

Chapter 3: Design

Guidelines in this chapter apply to Design/Bid/Build projects. Consult with the Owner to identify variations for other project types.

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3.1 GENERAL

- A. Administration of Design Services: Design the project to meet the authorized scope, budget, and schedule. Upon initiation of the project, arrange to review with the Owner the service and administrative requirements. This review will typically be a meeting in which the following topics are addressed.
 - 1. The project's State Building Commission (SBC) project budget information form and the project scope and budget requirements established by the form including definition of key terms and concepts such as "Bid Target". Obtain a copy of this form from the Owner.
 - 2. Agreement(s) between Owner and Designer.
 - 3. Roles and responsibilities of the Owner, the Designer, and the user.
 - 4. The procedural guidance of this Designers' Manual.
 - 5. Designer Invoices and Payments.
 - 6. Procedures for Design Phase reviews.
 - 7. Testing laboratory services and special consultants provided under the Owner-Designer Agreement such as soil testing and consultants for special features or systems.
 - 8. Schedule for services.
 - 9. Any required clarification of the requirements.
- B. Bid Target: Design the project to not exceed the authorized project Bid Target. The Designer's construction cost estimate shall include any Designer-determined estimating contingency. *(This is not the same as the Owner's contingency which is added to the Bid Target to calculate the MACC. The Owner's contingency is solely designated for the Owner's exclusive control and use for unanticipated project costs.)*
- C. Project Identification: The exact title of the project and SBC Number shall be used on all documents including invoices and correspondence. Subject lines of email correspondence shall include the exact title of the project. Abbreviations of words or names in project titles may be used on correspondence inasmuch as the complete title is readily understood.
- D. Design Phase and Issue Date Identification: Design document submittals to the Owner shall be labeled to identify the design phase for which they are provided and shall indicate the date of issue.
- E. Design Phase Approval: When providing services for multiple Design Phases, obtain written approval of the Owner before proceeding with the next phase.
- F. Meeting Notes: Prepare meeting notes from each meeting with the Owner and transmit them to the Owner within seven calendar days of the meeting. This includes meetings

with user groups or occupants, regardless of the attendance of a representative of the Division of Facilities Planning.

- G. Drawing Size, Scale, and North Arrow: Unless otherwise requested, reduce drawings submitted on paper to the Owner to an accurately scalable half size for submittal. For example, a drawing at 1/4" scale submitted at half size shall be scalable at 1/8" scale. Lettering on drawings shall be legible when reduced to half size. Graphically illustrate scale on plan drawings. On plan drawings, regardless of design discipline or building system represented, include a north arrow with the preferable method representing both true north and building north.
- H. Testing Laboratory Services: Follow the requirements of Section 6.4 for the selection and payment of testing laboratory services.

3.2 REGULATORY

- A. Codes and Regulations: Applicable codes and regulations are listed in 01 41 15 Basic Regulatory Requirements, as exhibited in Appendix 3. Other codes or regulations may also apply. Designers are responsible for designing in accordance with the codes and regulations applicable to the project.
- B. State Fire Marshal Office (SFMO) Review: The SFMO has responsibility for reviewing construction documents to approve the fire, building, life safety, and accessibility code compliance of state owned facilities. The Rules of the Tennessee Department of Commerce and Insurance defines "construction" and requires plans and specifications to be submitted by the SFMO prior to commencing construction of a state building. (SFMO review is not required for state leased facilities in exempt jurisdictions, i.e., those jurisdictions that are approved by the SFMO to run their own codes enforcement program). The Owner will cooperate with the Designer and the SFMO to meet the codes requirements and user requirements for the project. Additional guidance is as follows:
 1. SFMO contact information:

Tennessee Department of Commerce and Insurance
State Fire Marshal's Office
Davy Crockett Tower
3rd Floor, 500 James Robertson Parkway
Nashville, TN 37243-1162
Telephone: 615-741-7190
Fax: 615-253-3267

Web site for the SFMO Codes Enforcement Section, Plans Review Information:
<http://www.state.tn.us/commerce/sfm/whatwedoPr.html>
 2. Upon project initiation, discuss with the Owner the process for communication and review with the SFMO. The Owner may request, as a component of Basic Services, that the Designer initiate communication and technical coordination with the SFMO in Design Phases prior to the Construction Document phase to allow for early identification of issues.
 3. For SFMO reviews, the Designer shall utilize the SFMO's required submittal process as outlined at the following: <http://tn.gov/commerce/sfm/fpcsect.shtml>
 4. The Designer does not pay the SFMO review fee. The Owner pays the review fee through internal state administrative processes. In estimating the review fee, the Designer must give careful attention to the fee table and exemption provisions.

5. The SFMO's approval letter must be obtained before a bid date will be assigned by the Owner.
- C. Storm Water Permits: Storm water permits are regulated by the Tennessee Department of Environment and Conservation (TDEC). Submit projects that involve a project work site of one acre or more to TDEC for an initial review as soon as a preliminary site plan is available for evaluation of permitting applicability. A full submittal shall be concurrent with the SFMO review.

