SMALL PROJECTS USER GUIDE

LEHIGH UNIVERSITY

UPDATED 2026

Dear Colleagues,

The purpose of the Small Projects User Guide is to outline the work processes and other relevant information needed to effectively complete small projects at Lehigh University. Consider this as a reference guidebook with key information and processes for our colleagues working on small projects, and an understanding of the tools used by Facilities staff to guide the delivery of projects.

We welcome your feedback as you move through the project approval, design and construction process.

Respectfully,

Planning, Design & Construction
LU Facilities

Contents

Introduction

Intended for campus user groups and project team members, this guide provides information on the processes, approvals, and project team roles involved in small capital projects which typically have a budget of less than $5,000,000.00

The goals of its authors are to set expectations, share experiences, and facilitate communication among campus partners (leadership, Facilities, user groups, stakeholders and project team members).

Following the processes outlined in this guide helps to ensure our projects will:

- Meet University objectives and guidelines
- Satisfy user needs
- Finish on budget and on schedule

Lehigh University's Strategic Plan, identifies institutional priorities and emerging academic needs as they relate to the University's core mission. The Campus Master Plan provides a framework to guide the evolution of our campus. While the Strategic Plan and the Campus Master Plan directly apply to the planning of large capital projects, the same planning usually applies to small capital projects which often play a role in enabling or aiding the Campus Master Plan.

Users (students, faculty, staff, and our larger University community) are critical participants in the success of all projects. This Small Projects User Guide serves as a framework for small capital projects, helping users understand and move through essential checkpoints to complete their project. The guide is not, however, a step-by-step project manual.

Project managers and Planners provide guidance throughout the project to ensure appropriate steps are taken, from helping to define the project scope to move-in activities. Our team looks forward to working with you, the users, to design and build cost-effective facilities that meet your needs as well as contribute to the beauty of our campus.

Getting Started

While larger capital projects originate from the University's Strategic Plan and related Campus Master Plan, most small capital projects originate from a departmental or user need. A small capital project could be a need for new furniture, a lab renovation, a small building, or something in between. A flow chart describing the Lehigh Project Process can be found at the end of this document.

a. <u>Beginning Steps</u>

1. Review the Space Assignment Policy to determine if a Space Request is required as a precondition of your Project Request.

2. If a Space Request is required, fill out the form on the Facilities website. Note that Space Planning Committee approval is required for all Space Requests. The details and timing of Space reviews and approvals can be found in the Space Assignment Policy.

3. If your request includes planning for Lab space, complete and submit a Lab Information Form found on the Facilities website.

4. If your Space Request has been approved, you can then submit a Project Request Form on the Facilities website to determine your need.

5. If your project is approved to proceed, the Director of Planning, Design and Construction will assign it to a Facilities Project Manager (PM) and they will promptly reach out to you to discuss it. Please understand that depending on the number of projects in progress and our resource capacity, some approved projects may not start immediately.

People and Processes

Design Professional
For some projects, the design professional, usually an architect leading a team of sub-consultants, will provide comprehensive services, including architectural, structural, mechanical, and electrical engineering and cost estimating services. This consultant is usually brought on board through a selection process during the project initiation phase, after the project scope, location, and target cost have been defined.

Builder
A builder, construction manager (CM) or general contractor (GC), is engaged when appropriate for the project. Many projects will be bid among several builders after construction documentation is complete, depending on size and complexity of the project. For larger, more complex projects a CM may be engaged during the early design phase to provide cost estimates and related support.

Specialists
Depending on the specific programmatic and/or technical requirements for a particular project, other specialized consultants may join the project team, as needed. Some of these may be:

- Acoustical engineers
- Audio-visual consultants
- Code compliance consultants
- Cost estimators
- Laboratory specialists
- Landscape architects

Selecting Design Professionals

Not all small projects require the addition of outside design professionals. Lehigh University's Facilities has experienced project managers, and design professionals that can often complete small projects without the need of outside professionals. Your project manager will work with you to determine the appropriate mix of design professionals needed for your project. If your project requires outside team members, the selection of design professionals is among the most important steps in the beginning of a project.

Given the diverse building types and functions on Lehigh's campus, the University selects design professionals with deep experience in, and understanding of, the higher education environment, the specific programmatic

requirements of the project, and the campus context. Facilities has a list of ‘on call’ design consulting firms which can be engaged for less complex projects.

When outside help is needed on complex projects, Facilities initiates the selection process by identifying a list of design professional firms with appropriate experience and demonstrated ability to successfully collaborate. A list of firms receives a Request for Proposal (RFP) from Lehigh University, which provides a general description of the project and the project definition document. Firms are asked to confirm their interest in the project and to respond with a written presentation of their qualifications and proposed fee.

After reviewing the submitted proposals and each firm’s experience and skill set, a meeting may be convened with Facilities and stakeholders, where a short list of firms to be interviewed is reviewed.

Interviews enable representatives from each firm to present their qualifications and approach to the project in person, while also giving Lehigh University the opportunity to meet and interact with the designers and engineers with whom we will collaborate for the duration of the project.

