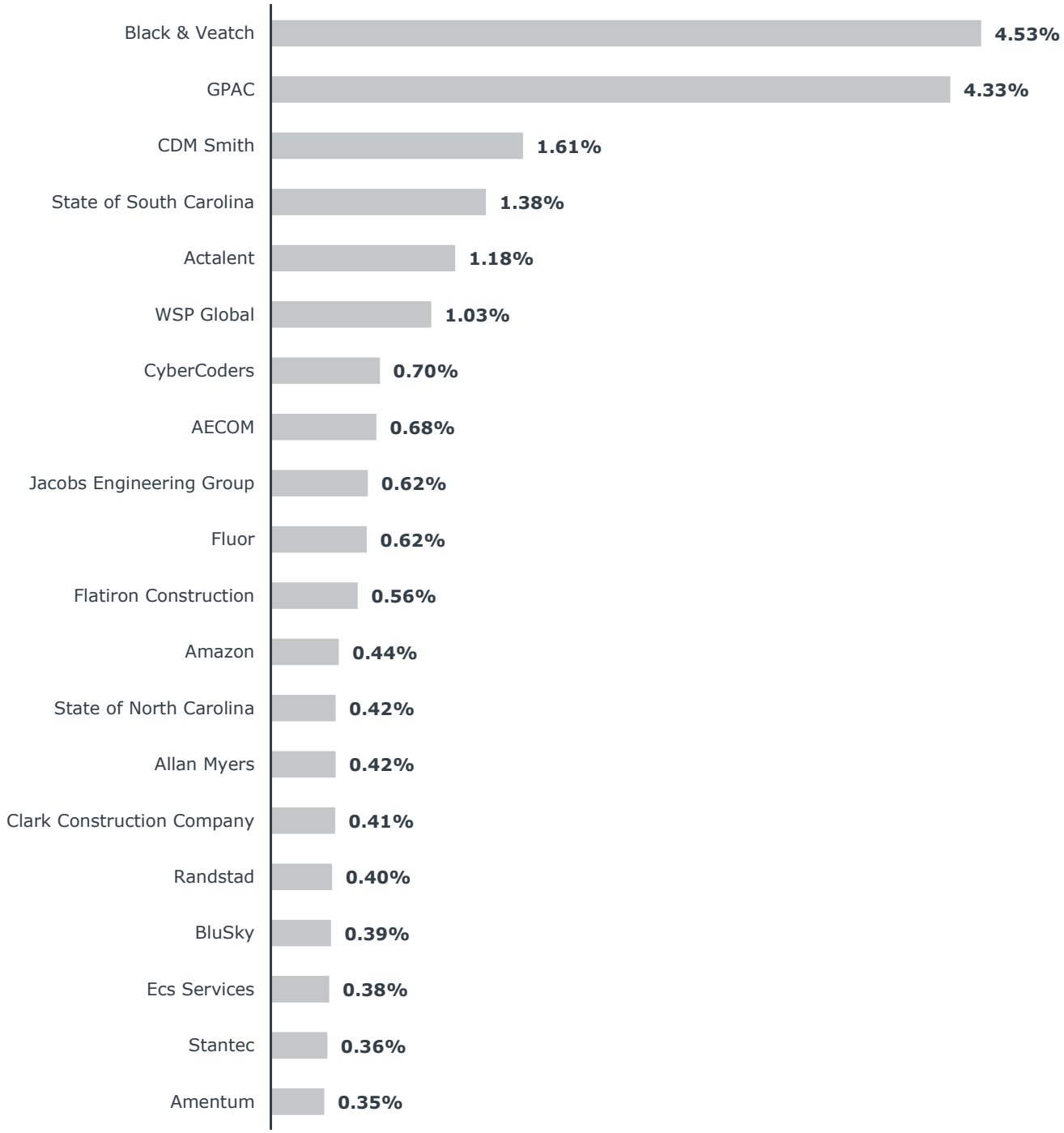


Source: EAB analysis. Lightcast.

Top Employers in Job Postings for Bachelor's-Level Construction Engineering Professionals