3.3 MECHANICAL DESIGN

Upon project initiation, discuss with the Owner the application of the Mechanical Design Criteria as provided in Appendix 4.

3.4 SUSTAINABLE DESIGN

- A. State Requirements: Upon project initiation, discuss with the Owner the application of the State of Tennessee Sustainable Design Guidelines (SDG) as provided in Appendix 2 and follow required SDG procedures and the additional guidance in this Section 3.4. Discuss with the Owner any additional sustainable design requirements related to U.S. Green Building Council's Leadership in Energy & Environmental Design (LEED) program. The State Fire Marshal's Office will require energy code compliance certificates for envelope, interior lighting, exterior lighting and mechanical with the Designers seal on the certificates.
- B. Sustainable Design Process:
 1. Use a graded approach when evaluating the feasibility of incorporating design criteria, as enumerated and described in the SDG, to select the most cost-effective features among the credits available.
 2. Conduct a Pre-design SDG Review of (1) the Program, (2) the SDG requirements, and (3) any other relevant project information and meet with the Owner to report on the review results at the earliest opportunity in the design schedule. At this meeting, request of the Owner any needed clarification of the Program and provide to the Owner the Designer's preliminary SDG Tracking Checklist with identification of applicable design features.
 3. Based on the Owner's review and comments from the meeting described above, conduct a Sustainable Design Workshop which shall include the project's principal designers and all design consultants. At this meeting, provide to the Owner for review and approval (1) a listing of applicable SDG criteria, (2) an assessment of the feasibility of the options based on the Program and Bid Target, and (3) the Designer's recommended action.
 4. Report on SDG implementation in successive design review meetings and obtain the Owner's approval at appropriate milestones. The Owner typically requires an approval of the checklist prior to Design Development and Construction Document phase completion approvals.
- C. Indoor Lighting Design:
 1. Endeavor to exercise creativity and ingenuity within the reasonable limits of the project scope, site, Program, and budget to maximize daylighting and exterior views for building occupants in regularly occupied building areas in accordance with the SDG.

2. Early efforts related to indoor lighting shall focus on the analysis of design strategies to minimize building energy required for artificial lighting as well as for cooling due to the interior heat generated by artificial lighting.
3. Where reasonable, endeavor to reduce general ambient illumination to a minimum and favor user-controlled task and focused-function illumination.
4. Incorporate lighting control methods such as dual switching for full and lower (e.g., half level) ambient lighting and motion sensor switches for ambient lighting in offices and classrooms. These control methods shall focus on reducing the building's lighting energy demand by digitally controlled sensing, dimming, or modulating artificial lighting levels based on occupancy, need, and available natural light.

D. Outdoor Lighting Design:

1. Endeavor to design creatively to focus outdoor lighting on (1) the time of need through daylight sensor controls or timers adjusted for varying natural light conditions, and (2) the functional need for lighting for vehicular access, exterior parking areas, pedestrian access paths and walkways, building entrances and exits, grounds security, and building feature highlighting for identification and wayfinding.
2. Through careful and considerate design of exterior lighting fixtures, avoid the three types of recognized light pollution: (1) Sky Glow, (2) Light Trespass, and (3) Glare, as described in the Illuminating Engineering Society Standard RP-33-99, Lighting for the Exterior Environments and by the LEED Lighting Design Lab: Exterior Lighting Requirements in LEED Rating System Version 2.1 NC (New Construction). Technical guidance is available on the following Web sites.

<http://www.lrc.rpi.edu/programs/nlpip/lightinganswers/lightpollution>

http://lightingdesignlab.com/commercial/LEED_Exterior.pdf

Make purposeful selection of lighting fixtures and luminaires, cutoffs or baffles, to focus outdoor lighting on its purpose rather than using fixtures such as "wallpaks" for general illumination but may create light pollution.

E. Material Recycling Collection Design:

1. Design areas distributed throughout the building for material recycling receptacles to preclude later accommodation in unplanned locations which may obstruct or diminish required fire egress paths or reduce planned functionality.
2. Provide a dedicated interior building recycling material collection room appropriate for building function and size adjacent to the main building service access point or loading dock. For multi-story buildings with large floor areas, secondary recycling collection rooms adjacent to service elevators may also be required. Consult with the Owner to ascertain campus-specific requirements.

