Chapter 2 - DESIGN PHASES

201 - DESIGN PHASES

A. The CSU Project Manager is responsible for determining requirements for subphase submittals and quantities of physical deliverables. The Design Consultant’s Contract will usually indicate the required design phase submittals. If not, the Design Consultant shall provide:

1. Programming (if required by the contract)

2. Preliminary Design Analysis Report, which continues as a component of all design phases.

3. Schematic Design

4. Design Development (if indicated by the contract, may be combined with Schematic Design)

5. Contract Documents (subphase submittals determined by CSU Project Manager and contract)
   a. 30% submittal
   b. 60% submittal
   c. 100% submittal

5. Bid Phase
   a. Bid Documents
   b. Bid Evaluation

6. Construction
   a. Issue Conformed Documents
   b. Construction Overview (Administration)
   c. Record Documents

For each deliverable, coordinate with the Project Manager for requirements regarding quantities of documents and quantities of sealed and signed documents to be submitted.

B. Code Compliance: As directed by the Project Manager for each design phase, the Consultant shall file drawings, specifications and addenda with the State of Colorado Code Compliance Consultant for building code review and with the Poudre Fire Authority for fire code review.

C. Quality Control: The Consultant shall submit a mock-up of each required submittal prior to submittal to the Project Manager for review and comment.

202 – DESIGN CHARRETTE

A. Colorado State University uses design charrette meetings in all phases of design to find consensus and support feasibility. The Consultant and its subconsultants shall participate in the charrette process as scheduled by the Project Manager.

B. The scope of charrette design and number of meetings will be determined by the Project Manager in consultation with the CSU Manager of Design and Construction and the Consultant.

C. Typical participants include CSU manager of design and construction, staff architect, staff landscape architect, the project manager; representatives of Facilities operations and the user group.

D. Different topics are explored at each charrette:
   1. Conceptual Design:
a. Architect/CSU design team visit site to fully understand building/site relationships, constraints, opportunities; review existing site and utility plans. Architect should take photos of site and surroundings
b. Develop initial site concept that supports campus district and the campus as a whole, with particular consideration of pedestrian/vehicular access and building entrance
c. Develop plan diagram(s) based on program and space relationships
d. Develop building massing studies based on site concept and plan diagram, begin to define the building character.
e. Develop project parti or fundamental project concept site and utility plans, initial site planning, conceptual floor plans, photographs

2. Schematic Design
a. Refine site concept, develop into site plan. Establish size/proportion of site elements and relationships to building/building function
b. Select massing concept, verify relationship to existing building patterns, scale and proportions
c. Test by modeling
d. Develop elevation studies that will support site assumptions and relevance to existing conditions
e. Refine plan diagram, develop into architectural floor plan
f. Check program requirements/spatial relationships
g. Study detailing, materials and systems in plan, elevation and 3D
h. Revisit parti/concept, building character
i. Budget check

3. Design Development: overview of design, materials, details, budget check
4. Construction Document: preview of final drawings, review for adherence to previous direction
5. Construction Administration: review and approval of materials by mockup and/or sample board

E. New buildings and large additions are subject to campus administrative design review at the conceptual, schematic and design development phases. Such projects must go through the charrette process and approval by the Manager of Design and Construction prior to any presentation to administrative review.

F. The Project Manager will schedule charrette meetings and arrange space with work tables, whiteboards, screen and wall area for pinup, and provide site and utility maps, Campus Master Plan, landscape information, Design and Construction Standards, Aesthetic Guidelines and other materials as needed. The Consultant shall bring the current Design Analysis Report and project drawings, trace paper for sketching, site and surrounding photographs and any available physical or computer models. The Consultant should provide portable computer and projector if presenting digital information.

203 – DESIGN ANALYSIS REPORT

A. See Chapter 3. The Design Consultant shall prepare a Design Analysis Report outlining the design standards, documents, parameters, programming and criteria for the Project. This document shall be updated and submitted with each subsequent phase, culminating in the Record Document submittal.

B. A Design Analysis Report is required for all projects unless otherwise determined by the Manager of Design and Construction. See Chapter 3.

