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 Facilities and Operations. The PM will be responsible for interacting with numerous University departments throughout the course of the project. These may include Administrative or Academic Units from the University.

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 & CONSTRUCTION PROCESS

There are many 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 would be included in the Consultant Scope of Services manual.

2.2.1 IMPLEMENTATION PROCESS

1. Governance Documents

Prior to the commencement of a project, supporting governance documents, as mandated by the Post-Secondary Learning Act (PSLA), will need to be completed by the University (typically led with the guidance of the Office of the University Architect). These over-arching governance documents include Long Range Development Plan (LRDP), Sector Plan and the Comprehensive Institutional Plan (CIP).

2. General Space Program

The preparation of a General Space Program (GSP) is a collaborative process that is undertaken within the context of assessing the overall needs of the university as outlined in strategic documents such as the CIP, Capital Plan and Faculty Academic Plans. A GSP identifies supported requirements and normally includes:

- A description of the scope and activities of the particular faculty, department or unit (it can be all of these combined) as they currently are and how they are envisioned to be over the planning horizon, usually 5 or 10 years;
- A quantification of the number of students, faculty, staffing and supports needed to carry out these functions properly;
- An identification of the current space locations and allocations by type/function and position in the form of a current inventory;
- Forecasts of space needs based on current uses as well as on its 5 or 10 year growth plans, using the Space Manual guidelines to calculate net assignable space that might be required.
3. Functional Program
The Functional Program is especially developed to inform the development of a building or major alteration to a building. There are different types of Functional Programs all of which are based on supported requirements. A higher level Functional Program may be developed for the purpose of test fit and feasibility studies, businesses cases and the like. A more detailed Functional Program may be developed for a building project that is expected to proceed into architectural design and construction. The development of a Functional Program is a collaborative process and depending on its purpose, it normally includes some or all of the following:

- It serves to establish and manage the scope of a defined building project while not intending to limit creative and innovative planning and design solutions;
- It studies the functional adjacencies, traffic flow and fit of function to the building in greater detail;
- It provides the functional and spatial specifications that guide the subsequent architectural design;
- It documents the scope of services, planning parameters and assumptions, operational methods, projected workload and staffing assumptions, functional relationship priorities, key planning criteria and room-by-room NASM space requirements.
- It may also include detailed room data sheets that identify architectural, engineering and furniture and equipment requirements.

4. Schematic Design
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 Internal UA 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:

- 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.

5. Design Development
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 can be combined with the
Construction Document 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 identified or approved 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 as the Code Authority Having
Jurisdiction through Design and Technical Services.

6. Contract Documents
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.

7. 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 assistance 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 in excess of the Competitive Bid Thresholds will be posted.

8. 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 and Operations utilizing own forces or a commissioning manager as required by the project.

2.2.2 CONSTRUCTION DELIVERY METHODOLOGY

Regardless of the Construction Delivery Method, the design method, as described above would be required. The following are the most common construction models that are utilized at UA.

1. DESIGN-BID-CONSTRUCT

2. DESIGN-BUILD

Many versions of this type of procurement methodology have been used on previous UA projects, including a ‘modified’ Design-Build and Design-Build using best value.

The involvement of UA personnel throughout the design and construction process is critical and there should be an emphasis on defining how personnel is engaged, establishing expectations at the
beginning of the project. This would include a clear outline of what deliverables will be required by UA throughout the design process (i.e. documents or reports to support any governance protocols).

3. DESIGN-BID-CONSTRUCTION MANAGEMENT

2.2.3 DESIGN REVIEW PROCESS

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 coordinated 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 Facilities and Operations.

Drawings are to be submitted for Safety Code Review to the accredited Safety Codes Agency 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 Safety Codes Officer from the accredited Agency establishes the process for building and fire safety inspections as construction periods
but as a minimum will include drawing review, rough inspection and final inspection. 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
- Information Services and Technology
- 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 neighbors
- Shut down requirements
- Hours of work
- Location of garbage bins 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 & DATA

Most large projects will have a significant component of telecommunications and data transfer. Information Services and Technology (IST) is the University department responsible for telecommunications and data networks. IST, 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), IST will refine the proposal based on further information as available, and pass it to the Project Design team for incorporation into the design.
2.0 PROCESS

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 coordinated by the Project Manager, who directs the utility shutdown request to Buildings and Grounds. Buildings and Grounds 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 coordinate 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 & 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.

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.