February 2023 - January 2024, Regional Data

n = 26,317 job postings

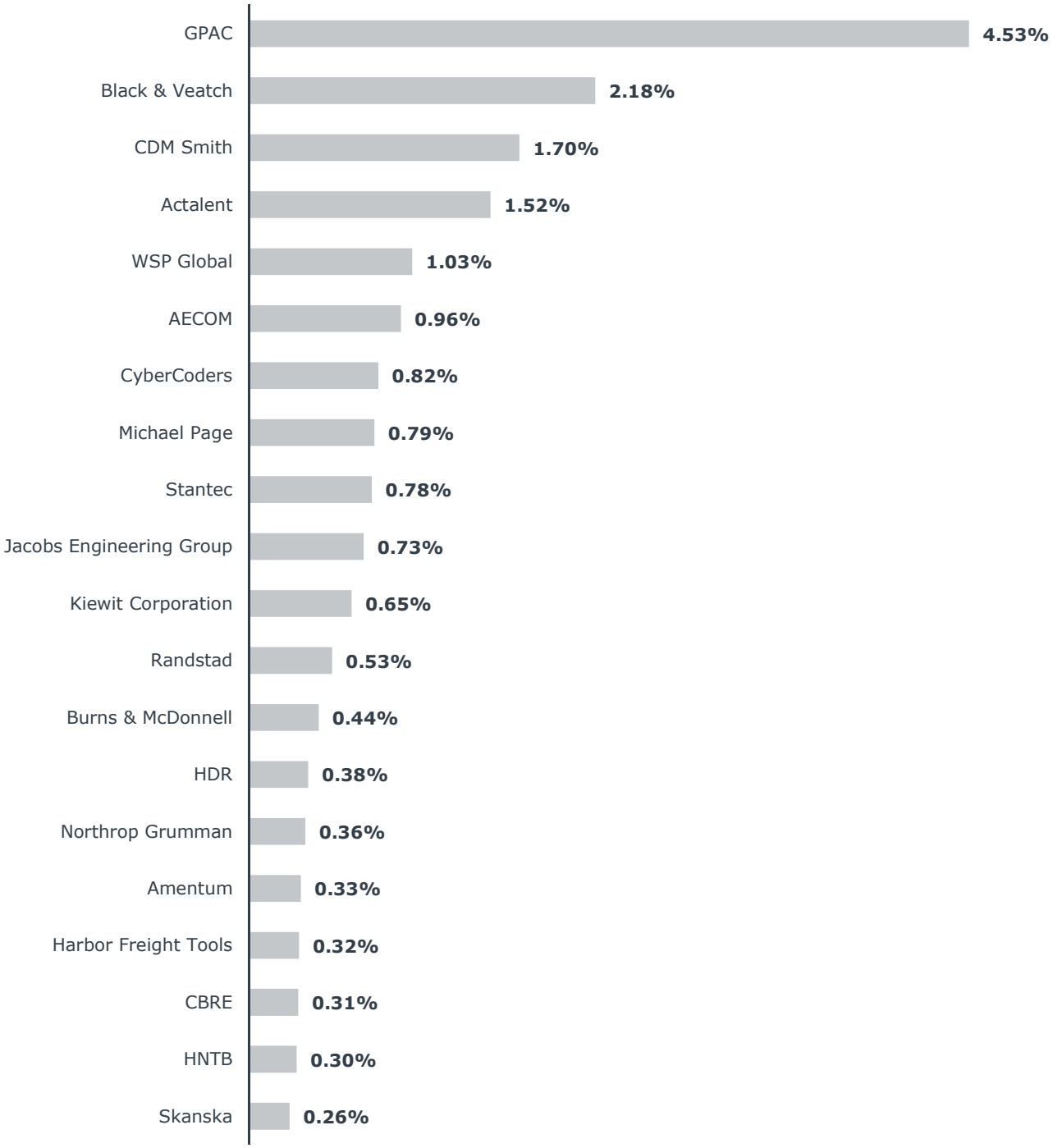


Source: EAB analysis. Lightcast.

Top Employers in Job Postings for Bachelor's-Level Construction Engineering Professionals

February 2023 - January 2024, National Data

n = 231,630 job postings

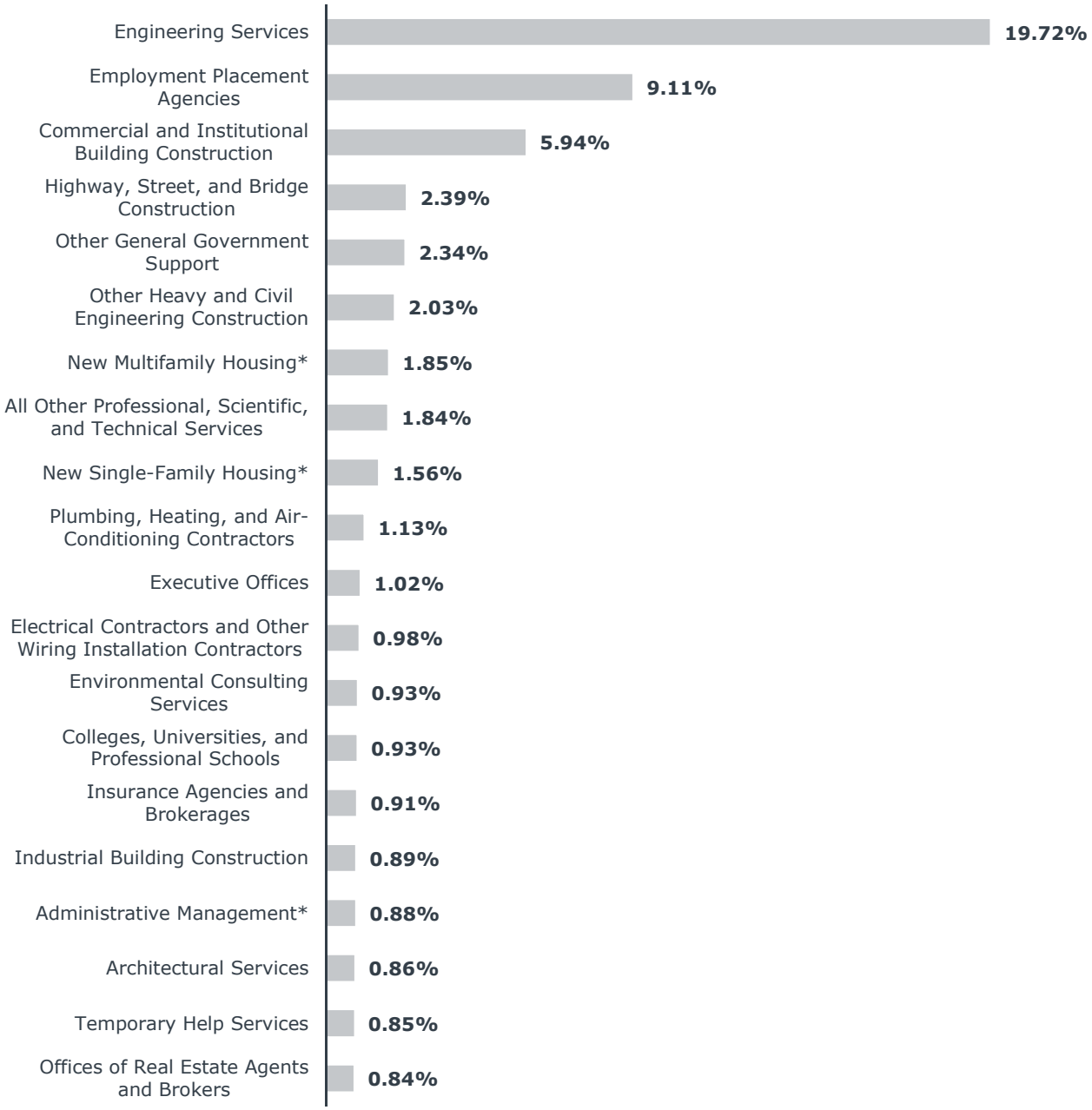


Source: EAB analysis. Lightcast.

Job Postings Across Industries for Bachelor's-Level Construction Engineering Professionals