C. Preliminary Estimate of Probable Construction Cost and Prospective Alternates

1. The Architect/Engineer shall provide the portfolio of the Cost Estimator demonstrating experience in estimating costs for this type of project. The Cost Estimator portfolio shall include comparison of the Estimate of Probable Cost to the actual bids received for at least five (5) recent projects. The Cost Estimator selection shall be subject to approval of the Principal Representative.
2. The Architect/Engineer shall review the Design Program and/or the Facilities Program Plan furnished by the Principal Representative to ascertain the requirements of the Project and shall prepare a written Pre-Design Estimate of Probable Construction Cost based on square foot or systems costs.

3. The Architect/Engineer shall identify alternates equal to 20% of the Fixed Limit of Construction. The alternates will be either all deductive or all additive, as determined by the Principal Representative.

D. The Architect/Engineer shall identify the Utility Incentive Programs of Fort Collins Utilities, Poudre River Power Authority, Xcel Energy and/or other resource utilities that may be applicable to the project and list all requirements for participation and submittals.

204 – SCHEMATIC DESIGN

A. At the start of Schematic Design, submit a schedule for delivery of final schematic documents and probable construction cost estimate to the University Representative. Assure immediate involvement of subconsultants in development of the structural, mechanical and electrical systems.

B. See Chapter 4. Based upon information and data in the reviewed and accepted Design Analysis, the Consultant shall perform field investigations and other design services and prepare Schematic Design Documents described below:

1. Engineering surveys and soils investigations (if not provided by the Project Manager) to be bound separately and issued with Bid documents for information.

2. Schematic drawings indicating design concepts and alternative solutions.

3. Documents required by the Code Compliance Plan Review Checklist exhibit to the contract.

4. Rough scale models of the project (if required in the Consultant Contract or if required to fully demonstrate or describe the project.

5. Schematic Design Analysis Report
   a. Initial cost estimates.
   b. Lists of permits, acceptances, agreements, potential long lead items and required actions.
   c. Preliminary list of equipment manufacturers and suppliers that meet CSU Standards.
   d. Sustainable design analysis, including LEED strategies and scorecard.

B. Design Review Committee: When evaluation and approval of a Design Review Committee is required by the CSU Aesthetic Guidelines, the Architect/Engineer shall prepare models, renderings and perspectives with associated solar studies to portray the project in whole or in part.

C. Preliminary Estimate of Probable Construction Cost, Schedule and Prospective Alternates

1. Architect/Engineer’s Schematic Design Estimate of Probable Construction Cost, with explanation for each variation from the Pre-Design Estimate. The estimate shall be based on square foot or systems costs, and allocated according to the CSI MasterFormat divisions used in the Specifications. If the Estimate exceeds the Fixed Limit of Construction, the Architect/Engineer shall provide written revision proposals to meet said Limit.

2. Review of the time anticipated for Construction Phase
3. The Architect/Engineer shall identify and design alternates equal to 20% of the Fixed Limit of Construction. The alternates will be either all deductive or all additive, as determined by the Principal Representative.

D. The Consultant shall pro-actively contact and cooperate with representatives of utility incentive programs to assure that design participation requirements are met. The Schematic Design submittal shall include a summary of design activities and results related to utility incentive programs.

205 – DESIGN DEVELOPMENT

A. At the start of Design Development, submit a schedule for delivery of final design development documents and probable construction cost estimate to the University Representative. Assure immediate involvement of subconsultants in design development of the structural, mechanical and electrical systems.

B. See Chapter 5. Based upon the reviewed and accepted Schematic Design Documents, the Consultant shall prepare Design Development Documents. These documents shall include:

1. Design Development Drawings
2. Outline Technical Specifications
3. Documents required by the Code Compliance Plan Review Checklist exhibit to the contract.
4. Design Development Analysis Report
   a. Preliminary Construction Cost Estimate
   b. Preliminary Construction Schedule
   c. List of Acceptances
   d. Construction and Procurement Contract Bid Packages
   e. Value Engineering Report (if required)
   f. Three Manufacturers/Suppliers for proposed equipment and materials.
5. For projects seeking LEED certification, the Consultant shall provide certifications, technical data and calculations in USGBC format as required for the LEED Design Phase Submittal. For other projects, update sustainable design analysis, including LEED strategies and scorecard.

