# TABLE OF CONTENTS

## INTRODUCTION

1. INTRODUCTION .................................................................................................................. 5
   1.1 Purpose .......................................................................................................................... 6
   1.2 BYU Project Design/Construction Contact Information ................................................. 6
   1.3 Project Organization / Role Definitions ............................................................................ 6
   1.4 Services Performed By Owner ....................................................................................... 7
   1.5 Services Performed By Architect/Engineer (A/E) .......................................................... 8
   1.6 A/E Design Team............................................................................................................ 9
   1.7 Payment ......................................................................................................................... 10
   1.8 Contractor Coordination ............................................................................................... 10

## FACILITY PROGRAMMING

1. FACILITY PROGRAM .......................................................................................................... 12
   1.1 General .......................................................................................................................... 13
   1.2 Facility Program Content ............................................................................................. 14
   1.3 Square Footage Guidelines ......................................................................................... 15
   1.4 Use of the Facility Program during the design phases .................................................. 15

## DESIGN PHASES

1. DESIGN PHASE PROCESS ................................................................................................. 16
   1.1 General .......................................................................................................................... 17
   1.2 Schedule ....................................................................................................................... 17
   1.3 Design Meetings ........................................................................................................... 17
   1.4 Design Documentation and Review Software ............................................................... 18
   1.5 Design Phase Plan Reviews ......................................................................................... 18
   1.6 Design Phase Budget Reviews .................................................................................... 19
   1.7 Submittal Documents Format ...................................................................................... 20

2. FACILITY DESIGN PRINCIPLES .................................................................................. 23
   2.1 General Design ............................................................................................................ 23
   2.2 Energy and Environmental Design .............................................................................. 24

3. PROJECT START-UP ........................................................................................................ 24
   3.1 Facility Program .......................................................................................................... 24
   3.2 As-built Drawings ....................................................................................................... 24
   3.3 Site Information and Verification ................................................................................. 24

4. SCHEMATIC DESIGN PHASE ..................................................................................... 25
   4.1 Project Design ............................................................................................................. 25
   4.2 Engineering systems .................................................................................................... 25
   4.3 Furniture Coordination ............................................................................................... 25
   4.4 Room Numbering ........................................................................................................ 25
   4.5 Schematic Design Submittal ....................................................................................... 25
   4.6 Schematic Design Reviews ......................................................................................... 26

5. DESIGN DEVELOPMENT PHASE .................................................................................. 27

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September 2016
BYU INSTRUCTIONS TO ARCHITECTS AND ENGINEERS

5.1 Project Design..................................................................................................................27
5.2 Interior Design and OIT Coordination.............................................................................27
5.3 Engineering Coordination...............................................................................................27
5.4 Design Development Submittal.......................................................................................28
5.5 Design Development Reviews........................................................................................29

6.0 CONSTRUCTION DOCUMENTS PHASE......................................................................29
6.1 Project Design..................................................................................................................29
6.2 City Planning Approval.....................................................................................................29
6.3 Construction Documents Submittal.................................................................................30
6.4 Construction Documents Review.....................................................................................31

BIDDING AND CONSTRUCTION .........................................................................................32

1.0 BIDDING AND CONSTRUCTION COMMUNICATION...................................................33
1.1 BYU Planning and Construction Project Managers Roles...............................................33

2.0 BIDDING..........................................................................................................................33
2.1 Bidding Documents........................................................................................................33
2.2 Bidding Procedure..........................................................................................................33
2.3 Bidders List....................................................................................................................33
2.4 Pre-bid Meeting..............................................................................................................34
2.5 Distribution of Plans and Specifications................................................................--------34
2.6 Questions/Clarifications..................................................................................................34
2.7 Addenda........................................................................................................................34
2.8 Substitutions..................................................................................................................35
2.9 Bid Opening and Review................................................................................................35
2.10 Budget Alignment Meeting (Value Engineering)........................................................35
2.11 No Conformance Set.....................................................................................................36

3.0 CONSTRUCTION..............................................................................................................36
3.1 Architect/Engineer’s Agreement......................................................................................36
3.2 Communications.............................................................................................................36
3.3 Construction Project Management Software ...................................................................36
3.4 Pre-construction Meetings..............................................................................................36
3.5 Weekly Construction Coordination Meetings..............................................................36
3.6 Job Site Visits................................................................................................................36
3.7 Contractor Redline Drawing Set....................................................................................37
3.8 Shop Drawings and Submittals......................................................................................37
3.9 Requests for Information (RFI)....................................................................................37
3.10 Job Instructions (JI)....................................................................................................37
3.11 Change Orders.............................................................................................................38
3.12 Substitution of Materials During Construction...........................................................39
3.13 Contractor’s Application and Certificate for Payments...............................................39
3.14 Mock-Ups and Color Approvals................................................................................39
3.15 Project Review and Approvals (Punchlisting)...............................................................39

4.0 PROJECT COMPLETION..................................................................................................40
4.1 Substantial Completion...................................................................................................40
4.2 Record Drawings and O&M Manuals............................................................................40
INTRODUCTION
1.0 INTRODUCTION

1.1 Purpose

A. This document has been developed for architects and engineers, hereafter referred to as A/E, who provide services for Brigham Young University Physical Facilities. Requirements, suggestions and recommendations contained herein are the product of many years of experience by BYU planning, construction and maintenance personnel. Where these instructions apply, strict compliance is required.

B. This document is designed to be used in connection with other documents prepared by Brigham Young University Physical Facilities. The A/E is expected to understand these documents and assure that its services and designs conform to the requirements. These documents include:

1. BYU Standard Forms and Agreements, such as:
   a. Architect’s Agreement
   b. Letter of Agreement

2. Instructions to Architects and Engineers (this document)

3. BYU Facility Design Guidelines

4. Building Information Modeling (BIM) Guidelines and Standards for Architects and Engineers

1.2 BYU Project Design/Construction Contact Information

A. Facilities Planning Department
   Managing Director of Planning
   Director of Architecture and Interior Design
   Director of Engineering & Utilities
   Project Programming
   Planning Project Managers
   Architecture
   Engineering (Civil, Structural, Mechanical, and Electrical)
   Landscape Architecture
   Interior Design
   Cost Estimating
   BIM Manager

B. Construction Department
   Director of Construction
   Construction Project Managers

1.3 Project Organization / Role Definitions

A. Architect/Engineer (A/E): The A/E is the architect or engineer who is the prime contracted entity with BYU for a given project. They will often have architectural or engineering consultants to support the design needs of the project. The A/E shall coordinate all activities of its consultants. The A/E shall designate a primary point of contact at the beginning of the project to represent itself and its consultants. It is important to note that the A/E shall work under the direction of the BYU Project Manager from BYU Physical Facilities assigned to the project. Representatives of the various departments on campus who will be the users of the building will often be active participants in the design process. However, direction on how to proceed with the design is to always go through the Planning or Construction Project Managers. Direct communication with the users of the building is
not to take place without the knowledge and consent of the Project Manager. In no case is the A/E or its design team to proceed in making changes to the design without the direction of the Project Manager.

B. **BYU Owner’s Representative:** The official Owner’s Representative for all projects at BYU is the Assistant Administrative Vice-President for Physical Facilities. Approval by the Owner’s Representative is required for contracts and other stages of a project.

C. **Planning Project Manager:** The Planning Project Manager is the primary point of contact representing BYU for the design team during the design phase. This individual will be assigned to the project by the Owner’s Representative, typically at the beginning of design. They will coordinate the involvement of BYU personnel who will participate as part of the design team (including BYU engineers, designers, architects and user groups). All communications, including meetings and emails, throughout the planning and design phase between the design team and BYU personnel, BYU-hired consultants, or the contractor are to include the Planning Project Manager. The Planning Project Manager will remain involved through construction completion as a support to the Construction Project Manager.

D. **Construction Project Manager:** The Construction Project Manager will be the primary point of contact representing BYU for the A/E design team and the contractor during the bidding and construction periods. They will coordinate inspections and help facilitate the process for BYU personnel, the A/E design team and the contractor. The Construction Project Manager is to be included in all communications, including meetings and emails, with BYU personnel, BYU-hired consultants, or the contractor during bidding and construction. The Construction Project Manager will often also participate in the design phase as project support to the Planning Project Manager.

E. **Preconstruction Services Contractor:** If BYU selects a preconstruction services contractor for a project they will participate in the design phase. They will assist the A/E and owner with pricing and will prepare an independent cost estimate for each phase. They are also expected to help the design team with questions of construction schedule and constructability and fully participate in plan reviews.

F. **Contractor:** The contracted construction company for a project. The contractor arrangement may be from a design assist process, a design-bid-build process, or other arrangement.

### 1.4 Services Performed By Owner

A. See also BYU Standard Forms and Agreements, including Architect’s Agreement.

B. Prepare and furnish to the A/E a written facility program, unless in contract scope of the A/E. The facility program defines the general nature, size, accommodations, and other requirements that are necessary to enable the A/E and design team to design the project.

C. Provide and pay for the cost of an accurate topographical site survey and geotechnical report, as may be required for the project. The Planning Project Manager must approve and coordinate all tests.

D. Provide an electronic copy of the campus site map with all site utilities for the project site and vicinity.

E. Provide the A/E with as-built drawings as they are available (as-built conditions are to be field-verified by the A/E).

F. Give thorough consideration to all sketches, estimates, construction document drawings, specifications, proposals and other documents submitted by the A/E.
BYU INSTRUCTIONS TO ARCHITECTS AND ENGINEERS
INTRODUCTION

BYU INSTRUCTIONS TO ARCHITECTS AND ENGINEERS

G. Inform the A/E of decisions within a reasonable time so as to not interrupt or delay the work of the A/E.

H. Coordinate necessary meetings and plan reviews involving personnel of Brigham Young University and the A/E.

I. BYU has an in-house estimator who is directly responsible and will be the sole estimator for the not-in-contract (NIC) costs for all projects. This estimator will coordinate with the A/E to ensure that all necessary work for a project is properly accounted for in the construction and NIC budgets.