February 2023 - January 2024, Regional Data

n = 26,317 job postings



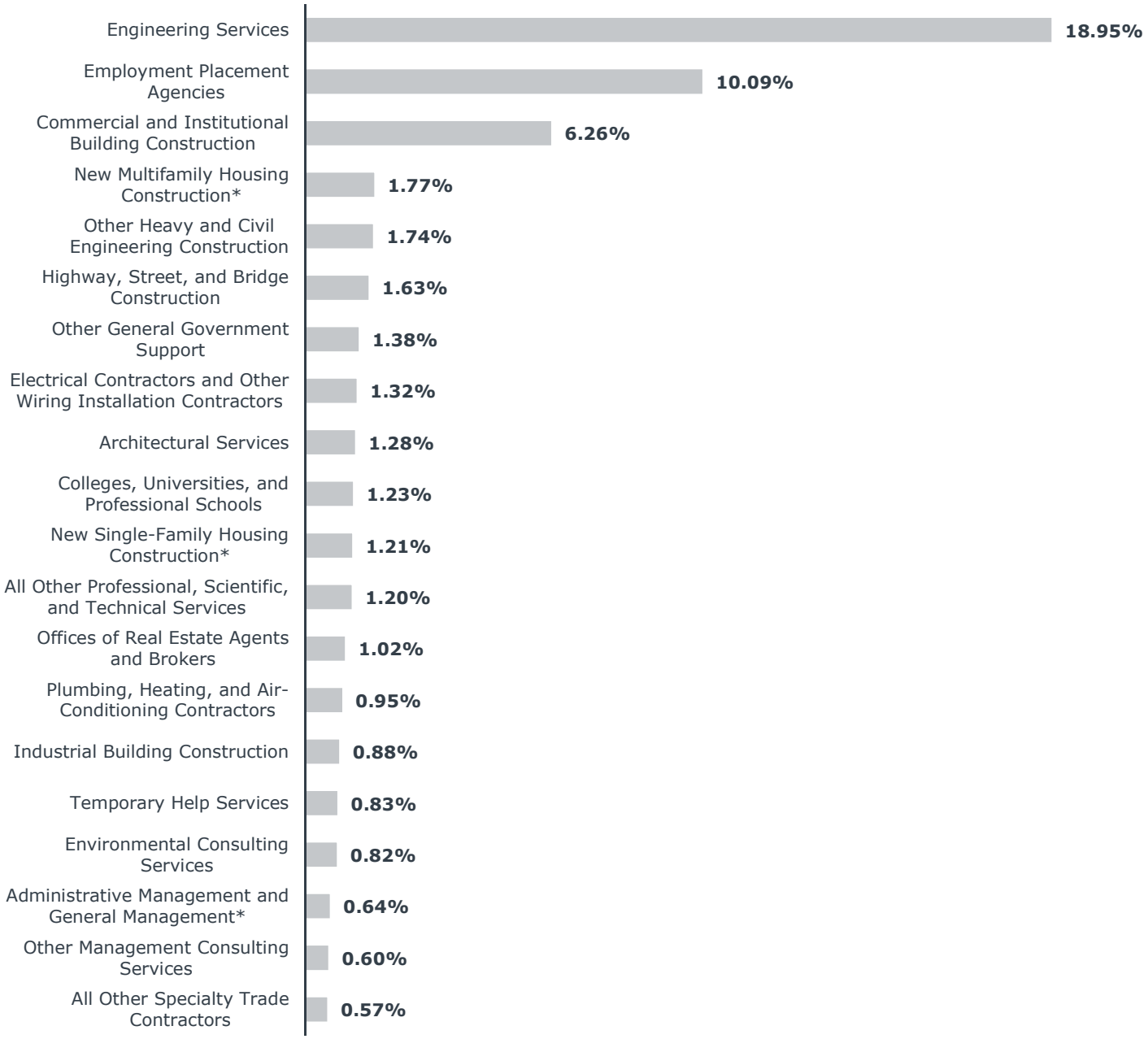
* Full industry names: New Multifamily Housing Construction (except For-Sale Builders), New Single-Family Housing Construction (except For-Sale Builders), Administrative Management and General Management Consulting Services

Source: EAB analysis. Lightcast.

Job Postings Across Industries for Bachelor's-Level Construction Engineering Professionals

February 2023 - January 2024, National Data

n = 231,630 job postings



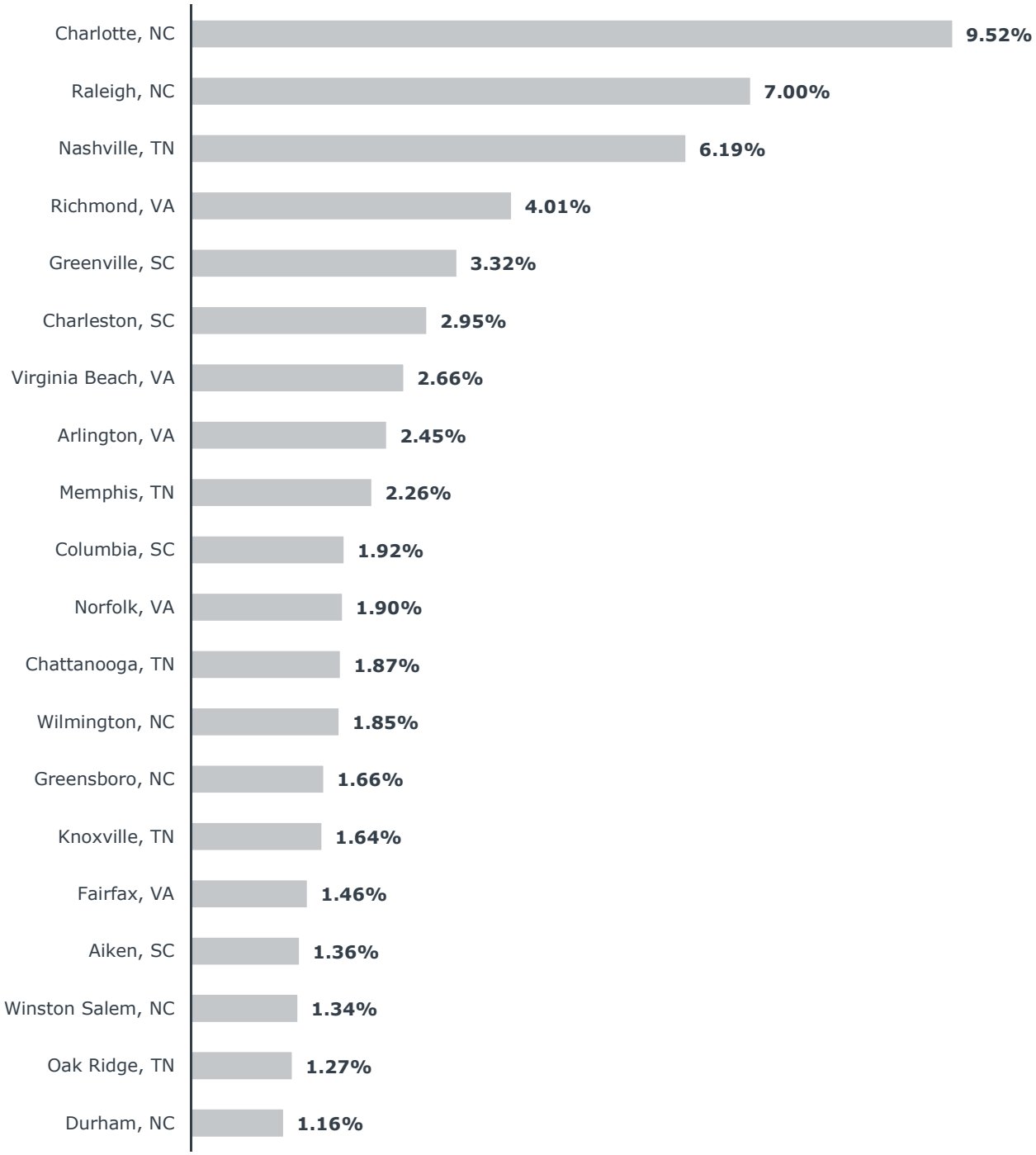
* Full industry names: New Multifamily Housing Construction (except For-Sale Builders), New Single-Family Housing Construction (except For-Sale Builders), Administrative Management and General Management Consulting Services

Source: EAB analysis. Lightcast.