Communications

The success of all projects centers on clear, timely communication among users, leadership, stakeholders, Facilities, and external project team members. During project initiation, Facilities works with the project sponsor and user representative to establish clear protocols:

- Identify who will be responsible for communications, input and decision making
- How information will be conveyed from front- line user groups to the project team
- How questions and clarifications of user needs will occur and be documented

Ideally, one individual will be identified to represent each user group. This user representative will be responsible for gathering data and consensus from all user groups, and for forwarding the necessary information to the project team, ensuring that user interests are represented. This individual must be available to attend all regularly scheduled meetings. While the individual users may need to interact directly with the design team from time to time, typically most user project requirements will be communicated through the user representative. A departmental manager or administrator often plays this role.

Project Lifecycle

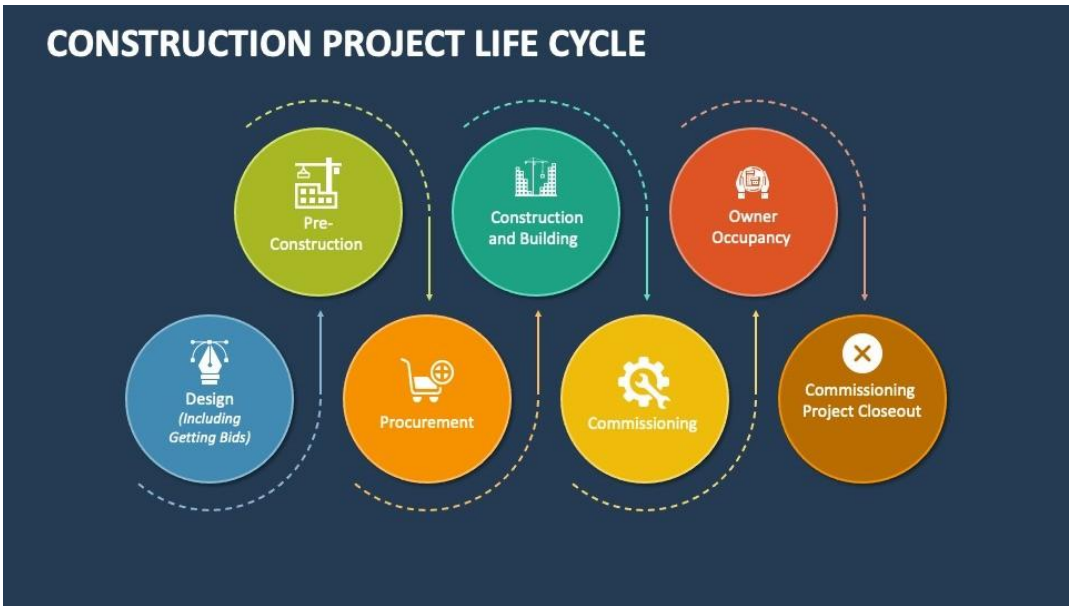
The chart below shows a high-level overview of the Construction Project Lifecycle. The requirements are tailored for each project, and may require differing levels of time, review and documentation depending on the scope of each project.

Initiation

- Project Request is submitted & approved by User
- Facilities Project Manager is assigned
- Facilities Project Manager meets with sponsor / users to review project scope
- Facilities Project Manager develops a preliminary project scope sheet, cost estimate, and schedule. For studies or larger projects requiring architectural and engineering documents, the initial project cost might just be provided for design services, with a rough Order of Magnitude provided for total project

costs, based on square foot calculations or comparable projects. For smaller projects not requiring a design team, a definite cost estimate may be developed upfront.

- User signs off on the scope, budget and preliminary schedule provided, allowing the Facilities Project Manager to proceed to the next phase.



Design & Planning

The **design phase** of a construction project is a critical early stage where the project's vision is turned into detailed plans and specifications. This phase lays the groundwork for everything that follows, from budgeting to construction and eventual operation. More complex projects, or projects involving changes to engineered systems (HVAC, electrical, plumbing, fire alarms / sprinklers) will require design professionals to develop detailed documents for contractor bidding, while others may be simpler and require only a detailed scope of work written by the Project Manager. Based on the type of project, the timeline for this phase could be anywhere from several weeks to several months.

Furniture Selection

If any furniture is needed within the space, this is to be communicated to the Facilities representative. The furniture must comply with the current Furniture Procurement Policy. Furniture must be procured through a University-approved vendor and will be built into the total project estimate for budget purposes.

Preconstruction

Preconstruction is the phase in a construction project that takes place before physical building begins. It's all about planning, coordination, and setting the stage for a smooth and successful construction process. Think of it as the bridge between the design phase and the actual build. The goal of preconstruction is to minimize surprises, manage risk, and create a clear roadmap for how the project will be built—on time, on budget, and up to quality standards. The Lehigh Project Manager works closely with the General Contractor and Design professionals on the following, to ensure a smooth project.