J. Provide information developed by BYU personnel (including Landscape Architect, Interior Designers, Office of Information Technology and special BYU-contracted Consultants) in a timely manner, such that this BYU-provided information can be coordinated with and included in the A/E’s plans. Expectations for the timing of the BYU-provided information to the A/E are to be reviewed with the A/E and design team during regular design meetings. The established timeframe is to be agreed to by BYU personnel and the A/E design team and is to be reasonable for the work required and must work within the timeline established in the overall schedule.

K. Designate Project Managers for both the planning and construction phases, who are employees of the Owner, and with whom the A/E is to interface throughout the term of the agreement. See descriptions in previous section for Planning and Construction Project Managers.

L. Pay for fees, permits, etc. with necessary jurisdictional agencies.

1.5 Services Performed By Architect/Engineer (A/E)

A. See also BYU Standard Forms and Agreements including Architect’s Agreement.

B. The A/E shall perform all necessary professional services in connection with design, engineering and construction. The Principal-In-Charge (PIC) is expected to be directly involved from the beginning of the project design to completion of construction.

C. The A/E and their design team shall maintain confidentiality regarding projects performed for BYU. Unless written approval is given by the Planning Project Manager, the design team shall not provide any information regarding projects, including the project itself, to anyone, including other BYU personnel, jurisdictions, or any other member of the general public. Any project related information or images must have written approval prior to use in marketing. In no circumstance is information regarding project square footages or construction costs to be shared.

D. The A/E shall assemble a design team including all engineering and specialty consultants that are required to perform the necessary design services for the project. The A/E is to discuss with BYU and obtain approval of its consulting engineers and other consultants prior to signing all consulting agreements.

E. Establish a schedule, and obtain BYU’s approval of such, at the beginning of the project. The A/E is responsible to manage all design phase work, including all coordination efforts of all consultants and BYU personnel, as necessary to keep the project within the BYU-approved schedule. Any required modifications to the schedule must obtain approval from BYU.

F. Do all in its power to keep the project design within the BYU-approved budget. The A/E is to prepare, with assistance from their consultants, a cost estimate for each design phase submittal. BYU may also have additional construction estimates performed by its in-house estimator and the preconstruction services contractor (See Design Phases section, item 1.6 – Design Phase Budget Reviews). Comparison of each construction budget will be made with each design phase. Variations in the cost estimates will be compared and resolved by the overall team. When the project design is...
BYU INSTRUCTIONS TO ARCHITECTS AND ENGINEERS

INTRODUCTION

not aligned with the budget the A/E and design team shall propose modifications to the design and scope as necessary to align the design with the budget.

G. Be familiar with all governing site and project conditions by visiting the site and reviewing applicable as-built drawings. As-built conditions, including dimensions, which affect the project shall be field verified by the A/E.

H. Be familiar with and be bound by BYU’s requirements set forth in this document and any other referenced standards. Obtain from the Planning Project Manager the most current version of the documents referenced in section 1.0.B above at the commencement of design services.

I. Be familiar with the BYU Facility Design Guidelines and coordinate with the design team to ensure all applicable standards are implemented into the design. The A/E design team shall complete the Facility Design Guidelines checklist for applicable items for each project phase. The Facility Design Guidelines are intended to guide the design to have BYU’s preferred standards, providing quality and consistency among the physical facilities at BYU. Professional recommendations by the A/E or its consultants which differ from the standards are welcome. The design team shall present their recommendations for consideration by BYU personnel as early as practical during the design phase. All deviations from the guidelines are to receive the expressed written approval from BYU.

J. Attend regular design and construction meetings with the Planning and Construction Project Managers and other BYU personnel as may be requisite to gain a complete understanding of the project to enable the A/E to successfully meet the owner’s needs in the design. The A/E is to prepare an agenda in advance so that the owner can coordinate in advance the attendance of the appropriate BYU personnel. The A/E is to take minutes at these meetings and distribute them for review.

K. At all times during the conduct of this work, allow the drawings under preparation to be reviewed by BYU personnel, as requested.

L. All work or services required to be performed by the A/E are to be accomplished with due diligence, and according to the standards customary to the architectural profession.

M. Coordinate elements of the design with BYU personnel and/or consultants as required to facilitate the design of the landscaping, interior design, information technology and other elements of the project which are to be provided by the owner.

N. Coordinate the work of the design team in order to design the appropriate connections to the campus utilities and services, including heating/cooling, water and sewer, electrical, data, etc.

O. Ensure that all applicable building, construction, health, seismic, and other codes, including zoning ordinances are complied with. All municipal, state or other agencies having jurisdiction over the building, documents, specifications or other aspects of the project are to be consulted by the A/E during project design. The A/E shall coordinate the submittal of all applicable documents for review and obtain the proper approvals, and shall assist BYU in its application for all necessary permits, etc.

P. Ensure that design meets the requirements and gains approval from BYU’s insurance carrier, FM Global.

1.6 A/E Design Team

A. The A/E design team shall include licensed professionals for all areas of design required for the project. The prime A/E may be an architect or an engineer, whichever is more appropriate to the project as determined by BYU.
B. All consultant selections are to be approved by BYU personnel and are expected to have the appropriate current professional licenses.

C. The typical design team may include the following services, wherever applicable to the project. Depending on project size and schedule, some of these services may be performed by BYU personnel.

1. Civil engineering
2. Landscape architecture
3. Architecture
4. Structural engineering
5. Mechanical engineering
6. Fire suppression engineering (may be by same mechanical engineer)
7. Electrical engineering
8. Fire alarm system engineering (may be by same electrical engineer)

D. Building automation controls consultant. BYU will hire a building automation controls design contractor to assist in the design process. This consultant is the same company that will provide the controls programming and hardware that is provided by BYU. The A/E team will be responsible for the mechanical engineering design including all sequencing, instrumentation diagrams and performance specifications. The A/E design team is expected to work with the controls consultant as the design is developed to ensure that proper documentation of contractor-installed items that are required to interface with the controls system. It is expected that the controls consultant is invited to project meetings as required for coordination and that their comments and recommendations are considered with the design.

E. Specialty consultants:

1. Specialty consultants may be required on projects involving special design requirements. The A/E is to recommend to the Planning Project Manager when it feels the services of a specialty consultant are needed for a project.
2. Specialty consultants may be hired by BYU or BYU may request that the A/E obtain the services of specialty consultants.
3. The A/E is expected to assemble a design team for all the required aspects of the design at the beginning of a project. When specialty consultants are brought on after the start of the project, fee adjustments, if required, will be negotiated.
4. For projects with auditorium acoustics, unusual sound or vibration isolation, or other related issues an acoustical consultant will likely be required. Other specialty consultants might include laboratory, audio/visual, kitchen, etc.

1.7 Payment

A. Payment of A/E’s fees will be made in accordance with the A/E’s Agreement. Requests for these payments are to be submitted on forms furnished by BYU. These forms are also available in electronic format from BYU Facilities Planning.

1.8 Contractor Coordination

A. All communications between the contractor and the A/E design team are to include the Planning and/or Construction Project Managers, depending on the project phase.

B. Preconstruction Services Contractor
1 BYU may choose to bring a contractor into the design process for preconstruction services in order to assist in meeting specific project goals (schedule, cost, specific construction type, etc.). When a contractor is brought on in such situations, coordination with the contractor is essential. The A/E shall work with the contractor as part of the design team and coordinate drawings, specifications, and other information as needed so the contractor can provide input on the cost, constructability, schedule, etc.

2 The A/E shall provide cost estimates for their design work. Having a preconstruction services contractor in the design process does not change this requirement. The independent estimates prepared by the contractor, the A/E, and BYU will be compared with each other to determine a probable cost of a project.

C. Design-Bid-Build Contractor

1 BYU typically obtains competitive bids from an invited list of pre-qualified contractors. The A/E shall prepare drawings and specifications in order to obtain competitive and accurate bids. The A/E shall also perform all coordination during the bidding and construction periods as required.
FACILITY PROGRAMMING
1.0 FACILITY PROGRAM

1.1 General

A. A facility program typically is prepared for all major construction projects to provide a written definition of a project. Depending on the project, the program may be prepared by the A/E in conjunction with BYU personnel or it will be provided to them.

B. A facility program is prepared by an ad hoc Building Committee, composed of individuals assigned by the Planning Project Manager. The committee will likely include designees of the BYU Facilities Planning Department, select people who will use the building, and the A/E, if applicable.

C. The Building Committee is to establish at the beginning of programming a schedule for completion of the facility program. Any revisions necessary require the approval of the Building Committee.

D. Regular meetings will be arranged by the Planning Project Manager as the project requires and as deemed appropriate by the Building Committee. The A/E is responsible to prepare a meeting agenda to distribute three days prior to each meeting. The A/E is to take minutes. Meeting minutes are to be distributed to the Building Committee by email within two business days following the meeting.

E. The Building Committee is to establish specific goals that set the vision for the project.

F. Working with the Planning Project Manager the Building Committee will often work collaboratively with college and university stakeholders on issues of common interest as deemed appropriate. However, the project may be sensitive, and at times involvement of other groups may need to be limited depending on the project and its stage of development. The A/E is only allowed to contact other campus personnel as directed by the Planning Project Manager.

G. For some projects, a trip(s) to other campuses or related facilities may be authorized for the study of buildings of similar function. If a trip is authorized, it will typically be taken before the building program is finalized, but after the general scope of the program is realized. The trip will be made with the A/E, selected BYU personnel, and preconstruction services contractor, if applicable. Reimbursable travel expenses, if not addressed within the A/E Agreement, are to be negotiated previous to the trip. Photographs and notes are to be taken by the A/E at each facility visited and distributed to the Building Committee.