3.5 SPACE EFFICIENCY AND COST ANALYSIS

Guidelines for Space Efficiency and Cost Analysis are detailed in the applicable Design Phase sections below. Application of these guidelines will vary in specifics by project. In conducting these analyses, refer to the Postsecondary Education Facilities Inventory and Classification Manual (FICM): 2006 Edition, Chapter 3, for building area measurement guidance. Review with the Owner the application of the terms in the FICM. Refer to the following UT website for Facilities Space Survey Instructions and the Federal Guidelines and Policies at:

http://iris.tennessee.edu/Real%20Estate/real_estate.htm

3.6 PROGRAM PHASE

- A. Owner-Prepared Program Information: As described in the Agreement, the Owner will normally have Program information to provide to the Designer that will establish the Owner's functional objectives including space requirements and relationships, time and budget constraints, and other special criteria.
- B. Program Phase Services: The Designer's Basic Services requirements for the Program Phase are generally defined by the Agreement but will vary in specifics by project. Specific requirements may include, but are not limited to, the following.
1. Project initiation by a Pre-Design Conference with the Owner.
 2. Verification of program requirements and advisement as specified in the Agreement.
 3. Validation or development of a project Problem Statement based on the program requirements.
 4. Definition of allocations and constraints regarding project scope, budget, and time.
 5. Program Phase SDG implementation.
 6. Program Phase Space Efficiency and Cost Analysis as described below.
 7. Consultation on site selection, site relationships, and site issues as follows.
 - Risk assessment of Owner-provided information on existing conditions.
 - Identification of real property considerations.
 - Existing and project-required utility easements.
 - Restrictions regarding project site usage, staging, work hours, and continued occupancy.
 8. Identification of code and regulatory compliance requirements.
 9. Consultation on functional aspects of the program and preliminary concepts for developing functional design solutions.
- C. Program Phase Communications: The following are potential topics for communications between the Owner and the Designer.
1. Obtaining soils testing, surveys, information on utilities, etc.
 2. Establishment of schedule for design and construction.
 3. Potential additional services that may be required of the Designer.
 4. The Designer's completion of Program Phase requirements.
 5. The Owner's written approval of the Program Phase and requirements for further services.
- D. Program Phase Space Efficiency and Cost Analysis:
1. Based on the project's State Building Commission (SBC) project budget information form, calculate the project's Efficiency Ratio (ER) by dividing the form's listed Net Square Feet (NSF) by the form's listed Gross Square Feet (GSF).

2. Research and document a minimum of three other similarly designed and constructed university projects in the United States in regards to project budget and ER. Comparative project cost data from the other projects shall be escalated to the midpoint of the planned project construction period.
3. Evaluate the Program's Net Assignable Square Feet (NASF) and the Program's descriptions of design feature quality levels for consistency with (1) the SBC form's Bid Target, GSF, NSF, and calculated ER and (2) the Designer's comparative research. Report the evaluation by either of the following actions:
 - a. If the Designer concludes that there is consistency and the SBC form's Bid Target is adequate, report this conclusion in writing to the Owner along with the other documents required for completion of Program Phase services.
 - b. If the Designer concludes that there is inconsistency and the SBC form's Bid Target is inadequate this conclusion shall immediately be reported in writing to the Owner along with the Designers' recommendations to reconcile inconsistencies by (1) reconsideration of the Bid Target, (2) an adjustment to the Program's NASF, (3) alteration of the target ER, (4) adjustments to design feature quality levels, or (5) a combination of the above.

3.7 SCHEMATIC DESIGN PHASE

- A. Owner-Provided Information: Verify existing conditions as practicable and discuss with the Owner the types of additional investigations that are needed to adequately design the project.
- B. Site Studies and Other Services: Early in the Schematic Design Phase, prepare and submit to the Owner a written proposal for land, environmental, archaeological and other surveys, geotechnical and hazardous materials investigations, and other such special services needed to design the project. The proposal may recommend preliminary studies and detailed follow-up studies. Discuss service and price for such with several qualified firms. Owner approval of the firm and the cost of services is required before authorizing work. Meet the following requirements in the proposal.
 1. Identify firms that submitted proposals, their prices, and the recommended firm for providing services. Cost shall be one of the factors in determining which firm to recommend, but not necessarily the controlling factor.
 2. Identify a timetable for obtaining services that provides adequate time for the Owner to review and approve the proposal.
 3. Attach an itemization of direct costs from the firm.
 4. Identify the projected maximum Owner's cost including applicable Designer multiplier.
 5. For Testing Laboratory Services follow additional guidance in Chapter 6.
- C. Schematic Design Phase Services: The Designer's Basic Services requirements are generally defined by the Agreement but will vary in specifics by project. Specific requirements may include, but are not limited to, the following.
 1. A schematic design communicated as specified in the Agreement.
 2. An analysis of the site including the following:
 - Analysis and descriptions as specified in the Agreement.