Estimating Project Costs

Preparing construction estimates involves calculating the anticipated costs of a project by considering materials, labor, equipment, permits, and other expenses. The process begins with a thorough review of project plans, specifications, and site conditions to ensure accuracy.

Facilities will present options to establish an appropriate target cost for a new project by understanding your goals and researching similar projects. The construction cost target established for the project does not typically include “soft costs” or non-construction related costs, such as design fees, permits, and furniture. For budgeting purposes, a project multiplier is added to the construction cost target to cover these soft costs which then generates the target project budget. During the project design, Facilities prepares estimates to confirm that the project cost still falls within or below the target project budget, usually at these milestones. Smaller projects typically have a cost estimate, or contractor bid, done only at the completion of construction documents.

The PM will determine the frequency of estimates during project initiation. Project teams prepare an independent estimate to confirm the cost. A second estimate by a construction manager (CM) or general contractor (GC) is required for larger projects, which will be reconciled with the other cost estimate(s) in a collaborative manner. If the estimated cost exceeds the target project budget, the project team and Facilities will recommend changes to the design (a step sometimes called value engineering), incorporating less costly alternative materials or design solutions in order to preserve the functional project objectives within budget. If these measures do not result in bringing the estimated cost within or below the cost target budget, the project will need to be redesigned to meet the budget. Or, additional project funding may be allocated from the Project Sponsor. These proposed changes may require modifying the project objectives, which will be reviewed and approved by Facilities and the project sponsor. Once Facilities confirms that the cost reductions have reduced the cost estimate to meet the project budget, the design team is directed to continue to the next phase.

Procurement

The procurement phase of a construction project is where the resources needed to build the project are acquired—this includes hiring contractors, securing materials, and finalizing contracts. It sits between the preconstruction and construction phases, ensuring everything is in place to begin a successful project and minimize time spent onsite and disruption to existing spaces and buildings.

Construction

During this phase, the actual construction work takes place based on the plans, designs, and schedules developed in the planning phase. This phase involves coordinating and overseeing various activities to ensure that the project progresses according to the established timeline, budget, quality standards and agreed-upon scope.

The construction team — including labor, subcontractors, and suppliers — carries out its assigned tasks or scopes of work according to the established project plan. On-site management, usually the superintendent, oversees all work and ensures that it is executed safely, efficiently, and in compliance with regulations and design specifications.

The Lehigh Project Manager closely monitors work progress against the project schedule and budget. The PM maintains close communication with all project parties, including the client, subcontractors, suppliers and regulatory authorities regarding the project’s status. This continuous monitoring enables them to promptly address any potential deviations, ensuring that the project stays on course.

Project Closeout & Owner Occupancy

Project closeout is the final phase of the construction lifecycle. This entails wrapping up all construction activities, completing any final tasks, and formally closing out the project.

Before formally closing the project, the construction team conducts a final inspection to ensure that all work has been completed according to the approved plans, specifications, and quality standards. At this time, any remaining issues or deficiencies outlined on the punch list are addressed and resolved. The contractor also obtains any necessary final approvals from regulatory authorities to ensure safe occupancy of the space.

The completed project is then presented to the Lehigh PM and Requestors/Users for approval. Once the client approves of the project and it aligns with their expectations, the Lehigh PM and contractor closes all contracts with subcontractors and suppliers and compiles all project documentation, including drawings, permits, warranties, and records, for the client.

Departmental or Institutional Moves

A successful move is best achieved by good planning. Please note that a small to medium sized move requires a minimum 2-week notice, while a large move (10+ occupants), requires a minimum 4-week notice. The move will be rescheduled if the necessary preliminary preparation (outlined below) is not completed by end of day prior to the established move date. Any additional costs will be charged to the entity that is moving.

Entity moving is responsible for the following, regardless of Departmental or Institutional Move:

1. Complete Space Request and/or Project Request form if required via LU Facilities website: https://facilities.lehigh.edu/ (including appropriate signatures)

2. Designate a person who will serve as the primary point of contact for the duration of the move. On the day of the move, there must be a departmental designee at each move-out and move-in site, unless directed otherwise by LU Facilities Representative.

3. Coordinate completion of the Employee Relocation Checklist with the Lehigh PM

4. Purging of unwanted items in a timely manner, via use of existing trash and recycling bins in the building, on a weekly basis. Additional receptacles may be provided via LU Facilities Representative, with costs charged to the moving entity. Note: It is a fire hazard to stack unwanted items in hallways or stairwells and this practice will not be tolerated.

5. Packing the contents of each space, i.e. office/department/laboratory, and labeling boxes, furniture, etc. clearly. ALL items to be moved must be labeled with building name and room number of destination, and name of responsible party on either end of box, not top, as boxes may be stacked. If furniture requires disassembly to be moved, all parts are to be labeled.

6. Packing the contents of lateral or horizontal filing cabinets, desks, bookcases and shelves into appropriate boxes. Copy paper boxes and large boxes are not appropriate for heavy items. Vertical filing cabinets do not need to be emptied.

