Engineering & Project Management: Core Functions and the Value Added to Cornell
Date: 8.26.25

Engineering & Project Management Mission: To provide engineering and project management leadership for planning, designing, constructing, and maintaining the university's facilities and infrastructure needs for learning, discovery, and engagement. To achieve this, the Engineering and Project Management team is structured around the following core functions:

- **Facilities Engineering**
  - Engineering & Architectural Design Services
  - Technical Stewardship
  - Quality Assurance
  - Building Code Consulting

- **Project Management**
  - Capital Project Management
    - *Pre-Design Phase*
    - *Design Phase*
    - *Bid Phase*
    - *Construction Phase*
    - *Closeout Phase*
  - Centralized Project Management Leadership and Mastery
- **Trimble Unity Construct Project Management System**
  - System Administration and Maintenance
  - User Training, Communication, and Support
  - Reporting and Business Analytics
  - Streamlined Processes and Modules

Project Management

Capital Project Management	Value to Cornell
Manage Project Success Criteria *(Scope, Schedule and Budget)*	*Project managers provide comprehensive project management services for University Capital projects. They are responsible for managing and balancing the project success criteria; scope, schedule and budget. They facilitate decision making for university partners and stakeholders utilizing an analytical and consensus driven approach that seeks to provide best value to the university.*

Project Communications and Reporting	*Facilitate communications within large and complex project teams comprised of internal campus partners and stakeholders and external architects, engineers, consultants and contractors. Serve as single point of contact to ensure clear direction on decisions is provided to the project team, expectations are clearly defined and communicated. Provide status updates and project schedules in Trimble as well as frequent executive level updates.*
Adherence to University Policy and Procedures	*Expertise in delivering projects in compliance with university and municipal policy and procedures. Provide risk assessments to aligning project goals and expectations within university policy and procedures. Provide auditable record of project activities and decision making.*
Contract Management and Administration Architect/Engineer Agreements Testing Agency Contracts Specialty Consultants Pre-Construction Contracts Contractor Contracts SUCF & Cornell Funded Contract Requirements Purchase orders and AV Procurement	*Project Manager serves as steward and advocate for the University, responsible for managing risk and relationships associated with contracts.*
Pre-Design Phase Management	
Define and confirm project goals	*Utilizes a project charter to confirm and update success criteria to ensure that client goals and expectations are in alignment.*
Lead consultant selection process	*Determines consultant procurement strategy and leads selection process from start to finish to ensure consultant fit, compliance, best value, consensus, and timeliness.*
Design Phase Management	
Leads design process and facilitates project development and decision making	*As the single point of contact, lead complex teams of stakeholders and consultants, coordinate and lead design meetings, manage project schedules, budget, reporting, etc.*

Project stewardship during design phase	*Ensure project meets stakeholder programmatic goals in balance with Cornell stewardship responsibilities (sustainability, energy, life-cycle cost, maintainability, compliance with design standards, and aesthetics/visual impact in consultation with OUA)*
Coordinate multiple consultants and stakeholders	*Leads procurement and integration of design effort with all stakeholders and extended consultant teams (Commissioning agents, pre-construction services, furniture, A/V design, signage and wayfinding, hazmat, etc...). Develops and maintains a communication plan.*
Navigate projects through municipal approval processes	*Facilitate project success by obtaining consensus, approvals, variances, and other reviews in a sequential and timely manner.*
Orchestrates design review process	*Manages formal design reviews and ensures that key stakeholder project comments are resolved and integrated. Reduces errors/omissions and coordination issues in project execution. Ensures design meets success criteria.*
Bid Phase Management	
Bid Document Preparation	*Bid document preparation and development of front-end documents. Quality assurance review of consultant document submissions ensures better bid pricing.*
Procurement and Bid Award Strategy	*Develop list of bidders, develop alternates and unit pricing, conduct descope meetings. Provides oversight of bidding process to ensure that policy and procedures are being followed. Leverage bid information for future project planning and estimating.*
Construction Phase Management	
Construction Stewardship and Quality Assurance	*Contractual management ensures the highest quality afforded by the design documents, on time and within the approved budget.*
Financial Stewardship $630M currently in active construction contracts $20M in monthly construction billings	*Responsibility and oversight for overall project budget and construction contracts. Reviews and approves all project related expenses, change orders and contractual commitments to ensure highest value for the University.*
University Advocate 900+ proposed change orders negotiated annually 10-20% change order reductions	*Sole University advocate on capital construction projects protecting the Universities position on contractual disagreements, financial commitments-expenditures, and achieving project objectives.*
Critical Construction Communications 100 - 150 active construction projects on campus at any one point in time	*Provides a single point of contact and communication for all construction activities; and acts as a liaison between the construction contractor and the greater Cornell community coordinating day to day activities and impacts on Campus operations.*