Top Cities Seeking Bachelor's-Level Construction Engineering Applicants

February 2023 - January 2024, Regional Data

n = 26,317 job postings

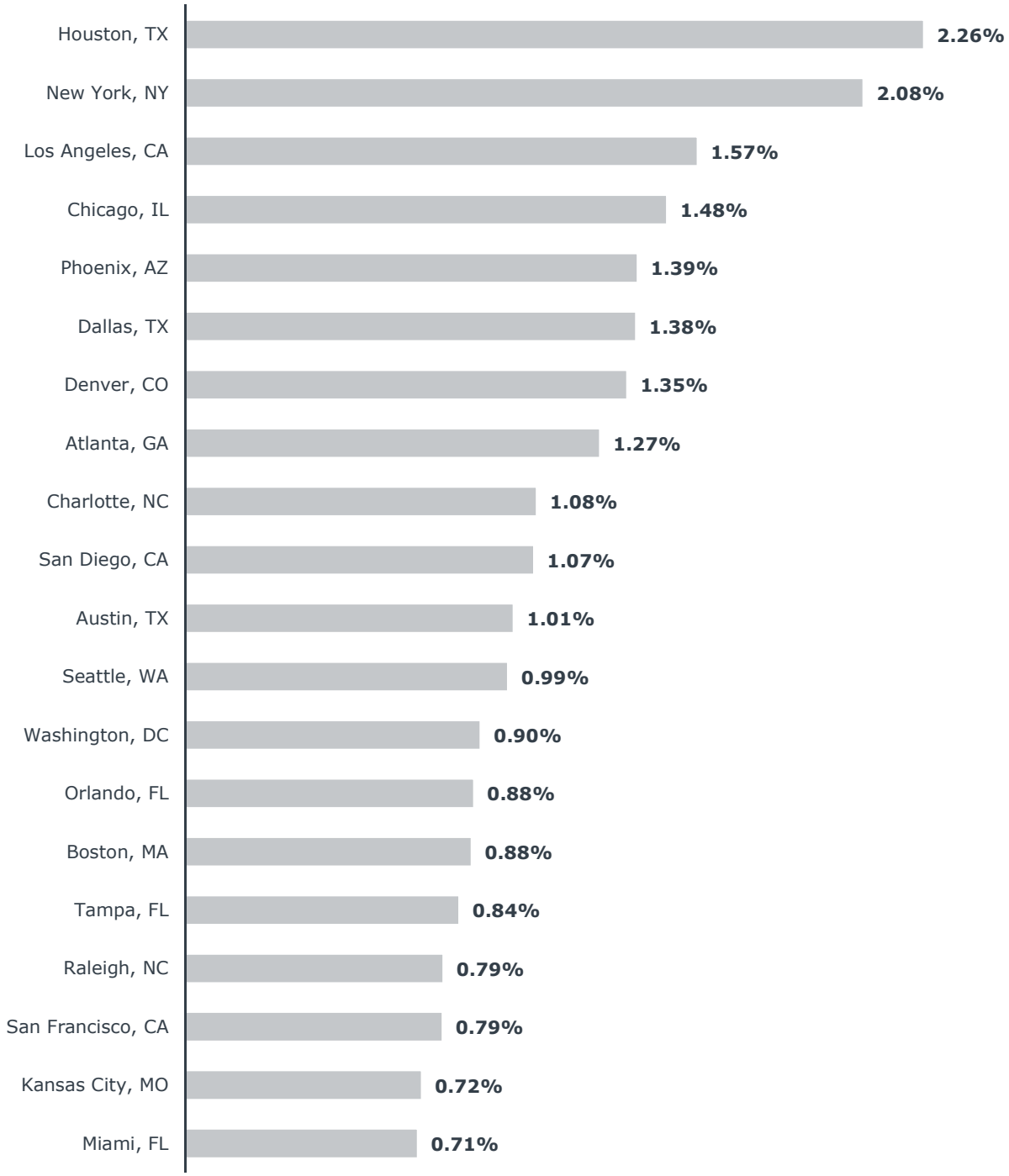


Source: EAB analysis. Lightcast.