7. Electronics (computers, monitors, printers) require special care. Please ensure that computers are backed up properly prior to the move and contact your LTS representative for assistance if needed. Do NOT pack electronics with other items. If moving multiple machines, label peripherals (cords, keyboard and mouse), tower and monitor(s) accordingly to make set up easier at the destination. Portable devices such as laptops and tablets shall be moved by responsible party, and best if not packed, or left behind during the move. Cisco desk phones are to be packed with electronics and moved with you.

8. If space planning layouts are requested for furniture and/or equipment, additional time will be required. New furniture will require selection time plus 4-6 weeks once ordered. Please be sure to contact Facilities Planning with upcoming move requests as soon as possible, to give the move planning teams enough time for assistance to enable a smooth and well-coordinated process and outcome.

9. Items will only be insured if moved by professional movers. And the University does not want to risk individuals getting injured while attempting to move items themselves, so please do not attempt to move any items except portable electronic devices yourself

Vacated Space

1. Note that once an entity vacates their space, it is expected that the space be left in "move-in" condition for subsequent occupants. This means not leaving any personal belongings, excess books, trash, etc. behind. Please contact your LU Facilities Representative with any questions regarding what is acceptable to be left behind. Any required repairs, excess cleaning, etc. will be at the expense of the entity who vacated the space.

2. When moving from a building that has all new furnishings, ALL furniture is to remain in that building and will not relocate with the entity moving. The only exception might be a specific items that are custom to the specific occupant, such as a particular ergonomic chair or desk. Please contact your LU Facilities Representative with any questions regarding what furniture and equipment must remain at the move-out location. And on the contrary, if any existing furniture may be brought into a building or space with all new furniture and equipment.

FAQs

Q: How do I determine a project's cost?

A: The Project Request form asks for your available budget. In asking this we are looking for guidance on the project's scope and potential cost support that is already available. However, it is fine to leave this field blank if the cost is unknown. The PM assigned to work with you can provide estimates and cost ranges.

Q: Why do projects take so long?

A: Depending on the size and complexity, a project could take 4 months or 4 years. Below are some general guidelines to help set expectations, especially for projects that take longer than expected.

- New furniture can take 4-8 months due to production lead time as well as item research, vendor bidding, and item evaluation.
- Minor renovations that involve moving partitions, ceilings, and HVAC can take up to 8 months (or longer) due to permits and extensive systems work, including HVAC, electrical and lighting.

- Major renovations or a new building can take up to 2 or more years.

Q: When should I submit my request if I need my project done by a certain time, or before the start of the next academic year?

A: In our experience, renovation projects take more time than our users expect. One goal of this document is to give you the information you need to plan accordingly and contact us with enough time to achieve your goals. Generally, the earlier you can tell us about your needs the better. Various factors lead to longer than expected timelines, especially when projects require permit approvals and long-lead time items such as lighting, HVAC and furniture. Summer projects should be submitted no later than early fall for complex projects and no later than early spring for simple projects. Project requests submitted beyond March will likely be difficult to complete before the start of the next academic year.

Q: What is the role of a Project Sponsor?

A: The Project Sponsor or administrator plays an important role in maintaining progress on a project. This individual acts as the liaison between the department and the Project Manager, as well as coordinating potential services for the new or renovated space.

Typical responsibilities of a Project Sponsor on a small capital project include:

- Clearly articulate the need for the project, and the success criteria
- Act as a filter and spokesperson for desired changes
- Interface with intradepartmental stakeholders
- Help manage expectations of users with respect to budget, scope and schedule
- Assist in the coordination for the removal of the occupants' belongings in advance of construction
- Help determine storage location for equipment that needs to be saved for relocation
- Assist in the renovation requirements of temporary swing space, if necessary
- Assist in communicating construction impacts and faculty and/or staff
- Assist with installation of paper inserts into room signs in accordance with Facilities Design Standards

Q: What projects require permits?

A: The Project Manager will discuss permit requirements based on the scope and complexity of the project.

Glossary and Acronyms

A/E Architect/Engineer consultant
AIA American Institute of Architects
CA The abbreviation for Construction Administration, which occurs in the construction phase
CD Construction Documents
CM Construction Manger
CM/GC Construction Manager/General Contractor
CMAR Construction Manager at Risk
CO Change Order
CPM Critical Path Method
DD Design Development
DSG Design Standards & Guidelines
ES Executive Sponsor
FF&E Furnishings, Fixtures, and Equipment
GC/CM General Contractor/Construction Manager
GMP Guaranteed Maximum Price
GSF Gross Square Feet
HVAC Heating, Ventilation, Air-Conditioning, the mechanical systems of a building
LEED Leadership in Energy and Environmental Design
NASF Net Assignable Square Feet
NSF Net Square Feet
NTP Notice to Proceed
CPG Capital Projects Group
PCO Potential Change Order
PD&C Planning, Design & Construction
PE Program Executive
PM Project Manager
RFI Request for Information
RFP Request for Proposals
RFQ Request for Qualifications
SD Schematic Design
SOQ Statement of Qualifications
UBC Uniform Building Code
USGBC United States Green Building Council
VE Value Engineering
VP Value Proposition

Additional Services - Services provided by an A/E consultant that are not included in “Basic Services,” which may be performed by the A/E as part of the Contract only if and to the extent specifically authorized by Lehigh University in writing.