Closeout Phase Management	
Facilities Management Turnover	*Provides current/accurate data for building systems and operations. Utilize RedZone turnover checklist in collaboration with Facilities Management Group to ensure successful transition to maintenance and operations.*
Documentation for Archiving	*Assemble consultant/contractor record document submissions and other required documentation for submission to Facilities Inventory Group for Archiving for future projects, maintenance work and operations.*
Financial Closeout 83 Projects returned $6.03M FY25	*Lead process for returning unspent funds to the Sponsoring College/Unit in a timely manner to capitalize assets. Ensure that all contractual commitments are closed out.*
Centralized Project Management Leadership and Mastery	**Value to Cornell**
Leadership in Project Management	*University project management center provides leadership and guidance to E&PM as well as satellite project management groups located in Colleges and Units. The E&PM team authors and publishes the PM Checklists & Resources in collaboration with key stakeholders. Provide Construction Management Subject Matter Expertise on university policies and procedures. Set consistent PM service standards. Proven benefits and cost savings of centralized leadership include efficiencies associated with optimized bidding, project bundling, acquisition planning, reduced errors & omissions, streamlined processes and improve efficiencies within university policy.*
Knowledge Management and Information Sharing Project Management Checklists: 70 Checklists 125 Guidance Documents	*Curate lessons learned, best practices, checklists and guidance documents to provide project managers the tools necessary to deliver high quality and consistent project management services. This leads to constant improvement and mastery of the craft of project management.*
Training and Professional Development PMPD Monthly Training Sessions: Avg. 100 Attendees/Session; Over 15 Colleges & Units Represented 60 topics covered (40 hrs of training)	*Host and develop content for the monthly Project Management Professional Development (PMPD) training series. Provides learning units for professional licensing continuing education requirements.*
Data Analytics 16 Tableau Dashboards	*Our team develops and implements powerful Tableau dashboards that transform complex data into actionable insights. These interactive visualizations provide real-time access to key performance metrics, enabling stakeholders to make data-driven decisions with confidence. Our custom-built dashboards feature intuitive interfaces,*

	dynamic filtering capabilities, and seamless data integration, allowing users to explore trends, identify patterns, and uncover opportunities across the organization.

Trimble Unity Construct Project Management System

Trimble Unity Construct	Value to Cornell
Cloud Based Project Management System	*The University-wide system captures all project information in one cloud-based project management system, ensures enforcement of University policy and business rules relative to project authorizations (PARs), provides consistent filing system for project documentation, meets construction process audit requirements, and standardizes reporting. Trimble provides transparency to all project stakeholders and University executives by providing standardized management tools that track project budgets and design/construction management processes from project start to closeout.*
System Administration/Maintenance ~119 projects set up annually 2,940 users annually 72 roles 1,416 companies managed 2,492 contacts managed 9 KFS integrations managed daily 1 Maximo integration managed monthly	*Projects are set up in a timely manner with the proper budget template, users/roles templates, and documents templates based on the type of project (capital, small, stand-alone or blanket contract). The right people are in the right roles/authorities on the right projects with the proper security accesses and permissions. Guarantees timely budget tracking/reporting.*
User Training, Communication & Support 591 internal Cornell staff 2,349 external consultant/contract users Support all users	*Promotes successful and consistent use of the system that results in quality of data capture; allows ease of use by all parties and increases availability of high-quality status and decision-making reporting.*
Reporting & Business Analytics 848 global reports 161 administrator reports 95 custom report subscriptions On demand ad hoc reports	*Provides oversight for design/development of custom reports and dashboards ensures quality of data in reporting for critical decision making as well as for use in execution of functional/position responsibilities across campus for both system users and non-users.*