H. A range of programming alternatives should be developed by the design team and analyzed with the Building Committee during the programming process. Program alternatives are to be evaluated based on the project goals, cost and other considerations and risks of each alternative.

I. The programming efforts are to analyze the considerations and risks related to each of the program alternatives. Potential risk reduction strategies should be explored for each identified risk associated with the project. These considerations may include, but are not limited to the following:

1. The pedagogy of the college as it relates to the function of the facility
2. The college or campus unit’s present and future needs including changing work processes and divesting conditions
3. Projected cost
4 Potential site considerations
   a Soil and grading conditions
   b Adjacency to other facilities or site features
   c Impact on historical significance of buildings affected or adjacent
   d Utilities (including impact on any existing building's physical plant and
     infrastructure as well as impact on the campus central plant utilities)
   e Hazardous materials and conditions (existing and those inherent with the project)
   f Impact on parking

5 Life safety and Fire protection. Identify potential exposures to risk of loss of life, property or
   mission interruption.

6 Impact on existing facilities affected physically or by function. In cases of physical impact on
   existing facilities the A/E shall be familiar with the structure and plans of the existing
   facilities. Impacts on existing facilities should also be assessed based on BYU’s
   comprehensive Capital Needs Assessment Reports.

7 Project’s utility needs and system alternatives

8 Project schedule, including design and construction

9 Potential contractor procurement processes

10 Associated demolition of existing facilities

J. The A/E shall establish a cost model for the selected programming alternative that includes all
   foreseeable costs including those associated with the identified project considerations and risks.
   The cost model is to include a contingency appropriate for the project and its stage of design
   development. The cost model should include not-in-contract items that will be associated with the
   project (BYU’s in-house estimator will assist in determining the budget for these costs).

1.2 Facility Program Content

A. Special requirements for each individual project may be required. Specific needs of the project are
   to be established at the beginning of the project with the building committee.

B. The facility program is to include the following, at a minimum:
   Statement of the justification of the project
   Overall statement of vision for the facility
   Specific goals of the project
   Description of the pedagogy of the college and the effects that it has on the design and
   function of the facility and its spaces.

Analysis of the considerations and risks associated with the project

Room-by-room description of facility needs including:
   Recommended room sizes
   Recommended adjacencies
   Furniture/equipment
   Proposed finishes
   Special requirements

Cost Model

Project Schedule (design and construction phases)

Campus Site Analysis – Summary of existing utilities, infrastructure, grading, parking and
other site conditions present at the proposed site(s).
1.3 **Square Footage Guidelines**

A. For the calculation and reporting of gross and net square footages refer to the BYU document titled *Gross Square Footage Guidelines* located at:

   [http://plantwo.byu.edu/space/gsf.pdf](http://plantwo.byu.edu/space/gsf.pdf)

B. **Building Grossing Factors**

   BYU uses a number of standard building grossing factors for establishing space "budgets" which are used for setting initial construction cost budgets. BYU recognizes that some building designs require more public space than do other buildings. Allowances for this public space and additional circulation systems are included in the building grossing factors assigned to projects. BYU charges designers with developing building designs for facilities in which at least 63 percent of the total "gross" area (a 1.59 multiplier applied to the NSF) of the building is "assignable" space as defined by BYU.

   The total efficiency is a weighted average of all the space types in a building. The 63 percent minimum efficiency is the total occupiable area minus interior parking, divided by the total gross space, minus that portion of the gross applicable to interior parking, which is not necessarily an entire floor if there are other functions on it. The gross area includes mechanical and service spaces on mezzanines.

1.4 **Use of the Facility Program during the design phases.**

A. The design team is to obtain and understand the Facility Program at the commencement of the design.

B. In the preparation of plans in all phases of the project--Schematic Design, Design Development and Construction Documents--the A/E is expected to make each room and facility conform reasonably well to the footages listed in the building program. At the end of each phase, deviations from the program requirements must have the approval of the Owner's Representative before continuing the design.

C. Strict compliance with the total gross square footage of the building listed in the program is mandatory.

D. Provide an accounting of the project's net and gross square footages utilizing BYU's guidelines and multipliers

E. See also the requirements listed under each design phase for specific requirements.
DESIGN PHASES
1.0 DESIGN PHASE PROCESS

1.1 General

A. The A/E shall prepare drawings and specifications in accordance with the Facility Program requirements or in consultation with BYU personnel. The following sections explain the expectations for development of the project throughout each design phase (Schematic Design, Design Development, and Construction Documents).

B. The BYU Facility Design Guidelines are to be used in conjunction with the process described hereafter in developing the design and to make sure that design items are submitted at the appropriate time for design and review.

C. At the completion of each design phase, the drawings, specifications, cost estimates, energy analysis reports and other required submittal items will be reviewed as described below.

D. Specific needs of projects, including those with limited scope, may require modifications to design phase requirements. Specific written approval from the Managing Director of Planning is to be obtained for any modifications to the requirements contained herein.

1.2 Schedule

A. The A/E shall prepare a proposed schedule for the design process outlining all phases through start of construction. The schedule is to reflect adequate time for the following:

- Regular design meetings for each design phase.
- BYU plan review, budget review, and approval periods for each phase.
- Campus Planning approval (usually after Schematic Design, see design phase descriptions)
- Reviews by all applicable agencies having jurisdiction (city, state, etc.).
- Bidding period
- Construction duration

B. The schedule is to be discussed in the first design meeting. The A/E shall make any adjustments deemed necessary in the design meeting and shall present the modified schedule for approval. The design progress as it relates to the schedule is to be reviewed as the first agenda item at each meeting throughout design and construction.

C. If a contractor is part of the design team, its input is to be reflected in the timing of bidding, procurement and construction periods.

1.3 Design Meetings

A. Frequent consultation meetings (usually weekly) with BYU personnel and the design team during the design phases are essential. During the Construction Documents phase, meetings may not be required as frequently. Adjustments to the meeting schedule may be made when agreed to by the design team and Planning Project Manager.

B. The A/E shall prepare and distribute an agenda a minimum of three business days prior to each meeting. For longer meetings where participation from separate groups is required at different points, the agenda is to provide estimated durations of each topic and a list of the required attendees.

C. The approved schedule is to be reviewed in each design meeting and any modifications are to be discussed and approved.

D. The A/E shall conduct and take minutes at each meeting. Meeting minutes are to be distributed by email to all attendees within two business days following the meeting. Meeting Minutes are to record attendance, document action items (identifying completion date and responsible party), and document distribution of the meeting minutes. Action items include project related direction given
to any project participant during the meeting or prior to the meeting which may not have been documented.

E. The design team is expected to plan for meetings at the appropriate stages of design for coordination of the mechanical and electrical consultants with the building automation consultant hired by BYU. The meeting schedule should reflect these meetings and allow for enough time to make sure that the consultant is able to attend.

1.4 Design Documentation and Review Software

A. The design process is to be documented in a BYU-specified program, Bluebeam Revu. The A/E and its design team is expected to become familiar with and utilize this software for documentation and coordination throughout design and construction phases.

B. All meeting minutes and plans and other documents used each week are to be posted and kept within a Bluebeam Studio Project which will be set up and administered by the BYU Project Manager.

C. All owner-provided information and files are to be posted by BYU within the project for use by the design team.

D. All design phase review submittals are to be posted within the Bluebeam project.

E. Design reviews will be completed through the use of a Bluebeam Studio Session that will be created by the Planning Project Manager. The Bluebeam session will be used to collect review comments from BYU personnel, consultants and the design team. The design team is expected to provide a response to every comment posted prior to the next submittal.

1.5 Design Phase Plan Reviews

A. Plan reviews are a critical part of the overall design process. The review process has been created to give valuable feedback to the A/E to reduce changes later in the design process or during construction, when changes are more difficult and costly to make.

B. Plan reviews are held at the completion of each phase (Schematic Design, Design Development and Construction Documents). The required documents for the submittal for each phase can be found in the phase descriptions to follow. The plan review submittal will not be considered complete until all listed items are posted to the Bluebeam project. Both plans and specifications, as well as any other items listed for the phase, are to be reviewed.

C. Each member of the A/E design team is expected to verify that its work is complete and coordinated prior to the submittal being turned in. The A/E is expected to appropriately plan so that proper design and coordination is accomplished during all the design phases prior to the submittal. BYU's plan review process is not a substitute for the verification/coordination process required by all parties of the A/E design team.

D. BYU personnel, including designers, engineers, users, maintenance personnel and all persons directly concerned with the project, will review the submittals.

E. A plan review meeting will be held following the receipt of the submittal from the A/E. Plan review meetings are typically held on Thursdays. Plan reviews will typically allow for two-weeks of review time by BYU personnel prior to the meeting - coordinate with the Planning Project Manager to schedule plan reviews. Plan reviews will not be held unless all required items are received at the beginning of the review period.

F. The BYU Facility Design Guidelines contains items that BYU expects to be included in the design of its projects. It also indicates in which phase(s) each item is expected to be addressed in for proper review. The design guidelines checklist shall be used as a tool to ensure completeness of the submittal. It will be used for evaluation of the submittal and will be reviewed in the plan review meeting. The completed Facility Design Guideline file is to be turned in at the time of the document submittal.
G. The A/E, with collaboration from the Planning Project Manager, shall prepare an agenda for the meeting with approximate times and topics, when reasonably known, so attendees may attend for specific topics. The agenda is to be distributed 24-hours in advance of the meeting by the Planning Project Manager to all invited BYU personnel.