Top Cities Seeking Bachelor's-Level Construction Engineering Applicants

February 2023 - January 2024, National Data

n = 231,630 job postings

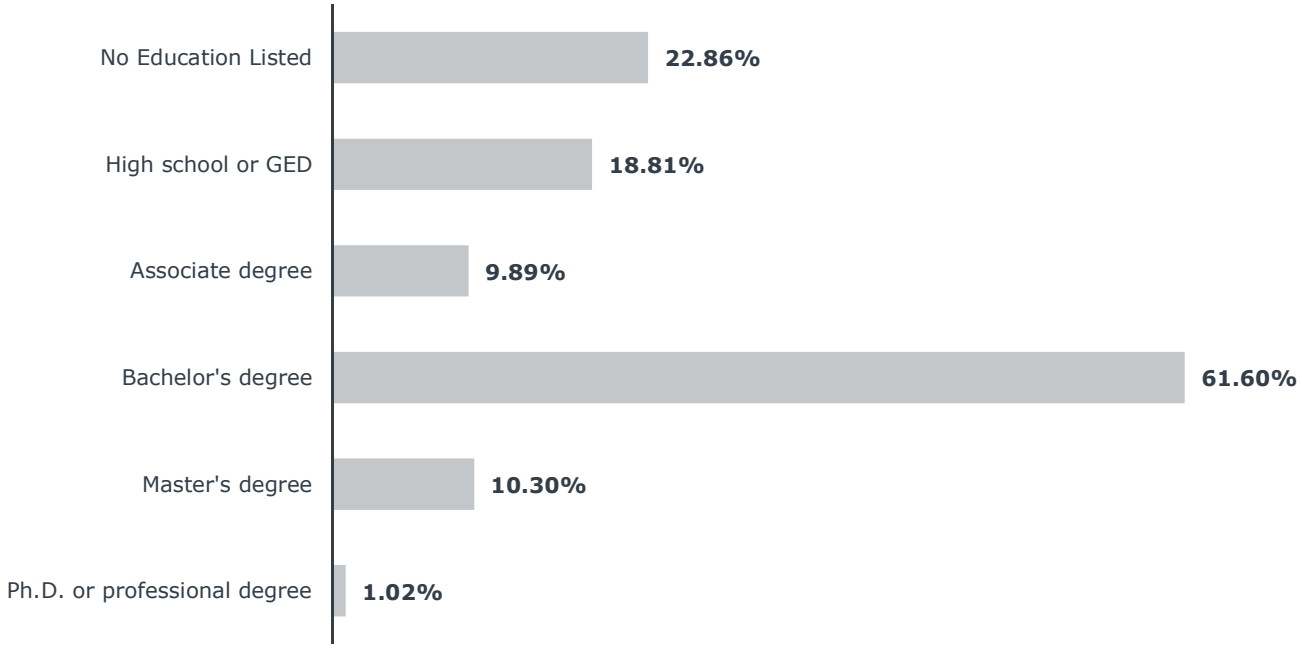


Source: EAB analysis. Lightcast.

Education Levels Requested of Construction Engineering Applicants[1]

February 2023 - January 2024, Regional Data

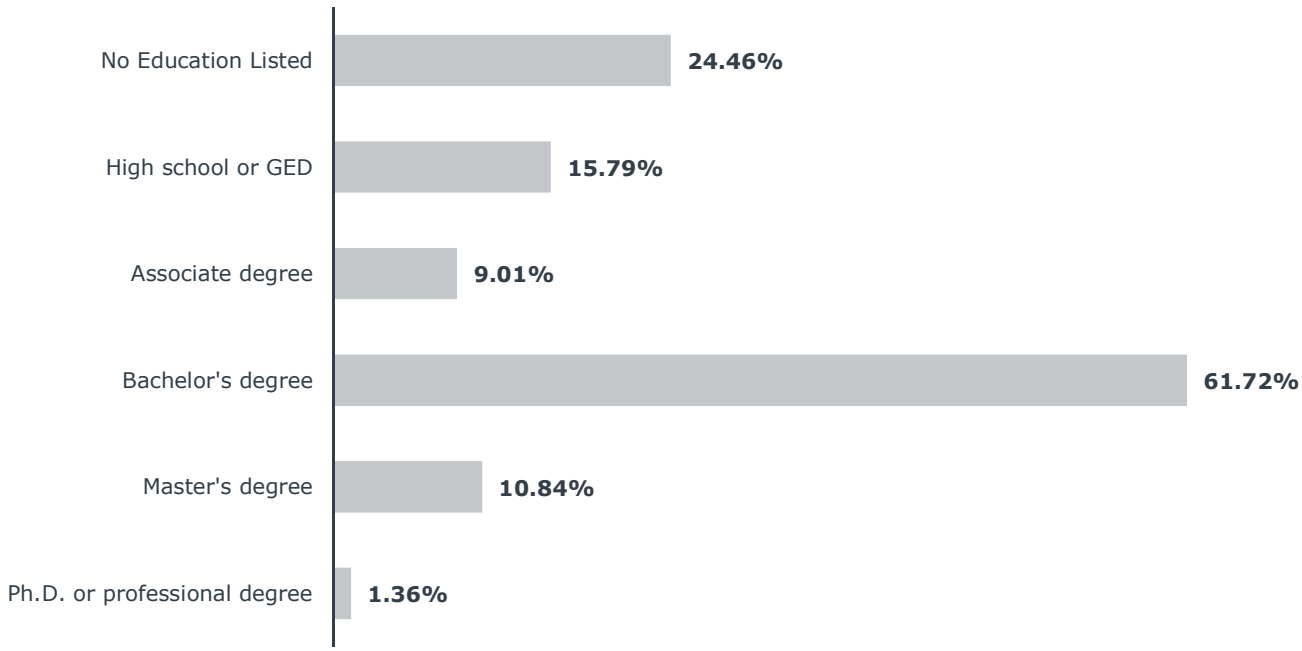
n = 42,719 job postings



Education Levels Requested of Construction Engineering Applicants[1]

February 2023 - January 2024, National Data

n = 375,308 job postings



1) The n-value reflects the number of job postings requesting any degree level construction engineering applicants rather than the number of postings requesting only those at the focus degree level.

Source: EAB analysis. Lightcast.

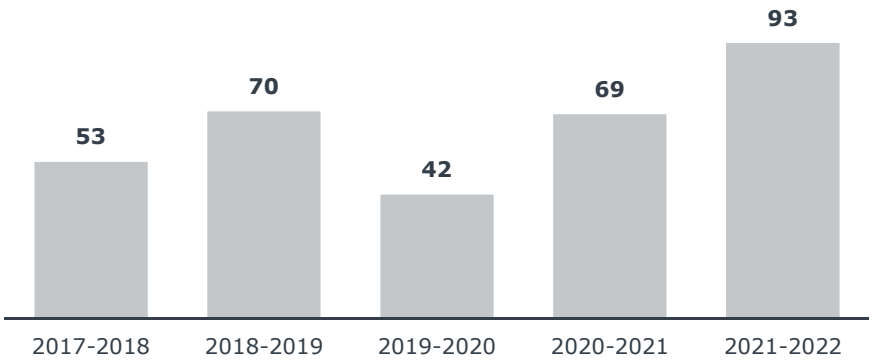
Competitive Intelligence

Regional Data Analysis of Bachelor's-Level Completions Under Construction Engineering (14.3301)

Between the 2017-2018 and 2021-2022 academic years, relevant degree completions fluctuated and ultimately increased by an average annual 22.79%, signaling increasing student demand. Further, the number of institutions reporting relevant completions increased by one institution, indicating a slight rise in competition. All three institutions reporting degree completions in the 2021-2022 academic year offered a distance-delivery modality, signaling a demand for online options. Overall, growth in student demand outpacing growth in competition indicates a favorable competitive landscape for program launch.

Completions Reported Over Time

2017-2018 to 2021-2022 Academic Years, Regional Data



22.79%

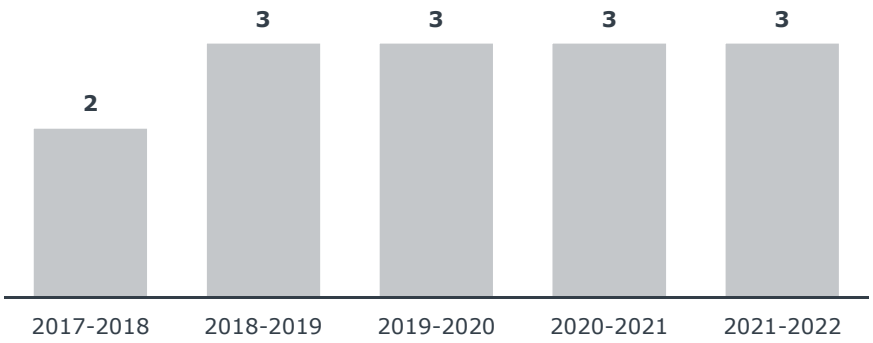
Average Annual Completions Growth

2017-2018 Academic Year to 2021-2022 Academic Year, Regional Data

- During the same period, the number of institutions reporting completions grew by 12.50% on average annually.