Streamline Processes & Modules 59 process workflows	*Ensures modifications to workflows and modules result in added efficiencies or effectiveness, such as fewer process steps or additional quality data collection for better reporting or ease of carrying out user functional responsibilities. Ensures configurations continue to align with policy as business needs evolve.*
Implement Modules & Functionality 10 modules implemented	*Promotes new or underutilized modules/functions that offer cost savings, process streamlining or untapped transparency. Provides implementation of those that align with University stakeholder goals or business needs and ensures that configurations align with University policy as business requirements change.*

Facilities Engineering

Engineering & Architectural Services	Value to Cornell
Design Services Biddable signed and sealed construction documents Scoping documents for FM Shops Construction phase support 90 to 110 Projects Annually $4M in design fees ($40M in construction)	*In-house multi-discipline design office provides faster, more efficient, and cost-effective architectural and engineering design solutions, specifically tailored to support the university's academic and research needs. The team develops building code-compliant, signed and sealed construction documents while offering custom design solutions for a large variety of interior renovation projects and building envelope improvements for our academic and student campus life facilities.* *Facilities Engineering ensures consistent results that lower long-term costs by maintaining institutional knowledge and making data-driven design decisions through direct access to facility information. Simpler and more direct procurement processes, better coordination with unit facility managers, and in-house construction phase support streamline project execution. Additionally, the fees from design services remain within Cornell, reinforcing the university's mission while delivering designs that better align with its strategic goals and infrastructure requirements.*

Condition Assessments Buildings Infrastructure Civil Structural Architectural Fire Protection Plumbing Mechanical Electrical	*Condition assessment services add significant value by leveraging the expertise of 35+ professionals, including 17 licensed specialists across a wide range of technical disciplines. This dedicated team provides tailored evaluations of Cornell's unique building and infrastructure systems, proactively identifying deficiencies and recommending prioritized maintenance and upgrades. By utilizing diagnostic tools and adhering to industry best practices, the team delivers high-quality reports that support strategic planning, code compliance, and informed decision-making for repair, renovation, or replacement projects. The internal team's deep institutional knowledge enables faster turnaround times, enhanced stakeholder collaboration, and considerable cost savings by reducing reliance on external consultants.*
Feasibility Studies New Construction Renovations Maintenance Infrastructure Energy Systems Sites and Stormwater	*Feasibility study services add significant value to Cornell University across a wide range of technical disciplines. The highly skilled FE team conducts in-depth analyses to assess the technical, financial, and operational viability of proposed building and infrastructure projects, while tailoring services to the university's specific needs. By performing on-site evaluations, code compliance reviews, system capacity analyses, cost estimates, and assessments of sustainability, constructability, and long-term performance, the team provides stakeholders with clear, actionable insights that guide planning, design, and investment decisions. The internal team's deep institutional knowledge ensures faster, more efficient processes, strategic alignment with Cornell's goals, and consistent high-quality outcomes. Additionally, in-house services reduce reliance on external consultants, resulting in cost savings and enhanced collaboration.*
Building Code Review Code Reviews Code Compliance Reports Compliance Plans	*In-house dedicated team ensures compliance with local, state, and federal regulations by evaluating designs, construction documents, and existing buildings for compliance with NYS and Local Codes. The proactive approach identifies and resolves potential issues early, mitigating risks, minimizing delays, and streamlining the approval process while maintaining the highest standards of safety and quality. With deep institutional knowledge, the team delivers tailored, actionable recommendations that align with Cornell's goals, reduce reliance on external consultants, and provide significant cost savings. These services ensure code-compliant designs that enhance*