H. The plan review meeting is to be conducted by the A/E (Principal-in-Charge).

I. The A/E and all consulting engineers are expected to be involved in the meeting. BYU requires a high level of involvement from all members of the design team.

J. Most comments will be posted to the Bluebeam session during the two-week review period. The A/E shall take notes of all comments received during the plan review meeting. Comments received in the meeting and not made directly in the session are to be recorded in the session and maintained as a record of all comments received. The documents, with all comments will be kept accessible to the design team and BYU personnel.

K. The design team is expected to follow up with and make sure every item recorded is addressed appropriately in the project design. The design team is to mark each item as “completed” when it is addressed and the item is appropriately documented in the construction documents. If the comment is not appropriate as stated in the comment the design team is to provide a response for why it is not able to be accommodated as stated. The Planning Project Manager will be able to assist contacting the reviewer should there be any question as to the intent of the comment. The process of completing each of the items from the plan review is to be completed within one month of the plan review meeting. In no case will a subsequent submittal be accepted if this is not completed.

1.6 Design Phase Budget Reviews

A. At each phase, a budget review meeting is required to review independent estimates prepared by the A/E, BYU’s estimator, and the preconstruction services contractor, if applicable.

B. The three cost estimates are to be prepared independently but using the same set of documents which are submitted for the design phase review. A minimum of two weeks should be given to prepare the cost estimates.

C. In order to keep the three cost estimates consistent the following should be applied to all estimates:

1. Profit, overhead, bonds and insurance – these costs are to be determined as per the contract by the preconstruction services contractor if they are contracted to do the construction or they are to be determined by agreement with the applicable parties.

2. Contingencies – Unless determined otherwise for the specific needs of the project the design and construction contingencies are to be calculated as the following percentages per the applicable phase.

<table>
<thead>
<tr>
<th>Phase</th>
<th>New</th>
<th>Remodel</th>
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</thead>
<tbody>
<tr>
<td>SD</td>
<td>10%</td>
<td>15%</td>
</tr>
<tr>
<td>DD</td>
<td>5%</td>
<td>7%</td>
</tr>
<tr>
<td>CD</td>
<td>0%</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Construction Contingency</th>
<th>SD</th>
<th>DD</th>
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</tr>
<tr>
<td>CD</td>
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<td>3%</td>
</tr>
</tbody>
</table>
D. The budget review meeting may be held in connection with the plan review meeting or at a different time within one week of the plan review meeting.

E. If a project is determined to be over budget following the budget review meeting, design adjustments will be necessary to align the design with the budget. The A/E shall present ideas to the project team to modify the project scope and design to be within budget. The preconstruction services contractor and owner will also participate in determining the cost alignment measures necessary.

F. Approval to continue into the next design phase or into bidding will be made only after the project is determined to be in budget.

G. The A/E is responsible to keep the project in budget and on schedule.

H. BYU will estimate all not-in-contract (NIC) costs independently. NIC items are to be identified in the documents so that all estimating parties are clear on the scope of work to be included in the construction estimate.

1.7 Submittal Documents Format

A. Electronic Files:

Most files submitted electronically are to be PDF, RVT, DWG, and XLS. Verify any other format to be used with the Planning Project Manager.

Documents in digital format may be submitted via Bluebeam Project (project management program), email or other secure means of digital file transfer. Permanent record documents (SD, DD & CD submittals, conformance set, and record drawings) are to be also submitted in physical media format (CD, DVD, flash drive, etc.).

B. BIM models:

Electronic copy of the Revit file (RVT) as required by the BYU publication, Building Information Modeling (BIM) Guidelines and Standards for Architects and Engineers.

Provide summary report from completed clash detection.

Per the Agreement, BYU retains ownership of the BIM model.

C. Plans:

1. Electronic format (PDF)

Individual sheets named with the format “(sheet number)-(sheet title)”. For example: A101-Floor Plan, S201-Level 1 Framing, etc.

Combined file with bookmarks for each page. Bookmarks are to begin with the individual file name of each sheet as described above.

Detail and plan callouts are to be hyperlinked to the referenced drawing/detail.

Files must be searchable PDF and not scanned images of pages.

2. Printed format

Please verify with the Planning Project Manager the number of copies of full and half-sized sets that will be needed. Number of copies may vary by submittal. Contact the Planning Project Manager to obtain information for BYU’s contracted printing company or as noted in the A/E’s Agreement.

The cost of printed drawings will be paid by the owner only when approved by the Planning/Construction Project Manager and printed by the BYU-approved printing company.

3. For early design submittals (SD & DD) the sheet numbers and titles are to reflect the anticipated number and title of the drawing within the completed drawing set.
Titleblocks must be consistent throughout the set and include the following at a minimum:
- BYU logo, project name, building acronym (on existing buildings) and BYU work order number.
- A/E name/logo
- Consultant name/logo (for consultant who prepared the sheet)
- Stamp (space for professional stamp of architect or engineer of record responsible for the sheet)
- Revision summary (location for a revision summary of revisions made to the documents, including alpha-numeric reference for changes and date of revision)
- Title of set (Schematic Design, Bid Set, Conformance Set, etc.) and date of issue
- Sheet number and sheet title

Cover sheet for all submittals must contain:
- Approved BYU project name and BYU work order number.
- Submittal date.
- Name and contact information for key individuals including: BYU Planning and Construction Department, Construction Project Manager, A/E, all consultants.
- Provide space for stamp and signature adjacent to each listed design professional.

Design Criteria
- Occupancy
  - All applicable building codes by name and year issued
- Construction type
- Gross Square Footage by Floor
- Total Gross Square Footage

Project approval lines. Obtain list of individuals who will require an approval line from the Planning Project Manager.
- Sheet Index (if sheet index is too large to fit in its entirety on cover sheet, move entire list to second sheet).
- Campus map with project location

Site plans must include the following information where applicable:
- An appropriate scale
- A north arrow
- Existing land contours with elevations
- Campus coordinates
- Outline of existing buildings
- Location of existing trees
- Outline of existing roads, sidewalks, curbs and gutters
- Slopes and cross slopes (with slope arrows and grade as a percentage) for all hard surfaces
- Location and pertinent data about existing wells, springs, ditches, canals, culverts, water mains, sanitary sewers, storm sewers, gas lines, electrical power lines, both buried and overhead, etc.
- Location of proposed roads, sidewalks, curbs and gutters
- Location of proposed buildings or additions
- Proposed land contours with elevations

Not-in-contract items are to be included in the construction documents (as appropriate for the design phase submittal) and identified as owner-furnished/owner-installed (OFOI) or owner-furnished/contractor-installed (OFCI) so contractor is aware of all the not-in-contract scope of work and can plan on coordinating as necessary.

D. Project Manual / Specifications:
1. Electronic Format (PDF)
   a. Individual section files named with the format "(CSI specification section)-(section title)". For example: “054000-Cold-Formed Metal Framing”.
b Combined file with bookmarks for each section as well as table of contents and division headers. Files may be separated into individual files for the major divisions if size is excessive.

c Files must be searchable PDF and not scanned images of pages.

2 Printed format

a Please verify with the Planning Project Manager the number of copies that will be needed. Number of copies may vary by submittal.

b Contact the Planning Project Manager to obtain information for the owner's contracted printing company or as noted in the A/E's Agreement.

c The cost of printed drawings will be paid by the owner only when approved by the Planning/Construction Project Manager and printed by the BYU-approved printing company.

3 The format of the specifications is to conform to the "Construction Specification Institute (CSI) Manual of Practice," most recent edition.

4 To expedite supervision and inspection, different colors of paper are to be used for division title/index pages and major divisions: orange for division title/index sheets, pink for fire suppression, blue for mechanical, yellow for electrical, green for earthwork/site.

5 Include a general index sheet at the beginning of the project manual listing all specification divisions and sections in the document. Include all CSI divisions in the general index and indicate "not used" for each division that has no applicable sections. Also include an index of sections on the first title/index page of each division.

6 For large projects the project manual may be separated into two volumes. However, do not split major divisions in multiple volumes. Generally, architectural specifications would be in volume one and mechanical, electrical, and civil specifications in volume two.

7 Boiler plate documents (instructions to bidders, general conditions, supplementary conditions, etc.) will be provided by BYU. It will be the A/E’s responsibility to include them in the project manual.

8 Specifications are to be written so that the work for each section may be bid separately by trade.

9 Open specifications with the contractor’s multiple choice are the policy of BYU. This means that the contractor is given three or more manufacturers to choose from, except for BYU-approved proprietary items. All of the listed manufacturers are to be approved by BYU personnel and the architect/engineer. The specifications must indicate that the contractor MUST base its bid on one of the manufacturers. The specified material or methods must be clearly stated (including all technical data, descriptions, manufacturers’ names, catalog numbers, etc.) so that a contractor will have a complete understanding as to what it is required to bid on. The "or equal" or "approved equal" phrases MUST NOT be used, as it is a constant source of contention. BYU personnel will approve the list of multiple-choice items during the Construction Documents plan review. Any exception to the multiple choice rule for listing proprietary items must be approved by BYU personnel.

10 The term "base bid" is understood to include all work contained in the construction documents, excluding any substitutes or alternates. The contractor is expected to bid on only those materials, equipment and methods that are contained in the construction documents.

11 The method for bidding substitutes is included in the BYU's Instructions to Bidders (contact the BYU Construction Department). Approvals of items not listed in the construction documents will be done only by addenda during the bidding period (See Bidding and Construction - Section 1.7 & 1.8). The A/E and the consulting engineers do not have any authorization to approve any materials in any other way.

12 The construction drawings and the project manual/specifications are to correlate together to provide the information necessary for the contractor to know what to bid and how to
properly construct the project. Efforts are to be made to coordinate information between the drawings and specifications and not duplicate specific information.

