2.0 PROCESS

2.1 Directory of Key Personnel

Outside Consultants, when retained by the University will work under the direction of a Project Manager (PM) assigned by Capital Programs. The PM will be responsible for interacting with numerous University departments throughout the course of the project. These may include:

- Ancillary departments (Housing and Food Services, Real Estate and Parking Services);
- Client (representing faculty departments/members);
- Office of the Registrar and Student Awards;
- Facilities Management;
- Utilities;
- Supply Management Services;
- Technical Resource Group;
- Computing and Network Services;
- Capital and Strategic Planning Services;
- Campus Security Services;
- Environmental, Health and Safety; and
- Financial Services.

An outline of the roles and responsibilities of these various departments and of the Consultants is outlined in the “Capital Projects Process Manual” and “Capital Renovation Procedures Manual”. These documents are available online at the University of Alberta website.

At a Project Initiation Meeting arranged by the University Project Manager points of contact for key personnel, their roles and organizational structure will be provided.
2.2 Design and Construction Process

The University currently use design-bid-construct, and/or design-build for the delivery of design and construction projects. Consideration is being given to using the P3 (public/private partnership) delivery process as well. An overview of the design process and the Consultants role is outlined. All three construction delivery processes share the same step 1, “Functional or Detailed Space Program”. The other steps may vary depending of the design and construction delivery process selected.

2.2.1 Design-Bid-Construct

There are six steps in the design and construction process for any project. These may be truncated for smaller projects, and while they occur, they are not formalized by a review and approvals process. Because most renovations are in existing buildings, the designs follow the parameters of the building.

The following provides an overview of the process. Further detail on the process and responsibilities of each of the parties is included in the Capital Renovation Procedures Manual and Capital Project Process Manual.

1. Functional or Detailed Space Program

This initial design phase is carried out by Capital and Strategic Planning Services (CSPS) and results in a Functional Program defining the Client requirements and detailing the scope for the Project. It could typically include:

- site location alternatives (if a new building);
- building location alternatives (if in existing facilities);
- determination of facility space standards and requirements;
- functional relationships;
- space data sheets;
- accommodation or demonstration plans (for smaller projects only, in existing buildings);
- individual space plans for critical layouts; and
- other information as required by the complexity of the project.

2. Schematic Design – 30% drawings

A Design Team or Consultant is assigned for the design services by the University Project Manager. This is a preliminary stage where various practical solutions are studied. In practice, particularly for smaller projects, this stage has been completed by the Client or CSPS prior to going to design. This step would typically include conceptual designs for all the relevant architectural and engineering disciplines and confirms the scope of the work identified during preparation of the Detailed Space Program.

Renovation projects have additional requirements. These include:

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- detailed site investigation of as-built conditions to verify assumptions prior to proceeding with the schematic design;
- confirmation of the expected life expectancy of the renovations in regards to the project life expectancy (also applies to specialized functions; and
- applicability of current codes and standards with review with the Office of Environmental Health and Safety.

Depending on the project, other areas may be significant enough to warrant inclusion in the Schematic Design phase, such as:

- space allocation and utilization plans;
- consideration of alternative materials;
- acoustics, theatre, food, laboratory specialists may also be involved for specific information input.

The deliverables of this phase are drawings and documents containing a number of design and construction options, cost implications and limitations, time restrictions, and a recommended solution depicting general concept and functional requirements of the project.

On larger projects, a formal Schematic Design Report contains the deliverables and a comparison to the Functional Program will be required for University approvals.

3. Design Development – 60% drawings

This phase sees the preparation of design drawings to determine more precise aspects of planning, appearance and construction. In practice, for smaller projects, this phase is combined with the Construction Documents phase. Like the Schematic Design phase specialist consultants may be involved.

Outline specifications will be developed plus any other documents which will illustrate and define the design concept in terms of siting, form, character, materials, structural system, mechanical and electrical systems, building automation systems, building envelope and other relevant details. These are presented as a detailed Design Development Report, which includes a tabulation of designed areas compared to those of the CSPS program requirements and an up-dated schedule of the Work reflecting the additional knowledge of the extent of the Work achieved during the Design Development stage for approvals.