Allowance - A dollar amount allocated to cover the cost of items of work that are of indefinite scope or quantity, or where the quality, configuration or other characteristics have not yet been determined. Allowances shall cover the cost to the Contractor of materials and equipment delivered at the site, less applicable trade

discounts, together with all costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses.

Approval (Lehigh Governance) - The approval of a small capital project by the VPSPP and/or the Facilities Planning Group is needed at the end of the Authorization Phase to proceed with construction, based on a final design and an approved project budget.

Approval Phase -The final phase of a small capital project, after the Authorization Phase, includes sub-phases Construction and Move-In.

Architect-Engineer (A/E) - The term “Architect- Engineer” aggregately refers to all of the architects and engineers in the employ of the Architect-Engineer, as well as Basic Subconsultants and Specialized Subconsultants separately engaged by the Architect- Engineer in the performance of this Contract.

As-Built Drawings - Drawings, prepared by the contractors, which accurately reflect what was constructed, including field verification.

Authorization (Lehigh Governance) - The authorization of a small capital project by the VPSPP and/or the Facilities Planning Group is needed at the end of the Study Phase (Schematic Design) to continue with design documentation, based on the schematic design and the project budget.

Base Bid - The competitive bid submitted by a contractor for base scope of a project. The apparent low base bid is not necessarily accepted until an analysis of add alternates and deduct alternates are included in the comparison.

Basic Services - Consulting architectural and engineering services from programming through construction and acceptance, provided by the architect, or principal consultant, including architectural, structural, mechanical, and electrical engineering and cost estimating services for a project.

Subconsultants - The Subconsultants retained by the Architect-Engineer for the performance of structural, mechanical, and electrical engineering services, cost estimating and specification writing services for the Project.

Benchmarking - A measurement and analysis process that compares practices, processes, and relevant measures to those of a selected basis of comparison (i.e., the benchmark) with the goal of improving performance. Lehigh will often employ a benchmarking process to examine quantitative and qualitative aspects of projects on or off campus to inform the target cost or schedule for planned capital projects

Bid Package - Drawings, specifications, instructions to bidders and other related documents necessary to solicit competitive bids for a scope of work.

Bidding - The process of soliciting and collecting competitive bids from contractors.

Budget - A planned allocation of financial resources to apply towards a proposed project or scope of work often including separate line items for discreet areas of work or effort.

Budget Contingency - A line item and amount in a budget to allow for items, conditions, or events for which the occurrence is uncertain, but that experience shows will likely result in additional costs. Typically estimated using statistical analysis or judgment based on past project experience. Contingency excludes major scope changes and extraordinary events.

Budget Estimate - An estimate generally prepared to form the basis for authorization and/or appropriation of funds.

Budgeting - The process by which financial resources are applied to one or numerous projects or areas of work.

Capital Plan - A listing of potential university projects approved by the trustees along with the related financial allocation. Projects in the capital plan are still subject to processes and approvals outlined in this guide.

Capital Project - For the purpose of this guide, a Lehigh University Capital Project is one managed by Facilities'

Casework - The built-in cabinets, shelving, and counters that are part of a project.

Code - General term which includes all municipal, state, and national building and life safety codes that pertain to a project.

Change Order (CO) - Written authorization from a building owner or the owner's agent to a contractor to change the scope of work, design, materials used, or equipment installed.

Chiller - The piece of HVAC equipment that chills the water used to a cool a building. Chillers are fueled by electricity, gas, or steam.

Commissioning - The process for achieving, verifying, and documenting that the performance of a building and its systems meets design intent as well as the owner and occupant's operational needs. The process extends through all phases of a project, from initial concept to occupancy and operations, and includes the training of maintenance personnel. May include performance tests on mechanical equipment, water washing, flushing and drying of equipment and piping, control systems operability checks, checking of safety and fire protection devices, and operation of systems. Commissioning normally follows mechanical completion and ends with initial operation or startup.

Conceptual Estimate - An estimate generally prepared based on very limited information.

Construction Administration - The administration by the owner, or the owner's representative (typically the architect), of the construction phase of a capital project.

Project Budget - A financial allocation established by Lehigh University for the construction of the project, including trade subcontractors, contractor's general conditions (staff, site requirements, etc.), design and construction contingencies, insurance, bonds (if any) and the contractor's fee. The construction budget is set at the end of the Schematic Design sub-phase. The A/E shall design the project so that the construction cost does not exceed the construction budget.

Project Contingency - That portion of the construction cost that may be reserved to cover increased or added costs resulting from circumstances that may not be completely predictable or foreseeable at the time that the Guaranteed Maximum Price (GMP) is established but that can reasonably be assumed to be included within the scope of work for the project and presumed to have been included in but was omitted from the GMP. Construction Cost The total actual or estimated cost of all elements of the project designed or specified by the A/E, including trade subcontractors, contractor's general conditions (staff, site requirements, etc.), design and construction contingencies, insurance, bonds (if any) and the construction contractor's fee. Construction cost does not include the compensation of the A/E, the costs of the land, rights-of-way, financing and other non-construction expenses.