B. Preliminary Estimate of Probable Construction Cost, Schedule and Prospective Alternates

1. Architect/Engineer’s Design Development Estimate of Probable Construction Cost, with explanation for each variation from the Schematic Design Estimate. The estimate shall be based on square foot or systems costs, and allocated according to the CSI MasterFormat divisions used in the Specifications. If the Estimate exceeds the Fixed Limit of Construction, the Architect/Engineer shall provide written revision proposals to meet said Limit.
2. Review of the time anticipated for Construction Phase
3. The Architect/Engineer shall identify and design alternates equal to 20% of the Fixed Limit of Construction. The alternates will be either all deductive or all additive, as determined by the Principal Representative.

C. Design Review Committee

1. When evaluation and approval of a Design Review Committee is required by the CSU Aesthetic Guidelines, the Architect/Engineer shall prepare models, renderings and perspectives with associated solar studies to portray the project in whole or in part.
E. Utility Incentive Programs: The Consultant shall list the utility incentive program measures incorporated in the design and provide an estimate of potential rebates and savings. The Consultant shall provide the documentation required by the utility and list specific contractor submittals that will be needed during the construction phase.

206 – CONSTRUCTION DOCUMENTS

A. At the start of Construction Documents, submit a schedule for delivery of interim and/or final construction documents and final construction cost estimate to the University Representative.

B. See Chapter 6. The CSU Project Manager and Design Consultant shall confer and determine the requirements for interim submittals prior to submittal of the contract proposal. Interim submittals may be required at 30% and/or 60%, depending on the size of the project. Each submittal shall be cumulative, comprised of those elements of the documents begun in the preliminary design and additional documents/reports as necessary or requested. For Submittal quantities and review stages, see Chapter 33.

1. Interim Construction Documents for progressive review, which shall include design analysis report, construction estimate, schedule and prospective alternates, developed to the corresponding level of progress.

2. Construction Document Estimate of Probable Construction Cost, with explanation for each variation from the Design Development Estimate. The estimate shall be based on square foot or systems costs, and allocated according to the CSI MasterFormat divisions used in the Specifications. If the Estimate exceeds the Fixed Limit of Construction, the Architect/Engineer shall provide written revision proposals to meet said Limit.

3. Critical path bar-chart schedule of the time anticipated for the Construction Phase.

4. Complete, fully documented and coordinated alternates equal to 20% of the Fixed Limit of Construction. The alternates will be either all deductive or all additive, as determined by the Principal Representative.

5. 100% Construction Drawings and Specifications for Final Review. Final Review documents submitted for Code Compliance Review shall be signed and sealed by the Designer of Record.

6. Documents required by the Code Compliance Plan Review Checklist exhibit to the contract.

7. Contract Documents for the Project

8. Final Construction Drawings

9. Final Construction Specifications

10. Engineering surveys and soils investigations (bound separately and issued with Bid documents for information, unless provided by the Project Manager)

11. Final Design Analysis Report
   a. Cost Estimate
   b. Construction Schedule
   c. Lists of Equipment Needs, Long Lead Items and Critical Construction Activities
   d. Itemization of acquired agency acceptances and permits
   e. Contract Data Submittal Report (CDSR)
   f. Cut Sheets of typical product for all specified or referenced work
12. Technical data or information necessary to complete applications for permits, grants or any other acceptances associated with the Project, including LEED certification application and updates.

13. Utility Incentive Programs: Division 01 of the Specifications shall list all the utility incentive program measures incorporated in the design and identify the exact type, content and timing of documentation required by the utility (receipts, bills of lading, startup certifications, etc.) that the Contractor will submit to the Owner for attachment to the incentive application.