Institutions Reporting Completions Over Time

2017-2018 to 2021-2022 Academic Years, Regional Data



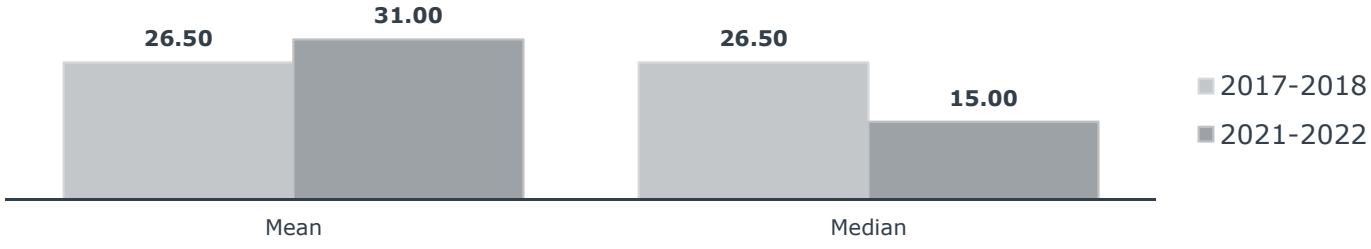
100.00%

Institutions Reporting Completions with a 100% Distance-Delivery Option

2021-2022 Academic Year, Regional Data

Completions per Institution Reporting

2017-2018 and 2021-2022 Academic Years, Regional Data



Source: EAB analysis. National Center for Education Statistics.

Regional Data Analysis of Bachelor's-Level Completions Under Construction Engineering (14.3301)

Two of the top three institutions in the regional market increased the number of reported completions from the 2017-2018 to the 2021-2022 academic year, while only the Citadel Military College of South Carolina increased their market share (13.98%). Notably, Virginia Polytechnic Institute and State University held 69.89% of the market, cementing themselves as a market leader. Still, the Citadel Military College of South Carolina was able to successfully enter the market, indicating room for new program launch.

Institutions with Most Reported Completions

2017-2018 Academic Year to 2021-2022 Academic Year, Regional Data

Institution	Reported Completions, 2017-2018 Academic Year	Market Share, 2017-2018 Academic Year	Reported Completions, 2021-2022 Academic Year	Market Share, 2021-2022 Academic Year	Completions Reported via Distance-Delivery, 2021-2022 Academic Year
Virginia Polytechnic Institute and State University	38	71.70%	65	69.89%	Yes
North Carolina State University at Raleigh	15	28.30%	15	16.13%	Yes
Citadel Military College of South Carolina	Not Offered	Not Offered	13	13.98%	Yes

69.89%

Conferrals by top 20% of institutions

2021-2022 Academic Year, Regional Data

Source: EAB analysis. National Center for Education Statistics.

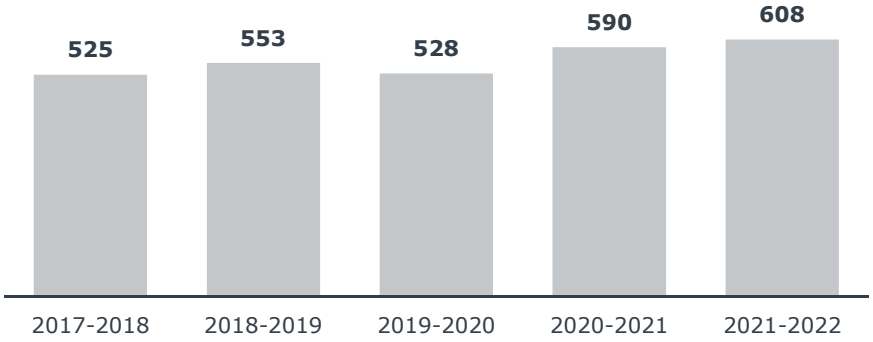
Competitive Intelligence

National Data Analysis of Bachelor's-Level Completions Under Construction Engineering (14.3301)

Between the 2017-2018 and 2021-2022 academic years, the number of relevant degree completions increased by an average annual 3.90%, signaling growing student demand. Further, the number of institutions reporting relevant completions increased by an average annual 6.89%, indicating rising competition. Overall, growth in student demand being outpaced by growth in competition signals a challenging competitive landscape for new program launch.

Completions Reported Over Time

2017-2018 to 2021-2022 Academic Years, National Data



3.90%

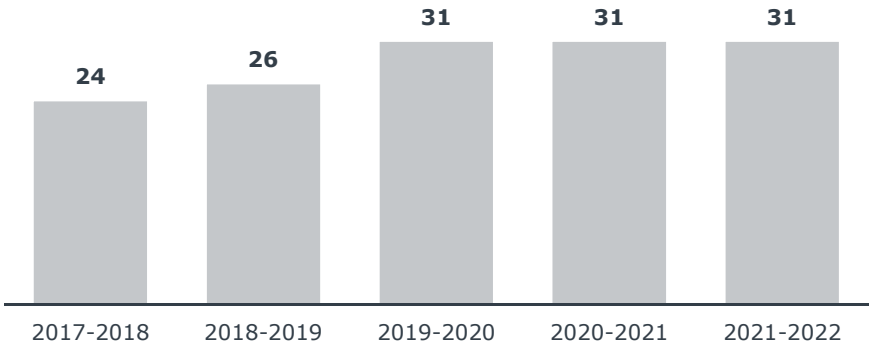
Average Annual Completions Growth

2017-2018 Academic Year to 2021-2022 Academic Year, National Data

- During the same period, the number of institutions reporting completions grew by 6.89% on average annually.