- Flood zone designations.
 - Local zoning.
 - Applicable permits.
3. Fire and life safety requirements and design concepts.
 4. Conceptual diagrams of alternate approaches to Program requirements.
 5. Visual studies in diagrammatic or model form.
 6. Dimensioned schematic floor plan drawings of the approved design concept.
 7. A narrative description of building systems.
 8. Schematic Design Phase SDG implementation.
 9. Schematic Design Phase Space Efficiency and Cost Analysis as described below.
 10. Review of applicability and criteria for building commissioning.
 11. Schematic Design Phase coordination with the SFMO.
 12. Determination of TDEC Storm Water Permit applicability.
 13. Communication of the results of site studies and other services.
- D. Schematic Design Phase Communications: The following are potential topics for communications between the Owner and the Designer.
1. Site analysis implications.
 2. Flood zone risks and implications.
 3. Relationship to master plans, land use, local zoning, permits, environment, circulation, mass transportation, traffic, parking, telecommunications, utilities, fire, and life safety.
 4. Functional relationships.
 5. Visual studies in diagrammatic form or in model form.
 6. Development and review of design concepts' fulfillment of Program requirements.
 7. Selection of a design concept and completion of Schematic Design.
 8. Consideration of the need for third party scheduling or commissioning.
 9. Project schedule.
 10. Consideration of site usage restrictions and effects such as noise, vapors, user operation routines and special events, and closures.
 11. Consideration of existing and project-required utility easements.
 12. The Owner's written approval of the Schematic Design Phase and requirements for further services.
- E. Schematic Design Phase Space Efficiency and Cost Analysis:
1. Calculate the GSF, NASF, and ER of the schematic design. Compare the calculated ER with the target ER and Bid Target established in the Program phase.
 2. Develop a Cost/GSF Estimate and utilize such to estimate the Probable Total Construction Cost as required by the Agreement. The Designer's Cost/GSF Estimate shall be based on comparisons to other similar and recently completed

projects. Comparative project cost data from other projects shall be escalated to the midpoint of the planned project construction period based on an escalation factor developed after researching a minimum of three industry sources' current escalation projections.

3. Resolve any inconsistencies between the Bid Target, the Probable Total Construction Cost, ER, and quality levels requirements.
4. Provide this analysis to the Owner in writing.

3.8 DESIGN DEVELOPMENT PHASE

- A. Design Development Phase Services: The Designer's Basic Services requirements are generally defined by the Agreement but will vary in specifics by project. Specific requirements may include, but are not limited to, the following services.
 1. A fully developed and communicated design concept as specified in the Agreement.
 2. A site plan with contours, applicable cross sections, and definition of extent of site disturbance and demolition.
 3. Design Development Phase Space Efficiency and Cost Analysis as described below.
 4. Significant typical design details.
 5. Narrative summary descriptions for materials, equipment, and building systems.
 6. Design Development Phase SDG implementation.
 7. Design Development Phase coordination for SFMO review and TDEC Storm Water Permit.
 8. Design presentation to the SBC.
- B. Design Development Phase Communications: The following are potential topics for communications between the Owner and the Designer.
 1. Early in the Design Development Phase, establishing or clarifying Owner design guidelines and user requirements for building systems and equipment which may include the following:
 - Telecommunications, security, and computer network systems.
 - Geotechnical conditions and design requirements.
 - Interior design including furniture, fixtures, and equipment.
 - Energy management systems.
 - Hazardous material management.
 - Building signage including "naming", dedication, or building plaques.
 2. External coordination requirements such as those for land rights, utility service and connections, site staging, and restricted access.
 3. Building and site closures or disruptions for normal user operations.
 4. Special quality controls and possible third party delivery methods.
 5. Necessity and preliminary definition of construction phases, allowances, and unit prices.

6. Necessity and preliminary definition of Bid Alternates for distinct optional design features.
7. Procedures for bidding and administration of contract documents.
8. Project schedule.
9. The Owner's written approval of the Design Development Phase and requirements for further services.

C. Design Development Phase Space Efficiency and Cost Analysis:

1. Precisely calculate the GSF, NASF, and ER of the developed design. Develop a summary of changes from the Schematic Design Phase design with a brief description of the influences causing the change.
2. Use an experienced and qualified cost estimator to prepare the Construction Cost Estimate as required by the Agreement which shall be based on material quantity take-offs and current industry pricing for the midpoint of the planned project construction period with application of escalation factors as appropriate. Additionally, apply the developed design's GSF to the previously developed Cost/GSF Estimate and compare the resultant amount to the Construction Cost Estimate.
3. Resolve any inconsistencies between the Bid Target, the Construction Cost Estimate, ER, and quality levels requirements.
4. Provide this analysis to the Owner in writing.

D. Design Presentation to the SBC: The Owner will inform the Designer of the specific requirements for the Designer to make a design presentation to the State Architect and to the SBC in Nashville. The Owner may request that a rehearsal presentation be made to the Owner prior to the SBC presentation. Presentation requirements are specific to each project but may include the following.