	campus infrastructure and safety.
Technical Stewardship	**Value to Cornell**
University engineering leadership: best design & construction practices; analysis of latest technologies and lessons learned on projects to keep University Standards up to date	*Highest life-cycle value; lower maintenance and replacement costs based on proven experience; in-house code review avoids consultant costs and reduces claims*
Hands-on response to facility emergencies, fast condition assessments, and efficient repair/maintenance support response	*Quick technical consultations, smooth coordination with campus unit facilities, efficient determination of problems without consultant travel costs and expense; direct access to long-term maintenance records improves outcomes.*
Maintenance Planning Technical Support, Program Data Management, and Life Cycle Value Analysis	*Partner with Facilities Management using data-driven ROI and LCV analyses to support "best use of next dollar" – Bridges, Parking Structures, Generators, Fire Protection, Roads, Sidewalks, Electrical Gear, Exterior Lighting, Etc. Prioritizes replacement of these Capital Assets based on institutional knowledge, life expectancy analysis, testing and maintenance records.*
Facilities/academic collaborations; grant acquisition and management	*Staff includes academic course leaders; guest lecturers; student team mentors; judges for student competitions. Staff also prepare, write, negotiate, and manage grants for facilities/academic collaborations; FE-led efforts netted over $3M in outside grants for Cornell projects (Roosevelt Island; Central Energy Plant; Energy Conservation; Earth Source Heat) in past five years; currently pursing $7.5M+.*
Technical Consultant Selection and Evaluation	*Provide review and commentary during consultant selection process to minimize design problems and related cost overruns*
Energy and Environmental Analysis & Energy Use Intensity Goals	*Analyze building data and energy models to keep energy needs and costs low; avoid unneeded new utilities capital construction; simplify environmental compliance, and create budget and rate projections based on data trends.*
Energy Transition Support and Oversight	*Provide expertise to campus utilities regarding power generation, renewable technologies, and geothermal assets. Advise and provide advocacy regarding evolving*

	building and energy codes and environmental and energy legislation,
Environmental Cleanup and Compliance Documentation/Permitting	*Project in-house confidential support for environmental clean-up at lowest cost; protect Cornell from liability. Provide guidance and documentation for environmental permitting and compliance for facilities, utilities, and campus operations.*
Green Building Program Support	*Efficient in-house carbon accounting and LEED Program management saves millions in specialty consultant fees*
Capital Project Design Review and Design and Construction Standards	*Technical "eyes on" all significant Cornell projects (135 reviews in FY19) to ensure compliance with standards and designs specifically focused on the University's interests (best ROI, quality at fair cost)*
Utility Mapping & Locating	*Curate comprehensive Utility Maps and administer Dig Safely New York (Mark out Utilities) in-house, protecting worker and public safety and Cornell assets*
Aerial Drone Services	*Provide photographic and thermal aerial imagery to provide efficient site and facilities/equipment inspection rapidly and safely.*
Quality Assurance Services	**Value to Cornell**
Large Capital Project QA Program Subject Matter Expert engagement On-site reviews and hands-on support Interface with designers of record Support for commissioning agents Support third-party testing and inspections Focused effort on critical components Update standards based on lessons learned	*Quality Assurance Program is effectively coordinating the communication between subject matter experts within Facilities Engineering, the design consultant, the project management team, and Facilities Management trades, so that quality assurance is performed in an integrative team approach. Focuses attention on critical project components to ensure success. Guide higher quality construction with reduced change orders. QA Team ensures that subject matter experts perform design reviews for capital projects at appropriate points in the project life cycle and provides a feedback loop from Capital Projects lessons learned to update campus standards. Extend the service life and performance of systems and materials.*
Building Code Consulting Services	**Value to Cornell**
Building Code Program Management Building Code Thought Leadership Building Code Consultations Building Code Compliance Strategy Development AHJ Relationship Management Building Permit Process Management	*Support project teams as they comply with local, state, and federal regulations while maintaining the university's high standards for safety and quality. Provide code compliance consulting early in the project to reduce costly changes and "surprises" late in the project. In-house team of experts offers detailed reviews of construction documents providing critical guidance toward compliance. Acting as a direct liaison with authorities having jurisdiction (AHJs), the team*

	supports permitting, inspections, and approvals, streamlining the regulatory process to minimize delays, mitigate risks, and ensure seamless coordination with project teams. By maintaining strong relationships with AHJs and leveraging deep institutional knowledge, these in-house services reduce the need for external consultants, reduce costs, ensure consistent outcomes, and align projects with Cornell's infrastructure goals.