Construction Documents - The construction drawings, specifications, general conditions, supplementary general conditions, special conditions, addenda, and electronic submittals developed to set forth in detail all aspects of design, function and construction and that will be used for estimating the cost of the project, securing bids for constructing the project, and directing a contractor in construction of the project. The Construction Documents will enable the contractor to carry out the project.

Construction Manager (CM) - A broad term covering a variety of project delivery scenarios in which a construction manager is engaged to oversee scheduling, cost control, constructability, project management bidding or negotiating construction contracts, and construction. Lehigh utilizes several contract methods to engage a CM, depending on the project requirements, such as GMP (Guaranteed Maximum Price) and CPFF (Cost plus a fixed fee).

Construction Schedule - The schedule for the construction of the project, prepared by the Contractor and reviewed by the Lehigh PM.

Contract - An agreement between Lehigh University and an architect, contractor or some other suppliers creating mutual obligations enforceable by law. The basic elements required for the agreement to be a legally enforceable contract are: mutual assent, expressed by a valid offer and acceptance; adequate consideration; capacity; and legality.

Contract Documents - The documents that compromise the Contract, including the construction documents, as more fully set forth in the Contract.

Contractor - The prime general contractor performing the construction work on the project, or the contractor retained by the university to provide pre- construction services. Sometimes used interchangeably with CM.

Cost Estimate - A compilation of all the probable costs of the elements of a project or effort included within the agreed-upon scope.

Cost Estimating - The predictive process used to quantify, cost, and price the resource required by the scope of an investment option, activity, or project. Cost estimating is a process used to predict uncertain future costs. In that regard, a goal of cost estimating is to minimize the uncertainty of the estimate given the level and quality of scope definition. The outcome of cost estimating ideally includes both an expected cost and a probabilistic cost distribution. As a predictive process, historical reference cost data (where applicable) improve the reliability of cost estimating. Cost estimating, by providing the basis for budgets, also shares a goal with cost control of maximizing the probability of the actual cost outcome being the same as predicted.

Deduct Alternates - Project components that are desired by the owner but could be removed from the base bid if the bids exceed the budget.

Design-Bid-Build - The traditional method of project delivery, in which the owner commissions an architect or engineer to prepare drawings and specifications under a design services contract, which are put out to bid, after which the owner separately contracts with
a contractor for construction.

Design-Build - A project delivery method in which the client contracts with a single entity to provide both design and construction services. The design- build entity may be a single firm, a consortium,
or a joint venture assembled for the project.

Design Concepts - A design option or idea, usually early in the concept phase, that provides adequate information to determine if a concept is worth pursuing. An idea for a solution to a client/owner's architectural problem.

Design Development Phase - The first sub-phase of Lehigh's Authorization Phase, the Design Development phase is focused on identifying and verifying technical solutions to meet requirements of the schematic design, approved at the end of the Study Phase.

Design Development Documents - Plans, outline specifications and related documents developed from the Schematic Design Documents in greater detail to confirm or adjust, as required, all aspects of the schematic plans such as exterior design, mechanical and electrical systems, structural systems, area arrangement, foundation plans, etc., and to facilitate revised cost information to be prepared to reflect the more detailed development.

Design Documents - Collectively the Schematic Design Documents, the Design Development Documents and the Construction Documents, prepared by the A/E.

Design Review - A formal, documented, comprehensive and systematic examination of a design to evaluate design requirements and capability of the design to meet these requirement and to identify problems and propose solutions.

Design Schedule - The detailed schedule for the design phases of the project that includes milestones for design and approvals.

Design Standards & Guidelines (DSG) - An online resource for the architect that specifies requirements and processes relating to anticipated quality of building materials, systems and operational objectives. These requirements, once incorporated into the documents by the A/E, will be reflected in the construction documentation for installation during the construction phase.

Escalation - A budget allowance that may be created for uncertain changes in economic market conditions over time. Inflation (or deflation) is a component of escalation.

Estimate - A prediction or forecast of the resources (i.e., time, cost, materials, etc.) required to achieve or obtain and agreed upon scope (i.e., for an investment, activity, project, etc.) See also Cost Estimate.

Executive Sponsor - A Lehigh senior university official assigned by the provost to a project during the project initiation phase. The executive sponsor provides leadership to the project team, ensuring that project objectives, cost ranges and project timeline are met. The executive sponsor leads funding discussions, develops strategies on key decision points, and participates in the creation and approval of project documents by the provost.

Capital Projects Group (CPG) - The University committee responsible for review and approval of capital projects with authority up to $5.0M. CPG also recommends trustee approval for projects over $5.0M. Co-chaired by the President and Provost with other University leadership and facilities representatives.