E. Program Comparison:
1. Provide a square foot comparison showing the Facility Program square footages compared to the designed project square footages of the submittal.
2. Provide a program comparison for each room. Identify each room in a schedule format and include room number and name, program document facility number and name, program net square footage, designed net square footage, and amount over or under the programmed square footage amount. If departmental subtotals are included in the program, include them in the comparison schedule.

F. Cost Estimate:
1. A cost estimate based on area, volume or other unit cost is to be prepared and submitted. The estimate is to be as accurate as feasible with detail enough to match the level of detail of the design phase.
2. Costs are to include items listed on the room description pages of the Facility Program.
3. The A/E’s estimate is to be independent of the estimates prepared by the preconstruction services contractor and the BYU estimate.
4. Include a design contingency appropriate to the design phase and project. Design contingency is to cover changes during the design phases only and therefore should be higher in programming and schematic phases and should be zero at the end of construction documents.
5. The owner will add estimated not-in-contract costs to obtain a total project cost estimate.

2.0 FACILITY DESIGN PRINCIPLES

2.1 General Design
A. Designs are to be aesthetically compatible with the function and importance of the facility, establish an appropriate image, and be consistent in appearance throughout. Designs are to be timeless in nature and avoid trendy or faddish elements.
B. Facilities are to be economically efficient, have a consistent utilization of space, and accommodate the functions to be performed, including the programs of the religious functions of the facility, as applicable.
C. Facilities are to have a reasonable degree of flexibility, permitting reasonably foreseeable changes in future use.
D. Facilities are to be built with quality construction and materials and be designed to last for the life expectancy of the structure.
E. The design must comply with the items contained in the BYU Facility Design Guidelines.
F. Facilities are to relate contextually in specific ways to the site. The design is to consider the outdoor spaces that are created with the building and its context. Elements of the building design are to facilitate landscape features.
G. Facilities are to contribute to the ambiance and beauty of the university campus.
2.2 Energy and Environmental Design

A. Building projects involving heating and/or cooling are to be designed to minimize energy consumption and optimize operating efficiency.

B. It is expected that the architectural design will be influenced by the solar orientation and other energy and environmentally responsible concepts.

C. The A/E’s design team is to present energy saving proposals in the design meetings during conceptual and schematic phase.

D. A computer generated energy simulation model is to be provided that will create a representation of the anticipated energy consumption of the building. This can be done using any energy simulation software allowed by LEED. It is expected that the energy model will be used to help evaluate schematic design schemes and that it will be used as a design tool to help create a high performance architectural design.

E. Arrangement of spaces within the building are to reflect an appropriate relationship between windows and spaces with preferred daylighting and views.

F. BYU values a tight building envelope to prevent energy loss through the building skin and to prevent moisture related damage. All wall and roof types and building envelope details are to be designed such that they include a continuous air barrier, vapor barrier, weather protection and efficient thermal layers. These details are to be reviewed during design meetings. During construction BYU regularly does inspections and tests, such as smoke and pressure tests, on the building envelope.

G. Other environmentally responsible concepts and ideas (recycled, renewable and regional materials, water-wise fixtures, low-emitting materials, etc.) should be considered and discussed during the design process. Items are to be evaluated and discussed based on cost and quality. Any deviation from BYU standards must be specifically approved.

H. See the Facility Design Guidelines for specific requirements.

3.0 PROJECT START-UP

3.1 Facility Program

A. The A/E is to obtain and become familiar with the Facility Program and other related instructions/requirements from BYU (or if involved with programming, obtain approval of the Facility Program and receive written direction to proceed).

3.2 As-built Drawings

A. The A/E is to obtain any applicable record (as-built) drawings from BYU and familiarize itself with the existing conditions. Field verification will be expected where possible to ensure the accuracy of the documents. Do not rely solely on as-built drawings for existing conditions. Any destructive field verification which may be required must be approved by the Planning Project Manager.

3.3 Site Information and Verification

A. BYU will provide a site survey showing elevations, contours, property lines, streets, easements, etc., together with pertinent data on all existing utilities including water, sewer, electricity, gas, etc. The A/E is to coordinate with BYU regarding the extents of the survey to include all of the information that is anticipated to be necessary for the completion of the design of the project.
B. If it is determined that geotechnical investigations are advisable, the A/E will provide the BYU civil engineer with a site layout plan. It will be the owner’s responsibility to order and pay for the borings or test pits and subsequent mechanical, chemical or other tests.

C. After receiving the Facility Program and reviewing the as-built drawings the A/E shall visit the site with the Planning Project Manager and other BYU personnel in order to become familiar with all governing site conditions.

4.0 SCHEMATIC DESIGN PHASE

4.1 Project Design
A. In order to develop the most functional schematic plan, the A/E will typically develop several divergent conceptual design solutions to review with BYU personnel.

B. In working closely together through the schematic design phase, the A/E and BYU personnel will select one design scheme which is determined to be the most appropriate for the project.

4.2 Engineering systems
A. During schematic design the A/E design team is expected to evaluate possible structural, mechanical and electrical systems for the proposed building and discuss with BYU personnel. This analysis may be used as one evaluation method in selecting the appropriate design scheme.

4.3 Furniture Coordination
A. Spaces are to consider the furniture that will be used in each of the spaces to make sure that dimensions of the rooms are appropriate. Coordinate with the Planning Project Manager and the BYU Interiors representative assigned to the project. Typical layouts are to be developed during this time.

4.4 Room Numbering
A. When the project design is nearing completion of the schematic design submit the plans to BYU to develop the room numbers. The A/E shall submit plans with enough time to get numbers back from BYU (5 business days) and to incorporate into the plans prior to the Schematic Design Submittal. All submitted plans, schedules, etc. for the Schematic Design Submittal are to have the BYU numbering incorporated. Door numbering methodology will also be defined by BYU.

B. It is anticipated that some revisions will be made to the plans in later design stages which will require modification of some room and door numbering. All such revisions will need to be coordinated with BYU.

4.5 Schematic Design Submittal
A. Submission will not be considered complete until the following is completed and submitted to the Planning Project Manager.

B. Presentation Drawings and Images
   1  A set of presentation drawings, including site plans, floor plans, elevations and critical sections are to be submitted to the Planning Project Manager in electronic format (PDF).
   2  For most projects a colored perspective rendering or a model will be required. The A/E should discuss this requirement with the Planning Project Manager. If required, this is to be submitted with the schematic design submittal.

C. Electronic copy of the BIM model and the clash detection report.
D. Schematic Plans

1. As a minimum the schematic design submittal must include the following (additional requirements may be required per the BYU Facility Design Guidelines):
   a. Code review summary for occupancy, building size, construction type, etc.
   b. Demolition Plans (site and/or building), if applicable
   c. Site Plan: A site plan showing the general shape of the proposed building and location of adjacent buildings, streets, sidewalks, parking lots, utilities, etc. Utility tie-in locations must be indicated. Questions regarding site issues and survey information are to be directed to the BYU Civil Engineer.
   d. Floor Plan Drawings: Floor plan drawings in accordance with the program requirements, including room names and BYU room numbers for reference.
   e. Elevations and Sections: Schematic elevations and sections sufficient to indicate the scope of size, shape, volume, and materials.
   f. Exterior wall and roof types: Show all exterior wall and roof types comprising the building envelope. Indicate materials, thicknesses, R-values, location of air/vapor barriers, etc.
   g. Structural: Structural drawings showing gravity and lateral load resisting structural systems, allowable floor and roof loads, approximate main framing member sizes and design criteria for wind and seismic design.
   h. Mechanical: Basic mechanical plans with information on equipment types, zoning, methodologies, redundancy measures, etc. Identify location of mechanical spaces and mechanical chases on plans.
   i. Plumbing: Identify main pipe chases and approximate sizes and connections to site utilities.
   j. Electrical: One-line Schematic. Rough lighting counts, fixture types and lighting design levels for all spaces. Identify location of electrical spaces and panels on plan. Identify OIT spaces on plans.

E. Narrative Specifications

A narrative (organized by CSI sections) which identifies, in broad scope, civil, architectural, structural, mechanical and electrical requirements. Product types and any special requirements are to be indicated so that the cost estimates may be completed accurately for the types of materials/systems that are to be used.

F. Program Comparison comparing square footages and major attributes

G. Cost Estimate (turned in later for the budget review meeting)

H. BYU Facility Design Guidelines Checklist

Provide a completed checklist spreadsheet with all the items required for the Schematic Design properly addressed. Provide in XLS and PDF format. Explain any deviations from the guidelines as required in the appropriate location.


J. Project Schedule (design and construction phases)

4.6 Schematic Design Reviews

A. BYU Design Phase Plan Review: The review process is to be followed as outlined previously.

B. Budget Review: The Design Phase Budget Review is to follow the process outlined previously.

C. Governing Agencies: The Planning Project Manager, and possibly other BYU representatives are to be involved in all meetings with governing agencies. Discussion with any governing agencies are to unofficial and documents are not to be given to the governing agency at this point. Some projects
may be considered confidential at this stage and therefore approval by BYU administration, through the Planning Project Manager, is required before any discussions or appointments are made.

D. **BYU Campus Planning:** Following BYU Schematic Design plan review the project design is to be submitted to BYU Campus Planning for approval.

1. If changes to the exterior are required as per the review process, the changes are to be made by the A/E and approved by the BYU personnel prior to submitting to Campus Planning.

2. Coordinate with Planning Project Manager the required drawings/images to be submitted.

3. If significant changes to the exterior are created through the design development stage, the design will likely need to go to Campus Planning for approval of the changes.

### 5.0 DESIGN DEVELOPMENT PHASE

#### 5.1 Project Design

A. Following Schematic Design reviews and upon BYU personnel’s satisfaction with the documents, the A/E will be given written approval from Planning Project Manager to proceed with Design Development.