1. Presentations will be prepared on digital format (.ppt or .pdf) for projection in the SBC meeting.
2. Brief oral comments on any project aspect in response to questions from Commissioners.
3. Preliminary drawings as listed below communicating design concepts accurately but not so detailed as to detract from understanding the form and function of structures.
 - A vicinity plan showing the relationship of the project to the surrounding campus or community.
 - A site plan showing relationships to site features and adjacent structures.
 - Floor plans.
 - Elevations or perspective (preferred).
4. Prior to presentation a summary report will be required describing the building and related features which may include the following information.
 - Original Approved Substantial Completion Date
 - Current Targeted Substantial Completion Date
 - Original Approved MACC
 - Current MACC

- Number of Square Feet involved in Scope
 - Cost per Square Foot of Building Scope
 - In Budget: Yes or No
 - Purpose of Project
 - Brief Description of Project
 - Any Premium First Costs of Construction (if so, please provide written description and associated cost of each item)
 - Any Features which are anticipated to provide savings in life cycle costs (if so, please provide written description and associated estimated savings of each item)
5. The Designer's Construction Cost Estimate with reference information for GSF, NASF, ER, and the Bid Target.
 6. An energy analysis or summary of sustainable design features. The proposed Sustainable Design Guidelines to be incorporated in the project design.

3.9 CONSTRUCTION DOCUMENT PHASE

- A. Construction Document Phase Services: The Designer's Basic Services requirements are generally defined by the Agreement but will vary in specifics by project. Specific requirements may include, but are not limited to, the following services.
 1. Plan for the Construction Schedule
 - Whenever possible, the construction Contract Time shall be planned to run without imposed schedule impacts such as interruptions, sequences, or dependencies.
 - If such schedule impacts are unavoidable then accommodations for these impacts shall be made in the Bidding Documents and reviewed with the Owner early in the Construction Document Phase.
 - Establishing construction phases is a viable accommodation for a schedule impact. Designer services for phased construction schedules shall include the control of construction commencement and/or acceptance through phase-specific Notices to Proceed, Substantial Completion inspections, and Certifications for Payment.
 2. Plan Alternates as Required and Approved
 - The use of Alternates typically should be avoided and requires review and approval by the Owner. When necessary, Alternates are used to protect the Bid Target and improve the chance for an awardable bid.
 - When authorized by the Owner, Alternates shall be established, evaluated, and awarded according to SBC Policy: limited to three in number, additive, and listed in priority order in bidding documents.
 3. Plan Quantity Allowances and Unit Prices as Required and Approved
 - The use of Quantity Allowances and Unit Prices requires review and approval by the Owner.
 4. Avoid Lump Sum Allowances.

- Do not use Lump Sum Allowances unless approved by the Owner.
5. Construction Documents and a Project Manual required for receiving bids as specified in the Agreement.
 - Prepare required Drawings including, unless otherwise approved, a title sheet, location map, and list of drawings matching that in the Project Manual.
 - Follow the guidance in Chapter 4, Project Manual Guide, and Chapter 5, Bidding.
 6. Submittal of documents to the SFMO.
 7. A final revision of the narrative summary descriptions required in the Design Development Phase.
 8. Construction Document Phase Space Efficiency and Cost Analysis as described below.
 9. Construction Document Phase SDG implementation.
- B. Construction Document Phase Communications: The following are potential topics for communications between the Owner and the Designer.
1. Media and sizes for submitted Contract Documents.
 2. Verification that required submittals have been made to authorities, such as the SFMO and TDEC, and that approvals are in-hand or are due prior to release for bids.
 3. Status of required external coordination such as those for utility easements.
 4. Review construction staging, phasing, coordination of work by the user, accommodations required of the user, and functional impacts upon the user or others.
 5. Impacts of construction on existing facility warranties. For example, a project requiring penetrations to an existing roof may affect the roofing system warranty.
 6. The construction timetable, Contract Time, and Liquidated Damages.
 7. Commissioning specifications and implementation issues, if required.
 8. The timetable for completion of the Construction Document Phase and commencing to the Bid Phase. The Designer shall make revisions identified by the Owner prior to printing.
 9. Reviews of final draft bidding documents and preparations for the Bidding Phase including coordination of the following.
 - Invitation to Bid advertisement by the Owner.
 - Instructions to Bidders.
 - Bid Pack deposit.
 - Cost for additional Bidding Documents requested by Bidders.
 - Document distribution to Bidders.
 - Pre-Bid Conference agenda.
 - Bid opening date and procedures.
 - Bid Tab.
 - Communications including notifications and recommendations.

10. The Owner's written approval of the Construction Document Phase and requirements for further services.

C. Construction Document Phase Space Efficiency and Cost Analysis:

1. Precisely calculate the GSF, NASF, and ER of the final detailed design. Develop a summary of changes from the Design Development Phase design with a brief description of the influences causing the change.
2. Review the Construction Cost Estimate submitted to the Owner in the Design Development Phase as required by the Agreement. Based on this review, take either of the following actions:
 - a. Provide a written confirmation of the continued validity of the Construction Cost Estimate submitted to the Owner in the Design Development Phase with the Designer's recommendations regarding applicability.

Or

- b. Use the same cost estimator who prepared the Construction Cost Estimate in the Design Development Phase to update the Construction Cost Estimate for the final detailed design. This update shall include identifying and applying changes in material quantity take-offs, changes in industry pricing and escalation factors, additional detailing, and any other factor causing a change in the Construction Cost Estimate.
3. Apply the final detailed design's GSF to the previously developed Cost/GSF Estimate and compare the resultant amount to the Construction Cost Estimate as updated. Provide this analysis in writing to the Owner with the Designer's recommendations regarding applicability.