Any necessary clarifications and approvals from jurisdictional authorities (electrical or mechanical) are obtained during this phase. The Designer is not required to submit documents of the Work to the City of Edmonton, nor apply to the City of Edmonton for development, building, or inspection permits. These submissions are to be made to the accredited agency retained for Safety Codes Compliance through the Senior Technologist, Design Group, Capital Programs office.
4. Construction Documents – 100% drawings

In this phase, working drawings and specifications required for construction of the total Work are prepared. These shall include architectural, structural, mechanical, electrical and other specialty systems, plus all other information required for tendering.

5. Procurement (Tender/Bid)

Supply Management Services (SMS) assembles the Request for Bid/or Proposal using the University’s documents and issues the Requests. SMS receives, opens, and with the Project Management Office (PMO) reviews them for award. The design consultants are expected to provide assist to SMS and PMO during the process. This assistance includes such activities as:
- prepare answers to questions/clarifications of the design;
- prepare addenda;
- evaluate alternate products;
- evaluate bids.

Construction contracts with a value of more than $250,000.00 (GST included) must be advertised nationally on COOLNET and/or MERX.

6. Construction

Upon award the University Project Manager will lead the University’s involvement during the construction phase. The consultant will provide assist to the University as requested by the Project Manager. The assistance during construction includes:
- attendance at site meetings;
- site reviews of the construction with a follow-up report on progress, result of inspections, deficiencies and problems;
- answer questions with respect to design intent;
- issue supplementing details and sketches as necessary;
- review shop drawings, samples and mock-ups;
- review and make recommendations on alternate product submissions;
- prepare deficiency lists for substantial completion.

The construction stage includes the 1-year warranty period after completion of the construction.

Commissioning will be undertaken by the Facilities Management Department.

2.2.2 Design-Build – under development

2.2.3 P3 (Public-Private Partnership) - under development

2.2.4 Design Review Process

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Throughout the design process it is expected that there is an ongoing dialogue between the Consultant, Project Manager and client/user in regards to the design and the application of the Standard and Guidelines. In addition there are a minimum of two formal submissions for review by the University. They are the Design Development Report at completion of Design Development and the Pre-Tender Report prior to the Procurement stage. During the preparation of the Construction Documents there would be two reviews of content of the working drawings and specifications, at the 50% and 90% completion stage. These would be co-ordinated by the Project Manager and include review by the client, accredited agency retained for Safety Codes Compliance, Facilities Management and Computer and Network Services. For smaller, less complex projects, (i.e. renovations) only the 90% review may be required.

The Consultants are expected to do their own internal review for purposes of coordination.

The Safety Code Review is coordinated by the Capital Programs Office.

Drawings are to be submitted for Safety Code Review to the Capital Programs Office through the Project Manager. The number of review sets required is determined by the complexity of the project. Copies of schedules A-1 and A-2 arising from Section 2.6 of the Alberta Building Code are to accompany the transmittal of drawings for the initial review if the work is done by Consultants. These drawings are forwarded through the Project Manager who directs drawings and schedules to the Technologist, the Safety Codes Coordinator for the Project Management Office.

For smaller projects the Safety Code Review will typically be conducted during the period that the project is out for competitive pricing through SMS.

Two weeks should be allowed for the review process. Any external reviews required, such as Underwriters’ Engineering review of Sprinkler Drawings will happen as part of the review process.

The Capital Programs Office establishes the process for building and fire safety inspections as construction proceeds. Further review requirements will be defined in the response documents to this review.

At this stage, drawing sets should also be circulated to other groups which may be involved in the operation or maintenance of the completed facility, such as:

- Building Services
- Operations
- Energy Management
- Utilities
- Technical Resource Group
- Computer and Network Services
- Campus Security Services
Input from this forum should be considered invaluable in avoiding pitfalls in final design details and selection of finishes, fixtures and hardware that is compatible with best or established practices in building operations. Prior to the procurement step, the Project Manager, utilizing completed design drawings will obtain input into the construction process with respect to:

- Effect on neighbours
- Shutdown requirements
- Hours of work
- Location of garbage bin for construction
- Access for deliveries, service trucks
- Trades parking
- Emergency access
- Safety and security for adjacent areas
- Security of the worksite
- Odour/dust control
- Noise levels
- Examination timetables or other crucial schedules

This information will be provided to the bidders bidding on the project.
2.3 Communications and Data

Most large projects will have a significant component of telecommunications and data transfer. Computing and Network Services (CNS) is the University department responsible for telecommunications and data networks. CNS, upon request from the Project Manager, will assign a coordinator, who will serve as a member of the University Project Team for the duration of the Project, and prepare a “schematic design” proposal.