207 - BID AND PROPOSAL EVALUATION

A. See Chapter 7. Upon completion of the Final Review Submittal and the Project Manager's written acceptance of this submittal, the Consultant shall complete the Contract Documents and bind them so they are ready for distribution to prospective bidders. The Contract Documents shall be completed, checked, signed and sealed by the Consultant when required by the State. The Project Manager's comments from previous reviews shall be incorporated in the Contract Documents. All outstanding issues shall be resolved to the satisfaction of the Project Manager. Services in this phase include but are not limited to:

1. Preparing final cost estimate with separate bid item list with estimated prices filled in.
2. Executing the Commitment to Cost form.
3. Preparing sets of Bid Documents for distribution by CSU to prospective bidders
4. Participation in pre-bid meetings and site visits
5. Preparing addenda for distribution by CSU to prospective bidders
6. Reviewing substitution requests
7. Reviewing bid tabulations, evaluating and providing written recommendations

B. In addition to printed copies of the Construction Documents stipulated in the Basic Services, the Architect/Engineer shall furnish Electronic Document Sets:

1. For Bidding Documents: one complete Electronic Document Set in Adobe Portable Document Format suitable for posting on the Colorado State University and State of Colorado internet websites. The advertisement for bids shall state that prospective bidders are solely responsible for condition and completeness of downloaded files they distribute, reproduce, print or otherwise use for bidding purposes.
   a. An electronic set of the bid documents in native open editable CAD format shall be provided for the project record.

2. For Construction: Each prime contractor shall be furnished two Electronic Document Sets, one in native open editable CAD format and one in closed Portable Document Format to assure prompt prosecution of the work. For BIM projects, electronic files shall be provided to expedite project planning and clash detection.

3. The Architect/Engineer may stipulate that use of its native editable CAD files requires written approval by the Architect/Engineer, release of liability and removal of the Architect/Engineer name and trademark.

C. The Architect/Engineer shall issue Conformed Contract Documents for the Contract and for Construction within in accordance with the CSU Design Standards no later than ten (10) days after the Bid Opening. These Conformed Contract Documents shall incorporate all changes made by Addendum during the Bid Phase, and shall be provided in a timely manner so as to cause no delay in the Project. The Conformed Contract Document Notice shall be inserted at the beginning of the project manual.
208 - CONSTRUCTION PHASE

A. See Chapter 8. The Construction Phase shall begin with preparation of the Issue for Construction submittal. The Design Consultant shall incorporate all addenda, bid, contract forms, substitutions, subcontracts and changes made prior to the Notice to Proceed (NTP), and a Conformed Contract Document (Contract, Technical Specifications and Drawings) shall be issued for construction. The number of copies of contract documents required shall be established in the Consultant’s Contract. If not established, quantities as indicated in Chapter 33 shall apply. Services during the construction phase shall include but not be limited to:

1. Attend construction meetings in accordance with Project Manager's instructions.
2. Visit project site at appropriate intervals; complete observation reports.
3. Review and process submittals; adhere to standard procedures established by CSU regarding stamping and filing of submittals.
5. Review and evaluate Contract Documents.
6. Prepare and negotiate Change Orders.
7. Maintain and update LEED Construction Phase documentation.
9. Complete Record Documents. (See Chapter 9)

B. Before the Architect/Engineer certifies any Application for Payment submitted by the Contractor, the Architect/Engineer shall examine the Contractor’s “as-built” record of construction to determine in general the currency, completeness and accuracy of the record in depiction of the Work as actually built. The Architect/Engineer’s certification indicates that this specific examination has been performed. Whenever possible, the “as-built” record shall be checked each time the Architect/Engineer and/or its consultants visit the site.

1. In addition to the specifically required observations listed in the Agreement, the Architect/Engineer and/or the appropriate consultant shall observe all buried utility work following its installation and prior to its being covered for compliance with contract requirements, including placement of tracing and warning components.

209 – INSTRUMENTS OF SERVICE

A. Drawings, specifications and other documents, include all project documents in electronic form (including but not limited to computer assisted design (CAD), building information modeling (BIM), spreadsheet, word processing, portable document format, image and graphic files), prepared by the Architect/Engineer and the Architect/Engineer’s consultants are Instruments of Service for use solely with respect to this Project.

B. All electronic documents provided by the Architect/Engineer to the State shall be readable without password, security code or hardware lock. Native format documents may be write-protected, but shall be editable without password, security code or hardware lock when saved to a different filename.

210 – PROJECT RECORD

A. The Architect/Engineer shall provide an electronic Project Record including, but not limited to, project design and construction administration reports, submittals, requests for information, supplemental instructions, change order documents, administrative logs, electronic mail and correspondence not subject to proprietary or confidentiality agreements.
END OF CHAPTER 2