D. Transition to Bidding Phase: The following is a typical sequence of events for the transition from the Construction Document Phase to the Bidding Phase.

1. The Designer incorporates the Owner's comments on the draft Bidding Documents in appropriate revisions.
2. For projects determined to include "Highway Construction" or that are funded with Federal Funds and subject to the Davis-Bacon Act, the Owner obtains and forwards to the Designer a Wage Rate Determination for incorporation in the Bidding Documents.
3. The Designer submits to the Owner the final, signed and sealed, Bidding Documents, a copy of the SFMO approval letter, and a copy of the TDEC Storm Water Permit Application.
4. The Bidding Phase begins with the assignment of the Bid Date by the Owner.
 - The Owner sends the bid envelope cover with completed header information to the Designer.
 - The Owner places an Invitation to Bid advertisement in a newspaper.
 - The Designer adds the Bid Date to the Bidding Documents, sends the documents to the printing service, and sends Bidding Documents to plan rooms and the Owner.

3.10 FURNITURE, FIXTURES, AND EQUIPMENT (FF&E) ADDITIONAL SERVICES

A. Additional Services for FF&E Design: The Owner and Designer shall jointly review the

project to determine the applicability of additional services for FF&E design. If applicable, submit to the Owner a written proposal for additional services for FF&E design, prepared in accordance with the Agreement and to accommodate the specific requirements of the project. Services may commence only after written approval by the Owner. FF&E design services shall be coordinated with and mutually responsive to other services of the Designer to result in an integrated project delivery. Typical services for FF&E design are described below.

B. Program Phase FF&E Additional Services:

1. Meet with the Owner's user group representatives to discuss program requirements for FF&E including the following:
 - a. Functional standards and quality levels.
 - b. Personnel space standards and/or workstation systems.
 - c. General requirements related to power and data systems, telecommunications, and reproduction equipment.
 - d. Interior signage scope.
2. Following determination of user needs, prepare FF&E budget estimates and an outline schedule indicating milestone dates for completion of project FF&E work.
3. Determine scope and images required for interior signage.
4. Confirm the scope, schedule, and fee for FF&E design services.
5. Submit a written summary of results for Owner approval.

C. Schematic Design Phase FF&E Additional Services:

1. Prepare schematic design documents including the following:
 - a. Alternative design floor plans at 1/8" scale indicating FF&E types and quantities.
 - b. Illustrations (e.g., drawings, photographs, samples) of proposed types of finishes, materials, and fabrics.
 - c. Illustrations of interior signage design concepts.
 - d. Documentation of the user's specific FF&E requirements related to power and data systems, telecommunications, and reproduction equipment.
 - e. Preliminary listing of manufacturer recommendations.
2. Coordinate FF&E design with power and communications design for accurate understanding and compatibility across disciplines.
3. Schedule necessary meetings with user groups for confirmation of design direction.
4. Confirm FF&E schedule and budget.
5. Culminate Schematic Design Phase FF&E services with a presentation to the Owner's project manager and user group representatives for approval.

D. Design Development Phase FF&E Additional Services:

1. Prepare final floor plans for all FF&E features.
2. Make final written recommendations for approved manufacturers for FF&E specifications including specifications for finishes and fabrics.
3. Submit a final written recommendation for furniture and fabric selections. Selections

shall be based on user input from a minimum of one initial recommendation review meeting and two revised recommendation review meetings. Additional interaction with user representatives shall be conducted as necessary to develop recommendations.

4. Provide interior signage location plans, typical drawings, and descriptions of style and wording for each sign. Interior signage design shall be based on user input from a minimum of one initial design review meeting and two revised design review meetings.
 5. Provide illustrations for recommended locations and types of art.
 6. Develop and communicate with appropriate project design personnel to ensure proper coordination between FF&E and building systems including, but not limited to, electrical, communications, mechanical, and structural designers.
 7. Confirm FF&E schedule and budget.
 8. Culminate Design Development Phase FF&E services with a presentation to the Owner's project manager and user group representatives for approval.
- E. Construction Document Phase FF&E Additional Services:
1. Develop FF&E specifications and bid documents.
 2. Develop interior signage specifications and bid documents.
 3. Make arrangements with Owner for final selection and purchase of approved art.
 4. Confirm FF&E schedule and budget.
 5. Collaborate with the Owner's project manager and purchasing personnel to develop appropriate bidder lists.
 6. Submit Construction Documents for Owner approval.

3.11 DESIGN PHASE DOCUMENTS CHECKLISTS

Follow the Design Phase Document Checklists on the following pages for guidance regarding the required documents for completion of services in the Schematic, Design Development, and Construction Documents phases of design. Review the checklists with the Owner for confirmation or revision of document requirements.