Feasibility Study - A study performed to determine if a project is financially, physically, and legally possible.

Fixed Fee - The consultants' fixed price compensation for the performance of its basic services and those of its basic sub-consultants. The fixed fee does not include compensation for reimbursable expenses or specialized sub-consultants.

Furnishings, Fixtures, and Equipment (FFE) - The furnishings, blinds, carpets, shelves, (sometimes) casework, movable lighting, and other equipment that is not hard-wired or hard-plumbed into a building.

General Conditions - The general costs for a general contractor or construction manager including costs for material and labor for supervision, administration, clean up, protection, and related costs.

General Contractor (GC) - A firm that performs the work under contract all by itself, or through the use of subcontractors whose activities it supervises and coordinates, or a combination of the two.

General Terms and Conditions - General definition of the legal relationships and responsibilities of the parties to the contract and how the contract is to be administered.

Gross Square Feet (GSF) - All of the floor space inside a building, measured from the outside surfaces of exterior walls.

HVAC - Abbreviation for Heating, Ventilation, Air- Conditioning. The mechanical systems of a building.

LEED - Process to achieve certification for sustainability achievements in building design and construction governed through the USGBC (United States Green Building Council). The Leadership in Energy and Environment Design (LEED) is based on a points system, which includes levels such as silver, gold and platinum, and requires technical submittals and reviews to assure compliance with goals.

Life Cycle - The stages or phases that occur during the lifetime of an object or endeavor. In a life cycle cost or investment analysis, the life cycle is the length of time over which an investment is analyzed (i.e., study period).

Milestone - A zero-duration activity or event, which is part of a project schedule, which is used to denote an approval, or start or completion of a scheduled activity.

Milestone Schedule - A summary-level schedule comprised of key durations, events or milestones selected as a result of coordination between the owner and the contractor's project management. These events are

generally critical accomplishments planned at timed intervals throughout the project and used as a basis to monitor overall project performance.

Net Assignable Square Feet (NASF) - The Net Square Feet that can be specifically assigned to users.

Net Square Feet (NSF) - The net floor space in a building measured from the inside surfaces of exterior walls and excluding interior walls, partitions, mechanical equipment rooms, lavatories, janitorial closets, elevators, stairways, major circulation corridors, aisles, and elevator lobbies.

Not-to-Exceed Price (NTE) - The maximum amount payable to the contractor for the performance of the work under a time-and-materials contract. The maximum compensation to the Architect-Engineer for basic services, which is comprised of the fixed fee, the specialized sub-consultants NTE amount, and the reimbursable expense NTE amount.

Order of Magnitude Estimate - A quick, early-stage project cost/effort projection, often with a wide accuracy range (e.g., -25% to +75%), used for initial feasibility and go/no-go decisions when details are scarce, relying on high-level data, expert judgment, and analogous projects to give a ballpark figure before formal planning. It helps stakeholders understand a project's scale (e.g., $1 million vs. $10 million) before committing significant resources, guiding strategy rather than budget.

Owner - Often confused with “user” or “client,” the “owner” is the entity that officially owns and/or operates a completed capital project. For Lehigh, the owner is the Board of Trustees.

Planner - A representative of Lehigh’s Planning, Design & Construction office, who is assigned to a project to provide guidance throughout the project to ensure alignment with the Campus Master Plan and University aesthetic goals.

Planning - A general term to examine the preliminary arrangement of spaces or functions, which can occur at the campus level, or the building or space level.

Post-Occupancy Evaluation - Evaluations that focus on the satisfaction and behavior of project users or project participants.

Pre-Design - The phase of the project where the services provided by an A/E could include Feasibility studies, master planning, programming, the concept design, and research for a design project.

Lehigh University - The term “Lehigh University” means The Trustees of Lehigh University, the owner of the project, acting through its Lehigh University representatives.

Principal Architect - Usually the highest-ranking member of the A/E firm on the design team. Often the individual responsible for major design direction.

Programming/Concept Phase - During the Programming/Concept sub-phase, which is the first sub-phase in Lehigh’s Study Phase, facilities and the design team will lead a process involving users to develop a detailed program, a document that defines the functional needs, relationships and details about the project. Conceptual design options will be created depicting the functional needs and outlining pros and cons of each option

examining function and cost. Eventually one final option is approved to proceed in further design during the schematic design phase.

Programming - A process of systematically collecting, documenting and communicating the detailed criteria for the proposed performance of the facility and site. It may include the functional needs and relationships, building system requirements, and other parameters such as sustainability, planning and zoning criteria.

Project Architect - The architectural consultant responsible for managing the design effort on a project.

Project Budget - The total budget required to build and occupy a facility, composed of the construction budget and allowances to provide for design fees, furniture, equipment, permits, contingency and other costs not directly associated with construction.

Project Manager (PM) - A representative of Lehigh's Facilities department , who is assigned during the Project Initiation Phase. The project manager is responsible for the day-to-day management of the project, for instance tracking project progress, team performance and projected cost and quality. The PM is the central point of contact for users, stakeholders and consultants.