Institutions Reporting Completions Over Time

2017-2018 to 2021-2022 Academic Years, National Data



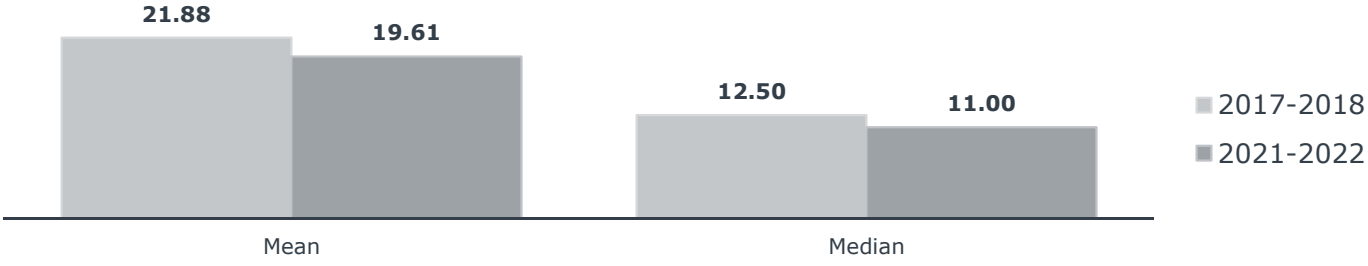
6.45%

Institutions Reporting Completions with a 100% Distance-Delivery Option

2021-2022 Academic Year, National Data

Completions per Institution Reporting

2017-2018 and 2021-2022 Academic Years, National Data



Source: EAB analysis. National Center for Education Statistics.

National Data Analysis of Bachelor's-Level Completions Under Construction Engineering (14.3301)

Five of the top ten institutions increased the number of reported completions from the 2017-2018 to the 2021-2022 academic year, while only four of the top institutions increased their market share. Further, the top 20% of institutions held 62.01% of the market, indicating market concentration and thus a challenging competitive landscape for new program launch.

Institutions with Most Reported Completions

2017-2018 Academic Year to 2021-2022 Academic Year, National Data

Institution	Reported Completions, 2017-2018 Academic Year	Market Share, 2017-2018 Academic Year	Reported Completions, 2021-2022 Academic Year	Market Share, 2021-2022 Academic Year	Completions Reported via Distance-Delivery, 2021-2022 Academic Year
Oregon State University	95	18.10%	77	12.66%	Yes
Iowa State University	74	14.10%	71	11.68%	Yes
The University of Texas at Arlington	Not Offered	Not Offered	70	11.51%	Yes
Virginia Polytechnic Institute and State University	38	7.24%	65	10.69%	Yes
Bowling Green State University-Main Campus	48	9.14%	54	8.88%	Yes
University of Cincinnati-Main Campus	56	10.67%	40	6.58%	Yes
Purdue University-Main Campus	27	5.14%	34	5.59%	Yes
University of Delaware	Not Offered	Not Offered	18	2.96%	Yes
Texas Tech University	29	5.52%	17	2.80%	Yes
North Carolina State University at Raleigh	15	2.86%	15	2.47%	Yes

62.01%

Conferrals by top 20% of institutions

2021-2022 Academic Year, National Data

Source: EAB analysis. National Center for Education Statistics.

Appendix

- Research Process and Sources

2

Research Process and Sources

EAB conducted an analysis to assess a proposed new programming opportunity.

All workforce demand data was collected from Lightcast, EAB's labor market intelligence partner. Competitive data was collected from the National Center for Education Statistics via the Lightcast platform.

1

Step One: Labor Market Analysis

This report includes an analysis of external labor market needs to determine demand for program graduates. Researchers evaluate historical job postings and future employment projections to determine if the labor market supports program growth.

2

Step Two: Competitive Landscape Analysis

The volume and growth of degree conferrals serves as an indicator of student demand for the program being evaluated. Researchers use conferral data to determine if the selected program is facing a crowded market or if it may struggle to attract students due to declining student interest.

3

(Optional) Step Three: Comparator Program Analysis

Researchers analyze how the design and curricula of similar programs should inform the structure and format of the proposed new program. The researchers collect information publicly available on profiled programs' webpages.

Research Methodology

EAB's market insights research guides strategic programmatic decisions at partner institutions. The Market Insights Service combines qualitative and quantitative data to help administrators identify opportunities for new program development, assess job market trends, and align curriculum with employer and student demand. Unless stated otherwise, this report includes data from online job postings from February 2023 to January 2024. To best estimate employer demand for bachelor's-level construction engineering professionals, we analyzed job postings for bachelor's-level professionals in relevant occupations (e.g., Civil Engineers, Architectural and Engineering Managers, Construction Managers).

Research Questions

The requesting partner asked:

- **How has demand for graduates of my program evolved over time?**
- **In what positions do employers demonstrate the greatest need for graduates?**
- **What skills should the program teach to prepare students to meet employer demand?**
- **Which employers demonstrate the greatest demand for graduates?**
- **In which industries should the program prepare students to work?**
- **In which cities do employers demonstrate the greatest demand for potential graduates?**
- **What education level do employers most frequently request from relevant professionals?**

Bolded questions were addressed within this analysis.

Research Limitations

Due to the self-reported nature of the NCES, some comparable and competitor programs may report completions for a bachelor's-level construction engineering program under a different CIP code not included in this analysis. Institutions may also report completions for programs unrelated to bachelor's-level construction engineering under the CIP codes analyzed in this report. Further, additional online programs may exist that are not captured in NCES data, as not all institutions offering a distance-delivery program report it as such. Additionally, if an institution offers multiple modalities, completions data will not distinguish between the number of online completions and face-to-face completions.

Definitions

CIP code refers to the Classification of Instructional Programming code.

Region and regionally refer to the following states: North Carolina, South Carolina, Tennessee, and Virginia.

Nation and nationally refer to the United States.

Project Sources

We consulted the following sources for this report:

- EAB's internal and online research libraries
- Lightcast Analyst, described below
- U.S. Bureau of Labor Statistics
- U.S. National Center for Education Statistics (NCES)

Labor Market Intelligence Partner: Lightcast

This report includes data made available through EAB's partnership with Lightcast (formerly Economic Modeling Specialists International), a labor market analytics firm serving higher education, economic development, and industry leaders in the U.S., Canada and the United Kingdom.

Lightcast curates and maintains the most comprehensive labor market data sets available for academic program planning, providing real-time job posting data, workforce and alumni outcomes data, and traditional government sources of data. Under this partnership, EAB may use Lightcast's proprietary Analyst™ and Alumni Insight™ tools to answer partner questions about employer demand, the competitive landscape, in-demand skills, postings versus actual hires, and skills gaps between job postings and professionals in the workforce. The Lightcast tools also provide EAB with in-depth access to unsuppressed, zip-code-level government data for occupations, industries, programs, and demographics. For more complete descriptions of the Lightcast tools, visit:

- https://lightcast.io/solutions/education/analyst
- https://lightcast.io/solutions/education/alumni-pathways

To learn more about Lightcast and its software and services, please contact Bob Hieronymus, Vice President of Business Development at bob.hieronymus@lightcast.io.