SCHEMATIC DESIGN PHASE DOCUMENT CHECKLIST

Project: _____ SBC No.: _____
Prepared By: _____ Date Prepared: _____

General Information

- Occupancy Classifications/Const. Type(s)
- Life Safety Plan with fire separations/walls, egress routes, ADA accessibility
- Occupant Loads
- Code Analysis Sheet with GSF for each level
- Drawing Set Sheet Index
- Room Numbering System

Space Efficiency and Cost Analysis

- Calculated GSF, NASF, and ER
- Comparison of Calculated ER with Bid Target
- Comparative Project Cost Data
- Escalation Factor Information
- Cost/GSF Estimate
- Probable Total Construction Cost

Site Plans

- Site Survey of existing topography
- Site Location Plan with parking/site features
- Site Grading/Drainage Plan
- Site Utilities/Civil Engineering Plan
- Site Landscaping Sketch Plan
- Site Detail Sheets

Building Floor Plans

- 1/8" Floor Plans with gross dimensions, building columns, and door swings
- 1/8" minimum Roof Plan
- Occupancy Separation/Rated Wall Plans
- Structural Foundation/Column Plans
- Structural Framing Plans
- Preliminary Furniture/Equipment Plans
- Reflected Ceiling Plans, major/typical spaces
- Mechanical Single-Line Distribution Plans
- Mech/Elect/Telecomm Room Layouts
- Vertical Circulation, Shafts, and Chases
- Preliminary Lab Equipment Plans (if required)
- Prelim. Kitchen/Specialty Equipment Plans

Building Elevations

- Exterior Bldg Elevations with locations of doors, operable/fixed/spandrel glazing, floor-to-floor and overall heights
- Exterior Finish Materials
- Exterior Cladding Systems
- Exterior Lighting Locations
- Roof Profile and Finish Materials
- Interior Elevations of major/complex spaces
- Typical Casework Elevations

Building & Wall Sections

- Bldg Sections showing floor-to-floor heights, space relationships, mechanical plenums
- Preliminary Typical Exterior Wall Sections
- Stair, Elevator, and Shaft Sections

Details

- Preliminary Significant Exterior Wall Details
- Significant Structural Details
- Preliminary MEP Equipment Schedules
- Reflected Ceiling Plans for major/typ. spaces
- Specialty Wall Details (blast/dust/visual)

Project Manual

- Basis of Design Description
- Basic Building Materials List
- Outline Specifications
- Interior Finish Narrative Description
- Soils Investigation Report
- Storm Water Erosion Control Plan/Prelim. Storm Water Pollution Prevention Plan
- Traffic Study & Description (if required by UT)
- Signage/Wayfinding Narrative (if required)
- Vibration Analysis (if required)
- Fume Hood/Lab Equip. Inventory (if required)

DESIGN DEVELOPMENT PHASE DOCUMENT CHECKLIST

Project: _____ SBC No.: _____
Prepared By: _____ Date Prepared: _____

General Information

- Occupancy Classifications/Const. Type(s)
- Life Safety Plan with fire separations/walls, egress routes, ADA accessibility
- Occupant Loads
- Code Analysis Sheet with GSF for each level
- Drawing Set Sheet Index
- Room Numbering System
- Sustainable Design Guidelines Checklist

Space Efficiency and Cost Analysis

- Calculated GSF, NASF, and ER
- Summary of changes from Schematic Design and description of causes of change
- Construction Cost Estimate
- Comparison of Estimate to design's GSF applied to previous Cost/GSF Estimate

Site Plans

- Site Survey of existing topography
- spaces, bike racks, MEP Units, & site features
- Site Grading/Drainage Plan
- Site Utilities/Civil Engineering Plan
- Site Landscaping Sketch Plan
- Site Detail Sheets

Building Floor Plans

- 1/8" Floor Plans with gross dimensions, building columns, door swings and labels
- 1/4" Enlarged Plans
- 1/4" Enlarged Stair and Elevator Plans
- 1/8" min. Roof Plan, with roof pads/drains
- Occupancy Separation/Rated Wall Plans
- Utility Main and Entrance Locations
- Structural Foundation/Column Plans
- Structural Framing Plans with shear walls
- Refined Furniture/Equipment Plans
- Interior Finish Plans/Schedules
- Reflected Ceiling Plans
- Mechanical Double-Line Distribution Plans
- Mech/Elect/Telecomm Room Layouts
- Vertical Circulation, Shafts, and Chases
- Electrical Power/Distribution Plans
- Electrical Lighting Plans
- Casework Location Plans
- Lab Equipment Plans (if required)
- Kitchen/Specialty Equipment Plans
- AV, Security/CCTV Equipment Plans

Building Elevations

- Exterior Bldg Elevations with locations of doors, operable/fixed/spandrel glazing, floor-to-floor and overall heights
- Exterior Finish Materials
- Exterior Cladding Systems
- Exterior Lighting Locations
- Roof Profile and Finish Materials
- Interior Elevations of major/complex spaces
- Typical Casework Elevations