Project Schedule - The work product of a planning process that identifies the duration and interdependent relationships of all activities that influence the progress of a project. This schedule is to be developed and maintained in a format and level of detail necessary to support critical path method (CPM) analysis. Lehigh University typically develops a conceptual-level planning version of a project schedule which is used to determine the milestone design schedule dates. This same work product becomes the project schedule and will incorporate the design schedule and the construction schedule. The contractor will assume responsibility for maintaining project schedule during the preconstruction phase.

Proposal - The submittal prepared in response to an owner's request for proposals (RFP).

Punch List - The punch list itemizes work that must be completed or issues that must be resolved by the contractor or vendor (FFE). This list is prepared by the responsible A/E for the project, and can include tasks as minimal as touching up the paint on a wall or as major as troubleshooting an HVAC system that isn't functioning as designed.

Reimbursable Expenses - Permitted expenses incurred by the architect and its sub-consultants in the performance of basic services. These often include travel and lodging expenses, printing and copying costs, postage, etc.

Request for Information (RFI) - A request from a contractor or vendor (FFE) to the architect or owner for a clarification of intent or understanding in the construction documents.

Request for Proposals (RFP) - A document issued by an owner, often as part of a competitive bidding process, that solicits proposals from architects, contractors or other suppliers for a product or service.

Request for Qualifications (RFQ) - A step sometimes used in the formal process of procuring a product or service. It is typically used as a screening step to establish a pool of architects, contractors or other suppliers that are then qualified, and thus eligible to submit responses to a request for proposals (RFP). In this two-step

process, the response to the RFQ will describe the supplier's general qualifications to perform a service or supply a product, but generally will not include specific details or price proposals.

Retainage - A portion of the money earned by the contractor that is withheld from periodic payments and retained by the owner as assurance that the contractor will complete the project.

Schematic Design - A sub-phase of Lehigh's Study Phase, occurring after the Programming/ Concept Phase, where an approved design concept is further studied and refined. Schematic design adds additional detail such as building form, site, energy use and sustainability strategies, general materials and building systems.

Scope Creep - A general term used to describe unanticipated or unapproved needs or requirements requested by a user, stakeholder or other party. Lehigh's governance process, which utilizes an executive sponsor, provides a forum for consideration of these unplanned needs.

Soft Costs - A general term used to describe expenses or allowances in a budget that are non-construction related, including items such as permits, inspections, testing, fees, and furniture.

Specifications - A document that describes in words what cannot be visualized or explained on a drawing or in a model. This document can be incredibly wide-ranging and include a detailed description of dimensions, construction, workmanship, materials, etc. of the work to be done. It can also address the performance criteria of the asset, the quality of the systems and products, which standards are applicable and how they should be executed, and even the products to be used.

Stakeholder - An individual group, or organization that may affect, be affected by, or perceive itself to be affected by a decision, activity, or outcome or a project. Lehigh stakeholders can be subject matter experts representing university departments in connection with compliance for elements such as public safety, environmental health and safety, as well as compliance with engineering and design standards. A Lehigh stakeholder can also be a person or department which is impacted by the project, particularly the construction phase.

Startup - In the final Approval phase of a Lehigh project, at the end of construction, a general term to describe the activities that take place between commissioning and the achievement of steady- state operation. In some usage, the term startup, may include both commissioning (i.e., testing after mechanical completion) and startup of systems.

Sub-consultant - A consultant who contracts with the prime consultant. Typical sub-consultants are structural, electrical, civil, and mechanical engineers; interior designers; landscape architects; acousticians; and telecommunications specialists.

Subcontractor - A contractor who contracts directly with the prime contractor. Typical subcontractors are demolition, concrete, structural steel, mechanical, electrical, plumbing, fire alarm and carpentry.

Substantial Completion - A milestone identifying that the work is sufficiently complete in accordance with the contract documents so that Lehigh University may occupy, operate, or use the work or designated portion for the purpose for which it is intended.

Substantial Completion Date - The date that Lehigh and the CM/GC agree that a project is substantially complete.

Users - A Lehigh representative, or representatives, of a school, college, department, center or administrative unit responsible for the functional and operational requirements of a major capital project. A user provides general and detailed project requirements, facilitates decisions with user groups, and coordinates with Facilities

USGBC - United States Green Building Council, an organization which governs a process by which owners can seek LEED certification for a project to recognize sustainable strategies incorporated into the design and construction of a project.

Utility Infrastructure - The network of utility systems that support any building project, including power, water, sewer, chilled water, telecommunications, steam, etc.

Value Engineering - A process that identifies and assigns values to the various functions of a building element, product or system and then seeks a final design that maximizes functional value and reliability while minimizing cost. While value engineering should occur throughout the course of design, it most often is used toward the end of the process in order to reconcile a construction budget that exceeds the target cost or authorized budget.

Value Proposition - A statement of value that should be delivered by the project that ensures success in achieving University strategic priorities. The statement, which also outlines academic and functional objectives, is approved by the Provost in the Project Initiation Phase.

Process Flowchart