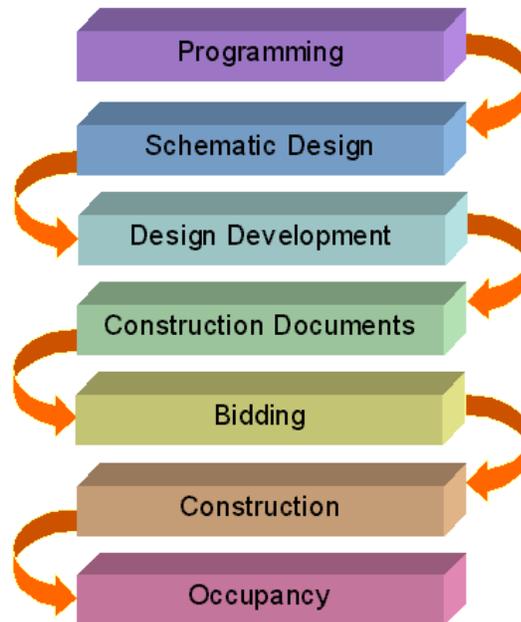


Anatomy of a Construction Project

THE DESIGN AND CONSTRUCTION PROCESS

In general, when a construction project is initiated, a Facilities Planning and Construction project manager is assigned to the project, and a building committee is formed to oversee the project development until completion. The life cycle of a project involves the following phases:

Construction Project Phases



These phases are common to all new construction and renovation projects; however, in smaller projects, the phases often become less formal, involve fewer individuals and may have a short schedule of only a few months. Large projects, on the other hand, may take years from the time they are envisioned to the time "move-in" takes place. In general, the Department of Facilities Planning and Construction (FP&C) provides leadership and guidance, serves as a resource, and protects the interests of the college throughout the entire duration of the project. The following describes each phase of a large project:

Programming (2 to 6 months)

A building committee of approximately six individuals is formed to represent the stakeholder group(s) involved with the project. The committee will be responsible for making the necessary design decisions based upon user requirements. One member of the committee will be designated as the "chair" to act as liaison with the FP&C project manager. FP&C also serves as a resource, sometimes in conjunction with external consultants, to assist committees in developing the specific requirements for the project. A Program of Requirements (POR) is developed that details all objectives, spaces, services (i.e. telephone, data, utilities, etc.), equipment (new and existing), special finishes, furniture and spatial relationships. The POR forms the basis of the college's expectations and goals for the completed project. The building committee and various other groups from the college, if required, will review and contribute to the development of the program documents prior to approval. In the case of technically complex projects, an outside consultant may be engaged to prepare the program documents.

Selection of the Design Professionals (1 to 2 months)

Design professionals are generally firms offering both architectural design and engineering services. However, on occasion, design firms join with engineering firms to form a design team. FP&C will issue a Request for Proposal (RFP) in accordance with the Local Government Professional Services Selection Act, using the Qualifications Based Selection process (QBS). When proposals are received from design firms, the building committee reviews and evaluates them to create a "short list" of design firms (or teams) that have the necessary qualifications and experience to be interviewed. The interviews consist of a formal presentation by the proposed team members, illustrating their expertise in the relevant areas, followed by questions from the building committee members. The committee selects the firm it deems most suitable to meet the task and recommends its selection to the college administration and Board of Trustees for approval. The successful design firm uses the program of requirements, institutional standards for design and construction, the schedule and the construction budget, as well as any other applicable requirements, as the basis for their design.

Schematic Design (2 to 4 months)

The first step by the design team is referred to as the "schematic design" phase, in which the objective is the development of simple diagrammatic documents delineating room sizes and relationships, single line diagrams of all systems (i.e. water mains, electrical risers, etc), preliminary elevation studies of the building exterior, and, if applicable, drawings of special interior spaces. The schematic design will be reviewed during frequent meetings with the building committee and FP&C. At the conclusion of this design phase, the architect will submit drawings, a project narrative and an estimate of construction cost for review and approval by the building committee and appropriate college representatives.

Design Development (2 to 4 months)

The approved schematic design is then further developed into definitive plans and elevations by the design team. Colors, patterns, materials, lighting fixtures, and special equipment and building elements are selected and reviewed with the building committee. For complex laboratory projects, detailed laboratory plans identifying all services, casework and equipment are also developed. Detailed floor plans, sections, elevations and an outline specification defining materials, finishes and systems, as well as an updated construction cost estimate, are submitted for review and approval by the building committee and appropriate college representatives.

Construction Documents (4 to 6 months)

The approved definitive design documents are developed into comprehensive construction drawings and specifications that are used to secure a building permit, if required, to competitively bid the work and ultimately as the basis for the construction of the project. The construction documents are submitted for review and approval by the building committee and appropriate college representatives when the documents are 50 percent complete and 100 percent complete (just prior to bidding). After a thorough review and evaluation of all the bids by FP&C and the Purchasing Department, the most responsive, responsible, low bidder who meets all the requirements of the bid documents is selected and recommended to the college administration and the Board of Trustees for approval.

Construction (6 to 30 months)

The FP&C project manager coordinates the work, monitors costs and scheduling, and reviews the construction work performed by the contractor. The project manager will also keep the designated building committee representative informed of the progress of the project. Building tours must be arranged in advance with the project manager due to safety and liability requirements. No one is allowed in the construction area without prior authorization. Unforeseen changes that arise in the field are appropriately handled by FP&C. Any user requesting changes to the project must be directed in writing to the FP&C project manager. The project manager will address these requests appropriately within the guidelines established by the college.

Pre-occupancy/Commissioning

FP&C arranges for contractors to provide training for Operations personnel and others who will be responsible for operating and maintaining the facility. Operations assume operational responsibility for the facility at the time of initial occupancy. Well in advance of the projected occupancy date (generally, at least sixty days), persons designated by the building committee must:

- Submit a comprehensive listing and schedule to the FP&C project manager. The schedule identifies who is moving (i.e. "from where - to where") and is used by the movers, IT and Operations.
- Contact IT to arrange for the activation of select telephone and data communications outlets.
- Contact Operations to arrange for keys.

Moving

The FP&C project manager will hire professional movers, if required. The building committee will designate the representative(s) to coordinate specific move times with the faculty, staff and students involved. The moving company will provide packing materials and instructions. Generally, all packing is the responsibility of the parties being moved. The academic unit is responsible for retaining technical, scientific, and any other special equipment procurement and installation. Special arrangements can be made through FP&C for equipment movers and hook-up of utilities when needed.

Occupancy

At the time of initial occupancy, the FP&C project manager will give an overview presentation and tour of the facility to designated representatives. This will include an explanation of how the building is zoned for thermal comfort, operation of appropriate building components, the location of emergency equipment and exits, etc. The operational and maintenance responsibility for the facility is turned over to Operations at this time. All calls for service relating to the building should be directed to Operations. The FP&C project manager will be available to assist with resolution of warranty and post-occupancy construction issues.