B. The project design is to continue to be developed according to the approved schematic documents and comments from Schematic Design Reviews, the facility program, *BYU Facility Design Guidelines*, and input provided in the regular project meetings.

#### 5.2 Interior Design and OIT Coordination

A. Following the Schematic Design reviews, the assigned BYU interior will prepare a furnishings plan. Once approved the furnishings plan will be submitted to the A/E for incorporation into its work. The BYU interior designer will coordinate with the applicable systems furniture vendors.

B. The approved furnishings plan will also be given to the BYU Office of Information Technology for them to plan the locations of telephone and data outlets. The A/E is to provide an electronic copy of the building floor plans to be used for this purpose. The OIT layout and furnishings plan will be submitted to the architect and electrical engineer for coordination and incorporation into their plans prior to the plan review submission. A/E is to work with BYU in determining the timing appropriate for the project.

C. A color board showing all visible finishes is to be prepared and presented to the BYU personnel for approval. Some finishes will be limited to BYU standards – coordinate with BYU interior designer before selecting materials to assure that selections meet the standards and appropriately coordinate. All finishes shall be reviewed and approved with the Planning Project Manager and the BYU interior designer prior to showing to the BYU user groups. Typically multiple color schemes are created from which the final scheme may be selected.

#### 5.3 Engineering Coordination

A. Electrical: Following approval of the light fixtures supplied as part of the SD submittal provide a lighting layout and photometric plan. Coordinate this with the BYU Electrical Engineer to develop and approve this plan during this phase.

B. Building Automation Controls. The BYU-contracted Building Automation Controls consultant will review the schematic design documents during the review period. During design development this consultant is to be invited to project design meetings to coordinate with the design team’s electrical and mechanical engineers to determine the most appropriate building automation controls design for the project.
5.4 **Design Development Submittal**

A. Submission will not be considered complete until the following is completed and submitted to the Planning Project Manager.

B. Presentation Drawings and Images: Submit an updated set of presentation drawings and images if changes have been made since schematic submittal.

C. Electronic copy of BIM model and the clash detection report.

D. Design Development Plans

1. Drawings must incorporate responses from the Schematic Design review comments as well as reflect design refinements made during the design development phase.

2. The submitted drawings are to include all the drawings to date and reflect all the items discussed and agreed to in the design meetings. They are to be an accurate reflection of all the design to that point. As a minimum the submittal is to include the following (additional requirements may be required per the BYU Facility Design Guidelines):
   
   a. All of the drawings required in schematic with additional refinement from design development.
   
   b. Completed code review summary, including exiting plans, egress components, fixture counts, etc.
   
   c. Detailed wall sections and envelope transition details (head and base of walls, material transitions, joints, etc.) in order to assess the design of the building envelope.
   
   d. Completed finish schedule.
   
   e. Structural, mechanical and electrical drawings. See also the BYU Facility Design Guidelines for specific requirements that will need to be shown at the DD level.
   
   f. Structural: General structural notes; footing & foundation plans with all wall sizes and reinforcing shown; framing plans with all sizes shown; typical foundation and framing details; structural schedules; tunnel plans (if applicable).
   
   g. Mechanical: Mechanical demolition plans; HVAC plans with duct sizes; Building Automation Controls plans, Smoke Evacuation plans (if applicable); snowmelt plans (if applicable).
   
   h. Plumbing: Demolition plans; plumbing plans; hydrology model; domestic water flow diagram.
   
   i. Electrical: One-line diagram; lighting plans showing layouts, switching, dimmable lighting conditions and controls; photometric plans; power plans including power and data outlets; OIT AV control station locations; special power requirements (voltage, phase, etc.); security and CCTV system plans; communications plans.
   
   j. Fire Suppression: Layout drawings (showing pipe sizing, system types, and capacity requirements), flow model calculations.
   
   k. Fire Alarm: plans showing device placement, panel location, emergency power coordination.
   
   l. Wiring Diagrams and furnishings plans for the Office of Information Technology (OIT) requirements.

E. **Outline Specifications**

   The specifications are to describe the general type of material and equipment for each trade classification. Provide the warranty specifications and the name of three products and manufacturers that meet the design criteria.

F. **Program Comparison**

G. **Cost Estimate** (turned in later for the budget review meeting)
H. **BYU Facility Design Guidelines Checklist**
   
   Provide a completed checklist spreadsheet with all the items required for the Design Development phase properly addressed. Provide in XLS and PDF format. Explain any deviations from the guidelines as required, in the appropriate location.

I. **Energy Model summary report**
   
   A complete energy model which incorporates building envelope information from the building's architectural design as well as the mechanical and electrical systems.

J. **Project Schedule (design and construction phases)**

5.5 **Design Development Reviews**

   A. **BYU Design Phase Plan Review:** The review process is to be followed as outlined earlier in the “Design Phase Process” section.

   B. **Budget Review:** The Design Phase Budget Review is to follow the process outlined previously.

   C. **Governing Agencies:** The Planning Project Manager, and possibly other BYU representatives are to be involved in all meetings with governing agencies. Discussion with any governing agencies are to be unofficial and documents are not to be given to the governing agency at this point. Some projects may be considered confidential at this stage and therefore approval by BYU administration, through the Planning Project Manager, is required before any discussions or appointments are made.

   D. **BYU Campus Planning:**
      1. If significant changes to the exterior are made during the design development stage, the design will likely need to go to Campus Planning for approval of the changes.
      2. Coordinate with Planning Project Manager the required drawings/images to be resubmitted.

6.0 **CONSTRUCTION DOCUMENTS PHASE**

6.1 **Project Design**

   A. Following Design Development Review and upon the BYU personnel’s satisfaction with the documents, the A/E will be given written approval to proceed with the Construction Documents phase.

   B. The project design is to continue to be developed according to the approved design development documents and comments from Design Development Reviews, the facility program, *BYU Facility Design Guidelines*, and input provided in the regular project meetings.

6.2 **City Planning Approval**

   A. **Provo City:** Following Design Development reviews and BYU Campus Planning approval, completed site drawings need to be prepared and submitted to the Coordinators Review Committee (CRC) for Provo City administrators’ approval of the project. The CRC may determine that a project will need to obtain approval of a specific project with the Provo City Planning Commission and/or City Council. It is recommended to obtain this approval as soon as possible to avoid unnecessary delays of the project.

   B. **Other Jurisdictions:** For projects outside of Provo the A/E is to coordinate with the agencies having jurisdiction to determine the necessary planning or other approvals that will be required.
C. The A/E is to coordinate all submittals with applicable governing agencies with the Planning Project Manager. BYU will pay for all applicable fees that are part of the plan review process with all governing agencies.

6.3 **Construction Documents Submittal**

A. Submission will not be considered complete until the following is completed and submitted to the Planning Project Manager.

B. Verify the building's permanent name with BYU. The building's permanent name is to be used on all construction documents (drawings, specifications, etc.)

C. Presentation Drawings and Images: Submit an updated set of presentation drawings and images if changes have been made since previous approvals. No changes to the exterior should be made during the construction documents phase and very little or no change to the interior.

D. Electronic copy of BIM model and the clash detection report.

E. Construction Document Plans

1. Drawings incorporating all responses from the previous design reviews and items discussed in project meetings.

2. The submitted documents are to be considered 100% complete by the A/E design team and are to include all the drawings required to obtain competitive and accurate bids and for the construction of the project. Each drawing sheet should have been reviewed and coordinated by each design team member prior to submittal to BYU.

3. In addition to the required documents for construction, all not-in-contract (NIC) items are to be included in the set. A table of all NIC items shall be included in the set (See Facility Design Guidelines). Individual items or equipment that are NIC items may simply be noted as such in the notes on the plan. Reference sheets for NIC items may be required per the project requirements. These sheets are to clearly identify NIC items and must clearly state on the sheet, “THIS SHEET IS FOR REFERENCE ONLY – WORK SHOWN HEREIN IS NOT IN CONTRACT”. The reference sheets may include:
   - Landscape development plans
   - Equipment plans
   - Furnishings
   - OIT required drawings

4. Drawings are to include a design for a building mock-up.
   - Exterior mock-ups are to include all elements of the substrate (structure, sheathing, thermal, moisture and air/vapor barriers) and all major exterior elements and conditions (brick, windows, architectural panels, etc.) as well as foundation and roofing transitions. The exterior mock-up is to also include at least one corner condition. Exterior mock-ups will be subject to envelope testing. See Facility Design Guidelines.

5. Interior mock-up walls may also be required depending on project needs.
   - All mock-ups and associated testing must be defined in the construction documents.

F. Complete Specifications

   The specifications are to describe the general type and quality of material and equipment for each trade classification. The specifications are to be written in Construction Specifications Institute's (CSI) complete three-part format with decisions made and coordinated. All specification sections are to follow CSI’s format and numbering.

G. Program Comparison

H. Cost Estimate (turned in later for the budget review meeting)
I. BYU Facility Design Guidelines Checklist

Provide a completed checklist spreadsheet with all the items required for the Construction Documents phase properly addressed. Provide in XLS and PDF format. Explain any deviations from the guidelines as required, in the appropriate location.

J. Energy Model summary report

If revisions have been made to the architectural design or design of the building systems which would affect the energy performance of the project, a revised summary report must be submitted.

6.4 Construction Documents Review

A. BYU Design Phase Plan Review: The review process is to be followed as outlined earlier in the “Design Phase Process” section.

B. Budget Review: The Design Phase Budget Review is to follow the process outlined previously.

C. Governing Agencies: The Planning Project Manager, and possibly other BYU representatives are to be involved in all meetings with governing agencies. After all review comments have been addressed the completed construction documents (same as bid documents) are to be signed by the appropriate BYU representatives and submitted to the jurisdictions having authority over the project. The Planning Project Manager will coordinate the completion of the permit application to be submitted.
1.0 BIDDING AND CONSTRUCTION COMMUNICATION

1.1 BYU Planning and Construction Project Managers Roles

A. The role of the primary point of contact switches when a project shifts from design phase to bidding and construction to the Construction Project Manager. The Planning Project Manager who was the primary point of contact during design will continue to be involved in a supporting role to the Construction Project Manager.