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ABOUT EAB

At EAB, our mission is to make education smarter and our communities stronger. We work with thousands of institutions to drive transformative change through data-driven insights and best-in-class capabilities. From kindergarten to college to career, EAB partners with leaders and practitioners to accelerate progress and drive results across five major areas: enrollment, student success, institutional strategy, data analytics, and diversity, equity, and inclusion (DEI). We work with each partner differently, tailoring our portfolio of research, technology, and marketing and enrollment solutions to meet the unique needs of every leadership team, as well as the students and employees they serve. Learn more at eab.com.

Appendix B

Construction Industry Advisory Board Support Letter

BARRINGER
CONSTRUCTION

UNC Charlotte
9201 University City Boulevard
Charlotte, NC 28223

Attn: Dr. Lingguang Song, PH.D.
RE: IAB Support for Construction Engineering

Dear Dr. Song,
Per the mission of the UNC Charlotte Civil Engineering Technology & Construction Management Industry Advisory Board, we continually evaluate the programs and potential opportunities that will increase enrollment and produce students who can fill the increasing need for talent in the Charlotte market. Developing a Construction Engineering Program that Pairs with our current Construction Management Program has been a topic for several years and was moved to a vote at our 2023 2nd Quarter Meeting.

The UNC Charlotte Civil Engineering Technology & Construction Management Industry Advisory Board voted at the 2nd Quarter IAB Meeting on December 15, 2023, for the establishment of a Construction Engineering Program, partnered with the Construction Management Program as a beneficial addition to the William States Lee College of Engineering program offerings. The premise of the vote is based on ideology.

"The Construction Engineering curriculum would be designed for the student interested in the planning, design, direction, and management of construction projects. It includes the core course requirements in mathematics, the physical sciences, and the humanities and social sciences. After exposure to engineering fundamentals and design of facilities, the curriculum provides a series of specialty courses in construction engineering related to building construction and systems, construction equipment, construction estimating and planning, and legal aspects of contracting. The student also develops skills in accounting, communication, and management. The curriculum is designed for students interested in delivering sustainable construction projects safely and efficiently by using appropriate resources and means and methods."

All 34 members attending the meeting provided a vote of support in a unanimous decision.

Members in attendance:

BARRINGER
CONSTRUCTION

John Tomasic	Danis Construction	Noah Palmer-Licht	Clancy & Theys
Joe Royer	JE Dunn	Matt Williams	Metrolina Builders
David Jarrett	Keller North America	Henry Batten	Concrete Supply
Payton Stull	Mill Creek Residential	Trey Craig	Phillips & Jordan
Jim Rhodes	Wayne Brothers	Kris Hannah	State Utilities
Dave Tolley	Blythe Development	Scott Oosthuysen	Cleveland Construction
Brian Spach	Reeves Construction	Michael Morgan	Denham-Blythe Construction
David Burke	Whiting Turner	Dan O'brien	Turner Construction
Keith Poettker	Poettker Construction	Star Swafford	Empire Communities
Drew Baucomb	Lane Corporation	Brittany Martin	Adams Electric Company
Ron Shaw	Lee Corporation	Joseph Bose	Elford Construction
Matthew Kiker	Thomas & Hutton	Darek Burns	Crescent Communities
Brandon Cline	Balfour-Beatty Civil	Matt Cavalline	Barringer Construction
Frank Dipaolo	Wharton Smith	Billie Graham	Myers & Chapman
Courtney Blalock	Robins & Morton	Jennifer West	Hazen-Sawyer
Michael Wright	Balfour-Beatty	Lauren Kearney	Crowder Construction
Brandon Whitaker	NCDOT	Haley Hassler	Barton Malow

Sincerely,

Matt Cavalline, Industry Advisory Board President

Attachment C

Academic Plan of Study for BS in Construction Engineering

BS CONSTRUCTION ENGINEERING				
FRESHMAN YEAR 1				
Course	Cr. Hrs		Course	Cr. Hrs
ENGR 1300 Exploring Engineering and Technology with Success	2		ENGR 1302 Logic and Computational Problem Solving	3
ENGR 1301 Foundations of Math & Science for Engineers	3		ENGR 1303 Engineering Visualization & Graphical Communication	3
MATH 1241 Calculus I	3		MATH 1242 Calculus II	3
Gen Ed Theme Course 1	3		PHYS 2101 Physics for Science and Engineering 1	3
Gen Ed Theme Course 2	3		PHYS 2101L Physics for Science and Engineering Lab	1
			WRDS 1103 Writing and Inquiry in Academic Contexts	3
	14			16
SOPHOMORE YEAR 2				
Course	Cr. Hrs		Course	Cr. Hrs
ETCE 1222 Construction Materials	3		ETCE 1211 Construction Surveying	3
CEGR 2102 Engineering Economics	3		ETCE 1211L Construction Surveying Lab	1
MEGR 2141 Eng Mechanics I (Statics)	3		MEGR 2144 Solid Mechanics	3
MATH 2241 Calculus III	3		MATH 2171 Differential Equations	3
CHEM 1251 Chemistry I	3		PHYS 2102 Physics II or CHEM 1252 Chemistry II	3
CHEM 1251 Chemistry I Lab	1		ETCE 2163L Construction Materials & Structures Lab	1
			CEGR 2111 Intro to Construction Engineering	2
	16			16
JUNIOR YEAR 3				
Course	Cr. Hrs		Course	Cr. Hrs
CMET 2221 Construction Means & Methods	3		CMET 3123 Cost Estimating 1	3
CMET 2105 Plan Reading	2		ETCE/CEGR Elective	3
CMET 2105L Plan Reading Lab	1		Gen Ed Theme Course 3	3
CEGR 3143 Hydraulics & Hydrology	3		STAT 3128 Probability and Statistics for Engineers	3
CEGR 3278 Geotechnical Eng	3		CMET 1680 Construction Safety	1
CEGR 3258 Geotech Lab	1		ACCT 2121 Accounting 1	3
CEGR 3122 Structural Analysis	3			
	16			16
SENIOR YEAR 4				
Course	Cr. Hrs		Course	Cr. Hrs
CMET 3150 Construction Law & Contracts	3		CNGR 4272 Capstone Project	3
CMET 3224 Construction Project Admin	3		ETCE/CEGR Elective	3
CMET 3126 Project Planning & Scheduling	3		Gen Ed Theme Course 4	3
ETCE/CEGR Elective	3		CTCM 2530 Critical Thinking & Communication	3
ENGR 3295 Professional Development	1			
	13			12

*CNGR 3401 Internship. Required Summer (Rising Sr.)	1
TOTAL HOURS	120