This proposal must then be reviewed by the Design Team for compatibility with the rest of the Project design. Upon approval of the proposal (or selection of one of the alternatives presented), CNS will refine the proposal based on further information as available, and pass it to the Project Design team for incorporation into the design package. It is quite feasible that this package will be split, particularly on smaller jobs, with infrastructure expansions being done internal to CNS, and work within the construction/renovation being part of the contract package.
2.4 Laboratory Renovations/Shutdowns

Renovations in laboratories which utilize chemicals, gases, radioactive materials, tissues, biohazards, mixed hazards or general hazardous materials must be closed out in compliance with a standard operating procedure defined by the Office of Environmental Health and Safety. A hazardous materials close-out procedures list and policy statement is enclosed in the Addenda.
2.5 Utility Shutdowns

If a shutdown in existing facilities is required, this must be co-ordinated by the Project Manager, Capital Programs Department, who directs the utility shutdown request to the Department of Facilities Management. Facilities Management takes the responsibility of notifying all parties involved and obtaining clearances to proceed. Advance notice of at least 72 hours to the Project Manager is required for these shutdowns. Should the shutdown involve asbestos, Bio-Hazard or Radiation area, the Project Manager is responsible to co-ordinate the shutdown request with the Office of Environmental Health and Safety.
2.6 Commissioning

The level of commissioning and personnel required depends on the type and size of project, though all commissioning activities will be led by the University’s Commissioning Team.

2.6.1 Minor Capital and Renovation Projects

Minor capital or renovation projects do not involve changes to base building systems. Sample projects would include classroom or space modernization and lab upgrades. A joint final inspection is conducted with the Design Team, University trades and personnel from EH&S (Environmental Health and Safety) if applicable. Concerns raised by the University will be provided to the Design Team for review, comment and implementation as appropriate.

2.6.2 Mid Sized Capital or Renovation Projects

Projects that involve the addition or modernization of base building systems that are not complex or technical in nature would fall under this category. Sample projects include construction of new housing or the modernization of building interior including minor system changes. The Design Team is to review with the University the systems that are to be included in the process and specify the contractor start-up program in the contract documents. The start-up program is to be a documented process with check sheets for each system and component. Prior to substantial completion the contractor is to make available to the University the completed check sheets for verification. The University inspection and performance testing report will be issued to the Design Team for review, comment and implementation as appropriate.

2.6.3 Capital or Renovation Projects to Base Building Systems

Projects that involve the addition or modernization of base building systems that are complex or technical in nature would fall under this category. The process would follow a similar process as for mid-sized projects but with some additional requirements. For certain systems the University will witness and participate in the contractor start-up of specialized pieces of equipment or systems such as fire alarm systems, fire pumps and emergency generators. The University will undertake a testing program of certain other systems (e.g. rotating equipment vibration tests). Third party testing would include building envelope scans and fume hood certifications.
2.6.4 Large Capital Construction

Projects that involve the construction of new facilities that are technical in nature or include the complete modernization of existing facilities (including replacement of base building systems) that are complex or technical in nature would fall under this category. The University will retain an external Commissioning Manager. The Commissioning Manager will work with the University and the Design Team to develop a commissioning program that is customized to the specific needs of the project, which will be lead, by the Commissioning Manager.

The number of third party testing agencies required will be dependent on the technical nature of the project, with research facilities having high certification requirements and level of involvement. The Design Team will outline all system categories in the systems matrix for the University to fill in their anticipated levels of involvement.

The Design team is responsible for including in the construction documents the in-contract tests.

2.6.5 Specialty Lab or Clean Room Projects

Projects that involve the construction of new research areas within facilities require accreditation and/or certification levels to meet specific legislated requirements prior to operating. A verification program is to be laid out by the Design Team in the contract documents.

Certification of lab or clean rooms is to be by accredited agencies only. In some cases the Design Team could act as the testing agency.
2.7 Drawing Standards

In order to provide a level of uniformity from project to project, as well as within projects, the University has established a CAD drafting standard, including layering conventions, line weights, drawing title block. This CAD Procedures Manual must be used by all Consultants. This standard is available on the University of Alberta web site, www.pd.ualberta.ca.

Prior to issuing drawings for code review, the Consultants are requested to advise the Project Manager of the number of drawings in the set relating to each design discipline. The Project Manager will provide the Consultant with drawing numbers conforming to the University drawing numbering system.