B. Communications during the bidding and construction phases are to include both the Planning Project Manager and Construction Project Manager.

C. The Planning Project Manager is to be involved in reviewing and coordinating all changes to the construction documents. As such the Planning Project Manager will be highly involved with any addenda, Job Instruction, or Change Order. The Construction Project Manager, as the point of contact, will aid in the coordination of these and all construction related directives.

D. The Construction Project Manager will be the primary point of contact with the contractor(s) and is to be included in all correspondence between the contractor and any BYU personnel, including the trade shops.

E. No directions are to be given to the A/E or contractor by BYU planning personnel or trade shops without the involvement of the Construction Project Manager.

2.0 BIDDING

2.1 Bidding Documents

A. The A/E shall coordinate with the Construction Project Manager and preconstruction services contractor, if applicable, for when to issue the construction documents (drawings and specifications) for bidding.

B. Obtain Instructions to Bidders and other boiler plate documents to include in the specifications from the Planning Project Manager.

C. Construction documents issued for bidding must include:

1. Revisions from the BYU design phase plan review process.
2. Revisions from budget alignment (value engineering) meetings prior to bidding.
3. Revisions from the city or governing agency reviews, if available at time of bidding.
4. Bid breakdown forms for mechanical and electrical items (coordinate with Planning Project Manager).

2.2 Bidding Procedure

A. Information about the BYU bidding procedure is contained in the Instructions to Bidders (contact the BYU Director of Construction).

2.3 Bidders List

A. BYU will create an approved contractor bidders list. All correspondence distributed to contractors (pre-bid meeting minutes, responses to questions, addenda, etc.) are to be distributed to all companies on the list through the BYU Construction Project Manager.
2.4 Pre-bid Meeting
A. The A/E is to attend the pre-bid meeting with the bidders and BYU personnel. The meeting will be scheduled and conducted by the Construction Project Manager. The purpose of this meeting is to review the project including the schedule and answer any questions the bidders may have.
B. Printed drawings and specifications may need to be prepared for distribution to contractors. Coordinate with Construction Project Manager.

2.5 Distribution of Plans and Specifications
A. Electronic format (PDF)
   1. Drawings:
      a. Combined file with bookmarks for each page. Bookmarks are to begin with the individual sheet number followed by the sheet title. For example: “A101-Floor Plan”, “S201-Level 1 Framing”, etc.
      b. Detail callouts throughout the drawings are to be hyperlinked to link the user directly to the location of the detail callout.
   2. Specifications:
      a. Combined file with bookmarks for each section as well as table of contents and division headers. Each bookmark is to be named with the format “(CSI specification section)-(section title)”. For example: “054000-Cold-Formed Metal Framing”. Files may be separated into individual files for the major divisions if size is excessive
   3. Coordinate with the Construction Project Manager the distribution of the drawings and specifications. Unless approved otherwise this is typically done through Bluebeam. The A/E however should not post this and notify the Contractor(s) directly. Once posted the A/E shall notify the Construction Project Manager who will prepare a transmittal form and post the drawings in Bluebeam and notify the Contractor(s) through an email with a link to download the documents.
B. Printed format
   1. The A/E will coordinate, through the owner’s contracted printing company, the printing of plans and specifications and delivery to BYU Facilities. Coordinate with the Construction Project Manager the number of printed plans and specifications.

2.6 Questions/Clarifications
A. During the bidding period the A/E is to be the point of contact for all questions from bidding contractors and subcontractors. Questions from contractors are to be made in writing to the A/E.
B. The A/E shall coordinate all responses with its design team Planning Project Manager and the Construction Project Manager and respond in a timely manner. All responses must be sent to the Construction Project Manager and Planning Project Manager to review. The Construction Project Manager will distribute to the bidding contractors. The A/E shall not provide responses directly to any contractor and all responses are to be distributed in an addendum by the Director of Construction and the BYU Construction Department.
C. All responses that require changes to the construction documents are to be made in writing and distributed to all contractors in an addendum. Both the Planning Project Manager and the Construction Project Managers are to be involved in the addendum.

2.7 Addenda.
A. During the bidding period, any and all additional instructions, clarifications, interpretations or modifications to the construction documents are to be made by written addenda prepared by the A/E, and/or the Construction Project Manager. The changes are to be reviewed and approved by
the Construction Project Manager, Planning Project Manager and the Director of Construction, following which will be signed by the BYU Owner’s Representative.

B. All addenda are to utilize the BYU addenda form as the cover page that summarizes all revisions to the documents and identifies what sheets are affected. Typically the addenda will be prepared and issued electronically.

C. Drawing sheets that are modified by the addenda item are to have the full-size revised sheet(s) attached to the addenda. All changes to the drawings are to be clouded and marked with a revision triangle. All revisions are to also be indicated on the sheet’s titleblock in the revision summary with the corresponding character and revision date. Revision clouds from previous addenda may be removed for clarity in showing revisions from the addenda being issued. However, previous revision triangles and callouts are not to be removed from the drawing or the titleblock. Revision triangles and callouts are to remain throughout the duration of the project as a record of the changes that have been made to the drawings.

D. Attach all revised specification sheets to the addenda with the changes clearly identified. Show deleted items with a strike-through and show all additions in bold.

E. All addenda are to be distributed to the bidders by the BYU Construction Department.

F. No one is authorized to make any clarifications, interpretations, modifications or give any instructions to the bidders during the bidding period except by written addenda as described above.

G. If governing agency reviews are completed during bidding and revisions are required to the construction documents they are to be issued in an addendum.

2.8 Substitutions

A. The A/E is to work with the Construction Project Manager to review any requests by the contractors for substitutions of products and materials that are not included in the specifications. The process for requests for substitution as outlined in the BYU Instructions to Bidders, and included in the specifications, must be followed. Any substitution determined appropriate for the project must be approved and distributed as part of an addendum.

2.9 Bid Opening and Review

A. The A/E shall attend the bid opening and will work with BYU personnel to review the bids and the list of subcontractors.

2.10 Budget Alignment Meeting (Value Engineering)

A. If the bids are not within budget the project may require a budget alignment meeting. The A/E shall work with the design team, BYU personnel, and contractor to determine possible solutions to align the project with the budget ("value-engineering"). The A/E shall conduct the budget alignment meeting with the design team, contractor and BYU personnel in which possible solutions are presented and discussed. The possible solutions are to be presented with a discussion on the difference in scope or quality along with the potential cost savings and schedule impacts. The group is to determine which items are to be implemented which are in the best interest of the university and align the project with the budget.

B. Following decisions on which budget alignment solutions are accepted, the A/E shall prepare a summary of all revisions and indicate the construction document sheets and specification sections which are affected. The A/E shall make all corrections to the construction documents and specifications as necessary to document all the solutions selected. Drawing revisions are to be clouded and marked with revision triangles and specification revisions indicated in a post-bid addendum. The summary of revisions shall be signed by the A/E, the Contractor and the BYU Owner’s Representative.
2.11 No Conformance Set
A. BYU does not like to have conformance sets printed due to the possibility of missing and/or conflicting information. Unless deemed necessary by exceptional circumstances no conformance sets are to be produced.

3.0 CONSTRUCTION

3.1 Architect/Engineer's Agreement
A. The A/E shall coordinate its services with the Construction Project Manager during the construction stage of the project. All conditions of the A/E’s agreement must be complied with.

3.2 Communications
A. All communication must include the Construction Project Manager.
B. The A/E design team shall not give instructions directly to subcontractors. All instructions are to be directed through the prime contractor. All communications between A/E team and consultants (on-site, over the phone or via email) must include the prime contractor.

3.3 Construction Project Management Software
A. The A/E and its consultants are expected to utilize Bluebeam Studio for all project documentation and communication between the design team, the contractor and BYU. It will be used to help track RFI's, JI's and Change Orders, submittals, meeting minutes, observation reports, etc. The Construction Project Manager will set up the Bluebeam Project for use throughout construction. The Construction Project Manager may help with brief training to help the design team understand protocols for using the software if necessary. Email will be used in conjunction with the Bluebeam Project for notifications and other correspondence.

3.4 Pre-construction Meetings
A. The A/E is to attend pre-construction meetings with the contractor and subcontractors as required and outlined in the construction documents.

3.5 Weekly Construction Coordination Meetings
A. The A/E is expected to attend and conduct the weekly construction coordination meetings with the contractor and BYU personnel. The meetings are to review the current overall project schedule, a projected 3-week schedule of activities, and ongoing and new items of discussion. The contractor is expected to provide the schedule updates at each meeting. Submittals, RFI's, Job Instructions, and Change Orders are to be maintained current within the applicable folders within Bluebeam and reviewed at each meeting.
B. The A/E is responsible to take minutes and distribute them by email to the project team and attendees within two business days of the meeting. The minutes are to include all ongoing and new items of discussion, with each item indicating the date of discussion, who has responsibility for action and the due date. Meeting minutes may also contain observation reports by the A/E. Minutes are to be posted to Bluebeam and a notification sent out via email notifying the project team members when it is posted.

3.6 Job Site Visits
A. The A/E is to visit the job site weekly and observe the construction. This is usually to occur in conjunction with the weekly Construction Coordination Meetings so the job site can be walked along with the BYU personnel and contractor. The A/E is to write field reports itemizing its
observations and submit them to the Construction Project Manager and the Contractor. Specific items noted in the field reports which require correction are to be emphasized in the reports. When pictures are included, an adequate description of the location and the reason for each picture should be given.