Building & Wall Sections

- Bldg Sections showing floor-to-floor heights, space relationships, mechanical plenums
- Typical Exterior Wall Sections
- Stair, Elevator, and Shaft Sections

Details

- Prelim. Significant Exterior Wall Details
- Wall Types & Interior Details (plans/sections)
- Window Types (exterior and interior)
- Significant Structural Details
- MEP Equipment Schedules
- Reflected Ceiling Plan/Section Details
- Specialty Wall Details (blast/dust/visual)
- All Final Ref. Detail Sheets (not yet developed)

Project Manual

- Basis of Design Description (including MEP)
- Preliminary Construction Specifications
- Interior Finish Narrative Description
- Soils Investigation Report
- Storm Water Erosion Control Plan/Prelim. Storm Water Pollution Prevention Plan
- Traffic Study & Description (if required by UT)
- Signage/Wayfinding Specifications (if required)
- Lighting Levels/Acoustical Specifications
- Vibration Analysis (if required)
- Fume Hood/Lab Equipmt. Inventory (if required)

CONSTRUCTION DOCUMENT PHASE DOCUMENT CHECKLIST

Project: _____ SBC No.: _____
Prepared By: _____ Date Prepared: _____

General Information

- Occupancy Classifications/Const. Type(s)
- Life Safety Plan with fire separations/walls, egress routes, ADA accessibility
- Occupant Loads
- Code Analysis Sheet with GSF for each level
- Drawing Set Sheet Index
- Room Numbering System
- Sustainable Guidelines Checklist
- Room Numbering Indicated wherever pertinent

Space Efficiency and Cost Analysis

- Calculated GSF, NASF, and ER
- Summary of changes from Developed Design and description of causes of change
- Confirmed validity of DD Cost Estimate -or- Updated Construction Cost Estimate
- Comparison of Estimate to design's GSF applied to previous Cost/GSF Estimate

Site Plans

- Site Survey of existing topography
- Site Location Plan incl. parking, accessible spaces, bike racks, MEP Units, & site features
- Site Grading/Storm Drainage Plan
- Site Utilities/Civil Engineering Plan
- Site Landscaping & Irrigation Plans
- Mech/Elect/Plumbing Site Plans
- Site Detail Sheets

Building Floor Plans

- 1/8" Floor Plans w/ dimensions and ref. marks, building columns, door swings & labels
- 1/4" Enlarged Plans for req'd areas/systems
- 1/4" Enlarged Stair and Elevator Plans
- 1/8" min. Roof Plan, with roof pads/drains
- Occupancy Separation/Rated Wall Plans
- Utility Main and Entrance Locations
- Structural Foundation/Column Plans
- Structural Framing Plans with shear walls
- Refined Furniture/Equipment Plans
- Interior Finish Plans/Schedules/Details
- Reflected Ceiling Plans & Details
- Mechanical Single-Line Distribution Plans and Double-Line Ductwork Plans
- Mech/Elect/Telecomm Room Plans
- Vertical Circulation, Shafts, and Chases
- Electrical Power/Distribution Plans
- Electrical Lighting Plans

- Casework Location Plans & Details
- Lab Equipment Plans (if required)
- Kitchen/Specialty Equipment Plans
- AV, Security/CCTV Equipt./Distrib. Plans
- All Final Schedules, Keys, and Legends
- Fire Alarm and Sprinkler Drawings

Building Elevations

- Exterior Bldg Elevations with locations of doors, operable/fixed/spandrel glazing, floor-to-floor and overall heights
- Exterior Finish Materials (indicated)
- Exterior Cladding Systems (indicated)
- Exterior Lighting Locations
- Roof Profile and Finish Materials
- Interior Elevations of major/complex spaces
- Typical & Special Casework Elevations

Building & Wall Sections

- Bldg Sections showing floor-to-floor heights, space relationships, mechanical plenums
- All Exterior Wall Sections (referenced)
- Stair, Elevator, and Shaft Sections
- Sections for HVAC & unique systems

Details

- All Exterior Const. Details incl. Roof Details
- Wall Types and Interior Details (plans/sections)
- Door/Frame/Window Schedules (ext. and int.)
- All Structural Details (coordinated)
- MEP Equipment Schedules
- Reflected Ceiling Plan/Section Details
- Specialty Wall Details (blast/dust/visual)
- Referenced Detail Sheets (all systems)

Project Manual (See also Chapter 4.)

- Basis of Design Description (including MEP)
- Final Construction Specifications
- Required Accessibility Details/Specs
- Interior Finish Narrative Description
- Soils Investigation Report/Specifications
- Pollution Prevention Plan
- Traffic Study & Description (if required by UT)
- Signage/Wayfinding Specifications (if required)
- Lighting Levels/Acoustical Specifications
- Vibration Damping Specifications (if required)
- Fume Hood/Lab Equipt. Inventory (if required)

END OF CHAPTER