B. The A/E is to also coordinate job site visits by its consultants during construction phases when work within their discipline is being performed. The A/E shall obtain, review and distribute field reports from its consultants following each visit to the site.

3.7 Contractor Redline Drawing Set
A. The contractor is expected to provide and keep up-to-date a complete redline set of prints which are corrected daily to show changes from the original drawings and specifications. This set of drawings is to be kept on the work site. The location, size and kind of equipment, runs of all pipes, etc. should be recorded. Redline drawings are to be reviewed monthly by the A/E to confirm that they are being kept up to date. The A/E shall also verify that consultants are doing the same.

3.8 Shop Drawings and Submittals
A. The A/E design team and BYU personnel will review all shop drawings and submittals for conformance to construction documents. The submittals are to be posted by the contractor within Bluebeam. Any reviews by BYU personnel are made as a courtesy review and all comments are to be reviewed by the A/E. The Construction Project Manager will stamp the submittal indicating that BYU has completed its review and has made all comments or that BYU will not be performing a review so the A/E will know that BYU reviews are complete and the submittal review finalized. After the submittals have been reviewed by the A/E, the appropriate consultants, and BYU personnel the A/E shall post the submittals with all corrections noted and stamped “Reviewed”, “No Exception Taken”, “Make Corrections Noted”, “Revise and resubmit”, etc. to the appropriate folder and send out a notification to the contractor and BYU personnel.

B. Submittals are to be reviewed and returned to the contractor timely and within ten business days of receipt.

3.9 Requests for Information (RFI)
A. The A/E shall provide a timely response to RFI’s submitted by the contractor. Turnaround time should be as soon as possible or within five business days.

B. Changes in scope of the construction documents are not to be made in a response to an RFI.

C. RFI’s that require changes to the construction documents are to be followed up by a Job Instruction (JI). If an RFI requires a JI, the response is to indicate that the question is answered in the JI. The JI is to be attached wherever possible.

3.10 Job Instructions (JI)
A. Job Instructions are used to transmit information on potential changes to the work called out in the construction documents and request associated pricing and scheduling impacts. The JI may be issued if the A/E team deems necessary, if an RFI requires modifications to the construction documents, or at the request of the owner.

B. The A/E is responsible to write the JI and shall include all information necessary for the contractor to verify the associated cost and schedule impacts (including details, sketches, plan revisions, etc.). Job Instructions are mandatory for any revisions to the work described in the construction documents, with or without associated modifications to cost or schedule. BYU reserves the right to write and execute a JI if it is deemed necessary or prudent.

C. All required modifications associated with the potential change are to be addressed in the JI. Each JI is to address one unique condition as much as is reasonable. Multiple independent items are not to be lumped together in the same JI.
D. Job Instructions are to be completed on the BYU-provided JI form. JI's are to be numbered consecutively for each project, beginning with number 001. If revisions are required after the JI is issued, the revised JI is to be issued with the original JI number followed by -R1, -R2 etc.

E. Each job instruction is to be reviewed and signed by the appropriate BYU personnel and signed by the A/E. The BYU Construction Project Manager will distribute to the Contractor.

F. Each JI item must include a summary of the changes on the JI form. Each item is to indicate the attribution of the revision (unforeseen conditions, design team error and omission, or owner request) along with a well described statement of the reason. Revised drawings and/or specifications or more detailed description of the changes may be attached as necessary.

G. The contractor will return the JI, with the contractor’s signature, accompanied by information outlining the necessary associated cost or schedule modifications. If additional information is required or the contractor determines that additional work not addressed in the JI is necessary, the A/E shall work with the contractor to provide the appropriate direction. Revisions to the JI may be issued as defined above. The Construction Project Manager will distribute the signed JI.

H. A job instruction is not an approval to proceed with changes. Only change orders are approvals to proceed.

I. Drawing sheets that are modified by the JI are to have the full-size revised sheet(s) reissued with the JI, in digital format. All changes to the drawings are to be clouded and marked with a revision triangle. All revisions are to also be indicated on the sheet’s titleblock in the revision summary with the corresponding revision number, JI number, and date. Revision clouds from previous revisions may be removed for clarity in showing revisions pertaining to the job instruction being issued. However, previous revision triangles and callouts are not to be removed from the drawing or the titleblock. Revision triangles and callouts are to remain throughout the duration of the project as a record of the changes that have been made to the drawings. The drawing changes will be made as part of the JI but will not officially become a revision to the drawings until it is completed as part of a subsequent change order.

3.11 Change Orders

A. Change orders are used to authorize changes to the construction documents or the contract amount. The Construction Project Manager is responsible to write change orders. The A/E shall provide revisions to the construction documents as required.

B. The A/E shall sign the change order after thorough review along with the appropriate BYU personnel and the Construction Project Manager will distribute to the contractor. The A/E is to sign the change order before BYU and the contractor showing agreement with the scope of the work and the associated costs and schedule impacts.

C. Change orders may be issued for one of the following circumstances:

1. Following a JI for which the cost and/or schedule impacts (as outlined by the contractor with the JI response) are deemed appropriate and the changes are in the best interest of the owner.

2. Following a request by the contractor to adjust the contract amount or schedule due to unexpected cost and/or schedule impacts caused by unforeseen conditions or circumstances.

3. To return unused portions of owner or contractor contingencies.

D. All changes to the scope of work defined in the construction documents, with or without cost/schedule impacts, must be issued as a change order.

E. Each change order shall include a summary of the changes. Each item is to also indicate the attribution of the revision (unforeseen conditions, design team error and omission, or owner
request) along with a well described statement of the reason. Revised drawings and/or specifications from the applicable job instruction are to be attached.

3.12 **Substitution of Materials During Construction**

A. The A/E shall not authorize a change of material independently, without BYU's approval. Authorized changes must be described in a job instruction or change order and approved by the Construction Project Manager and applicable BYU personnel.

3.13 **Contractor's Application and Certificate for Payments**

A. The A/E shall review the Application and Certificate for Payments submitted by the Contractor and deliver with the certified amount indicated and A/E signature to the Construction Project Manager to process payment. The A/E shall review the completion percentages with each payment application and verify that amounts requested for all trades are appropriate to the best of its knowledge. Following receipt of the payment application signed by the A/E, BYU will make payment upon approval.

3.14 **Mock-Ups and Color Approvals**

A. The A/E shall give approval of the mock-up(s) when the construction, colors and finishes are completed satisfactorily. Final approval must also be obtained from the Construction Project Manager. The A/E shall prepare a response as with a submittal to be signed by the A/E and BYU's Construction Project Manager, Managing Director of Facilities Planning.

3.15 **Project Review and Approvals (Punchlisting)**

A. The A/E with the involvement of its consultants are to perform a detailed review of the work at completion milestones on projects.

B. At a minimum these project reviews are to be done at the following completion milestones.

1. Above Ceiling: Above ceiling installations are to be punchlisted and repaired as necessary, then back punched prior to ceiling install.

2. Building envelope testing

3. Substantial Completion

C. Depending on the size of the project, the building may be broken up into smaller areas to allow for completed areas to be reviewed and “punched” ahead of incomplete areas. This may include building exterior, site, and by floors or areas as appropriate for the project and as agreed to by the Construction Project Manager, the A/E and contractor.

D. The A/E shall coordinate its field reviews, as well as those by its consulting engineers, with the contractor and the Construction Project Manager.

E. The contractor is expected to have completed its own “punch-list” of items for each completion milestone and have all items corrected prior to project review by the A/E, its consulting engineers and BYU personnel.

F. The A/E shall generate a “punch-list” of items needing correction. The A/E shall obtain all the lists from its consultants and BYU personnel to include in the “punch-list” given to the contractor. The combined “punch-list” is to have a space by each item for the contractor to initial and date when each task is completed or, if completed digitally, some other means for the contractor to sign off and date each item as they are completed.

G. After the contractor has signed-off and completed all the items on the “punch-list”, the A/E is expected to follow up and verify the work has been completed satisfactorily. The A/E design team, the Construction Project Manager and BYU personnel will give approval of final completion.
4.0 PROJECT COMPLETION

4.1 Substantial Completion

A. Following the substantial completion project review, unless the work is rejected, the A/E shall execute a Certificate of Substantial Completion. The certificate is to be signed by the A/E, Construction Project Manager and the contractor. After the substantial completion review, the A/E will furnish a final “punch-list” of items to be corrected. The A/E, Construction Project Manager and contractor will decide how much time is to be allowed for completion of the items and determine the appropriate dollar amount associated with the remaining work.

4.2 Record Drawings and O&M Manuals

A. Upon completion of the work, the record drawings are to be submitted to the A/E by the contractor. The A/E design team shall then make modifications to the original drawings to reflect the as-built conditions.

B. Within 90-days of the completion of the project and prior to final payment to the A/E, the A/E shall deliver completed record drawings with a letter of transmittal to the Construction Project Manager. This is to include the following:

1. An electronic copy of all drawings in searchable PDF format following file naming format previously described (4 copies of CD/DVD/flash drive).

2. Autodesk Revit (buildings) and AutoCAD DWG (site only), both in latest versions of the software, as specified in the Building Information Modeling (BIM) Guidelines and Standards for Architects and Engineers (2 copies of CD/DVD/flash drive).

3. A searchable PDF copy of the project specification following file naming format previously described (4 copies of CD/DVD/flash drive).

4. Printed copies of the complete as-built drawings and specifications.
   a. 1 full-size drawing set (loose sheets)
   b. 1 set of specifications

C. The A/E and its consultants shall review the Operation and Maintenance (O&M) manuals which are submitted to them from the contractor. They shall verify completeness of the items submitted per the specifications. Upon review and approval the O&M manuals are to be submitted to the Construction Project Manager.