

## Chapter Three PROJECT DESIGN

### 3.01 INITIATING DESIGN

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- A. The Designer provides professional services** for the project in accordance with the terms and conditions of the Owner/Designer Agreement. Toward fulfilling those obligations, the Designer should adhere to the following procedures unless specifically approved otherwise by Real Property Administration (RPA). At a minimum, the Owner upon completion of each Design Development and Construction Documents phases will conduct a written performance audit of the Designer as a formal means for feedback to the Designer. This audit will comprise the basis for completion of the SBC-7 Designer Evaluation Form found in Appendix 1 - *Administrative Forms*, which will be made available to the State Building Commission for their review.
- B. General Procedures:**
1. Exact title of project and SBC Number shall be used on all invoices, correspondence and documents.
  2. Designer document submittals to Owner shall be labeled to identify the design phase for which they are provided, and shall bear a reference date (i.e.: date of issue.) Owner will determine the number of copies of submittals and their distribution at project start.
  3. Designer will receive written approval of Owner before proceeding with each phase.
  4. Designer shall take minutes at design phase review meetings and provide written minutes within a reasonable time thereafter.
- C. Building Codes and Regulatory Requirements** used for State Building Commission projects, and their sources, are identified in [Appendix 3 - Bidding Documents, Section 01 41 15 - Basic Regulatory Requirements](#). Depending on the use of the building, other codes or regulations may also apply. RPA and the Fire Marshal's Office will cooperate with the Designer to develop a solution to conflicts between codes requirements and user requirements that meets the criteria for the project. Code usage may be revised or augmented, and Designers should keep themselves apprised of current codes and adoption dates.
- D. Sustainable Design Guidelines (Appendix 2)** will be used as a design tool for all new construction, renovation, and maintenance projects. All new construction projects under the SDG will be designed and constructed with a focus on meeting or exceeding minimum standards established by recognized sustainable and energy efficient design organizations such as LEED, Green Globes, and Energy Star.
- E. State Fire Marshal Review:**
1. Designer should obtain a concept review early in nearly every project, to allow ample opportunity for early identification of problems.
  2. Tenn. Comp. Rule & Reg. 0780-02-03-.02(1) requires plans and specifications to be submitted to and approved by the State Fire Marshal prior to commencing construction on a State building. Construction is defined in Tenn. Comp. Rule & Reg. 0780-02-03-.01(1)(b). Designer shall submit two (2) complete, signed and sealed sets of final documents for review at the earliest appropriate opportunity. The Fire Marshal's approval letter must be obtained before a bid date will be assigned by the RPA Bidding Administrator.
  3. Make submittals directly to the State Fire Marshall. The Plans Review Submittal Form needed with the first submittal is available from the State Fire Marshal's Office.
  4. Designer does not pay review fee; State agencies pay the review fee internally. In estimating the review fee for the Plans Review Submittal Form, pay careful attention to the fee table and exemption provisions on the back of the form. Send (preferably FAX) a copy of the draft form to the RPA Project Manager for review prior to submittal to the State Fire Marshal.



- A. **Normally, the Owner will have a Program sufficiently well developed**, as called for under the terms of the Owner/Designer contract for the project. The Owner may authorize the Designer to provide additional services in the further development of the Program.
- B. **The project will begin with a Pre-Design Conference.** The Owner will provide to the Designer a written Program sufficient to establish the Owner's functional objectives; including space requirements and relationships, time and budget constraints and other special criteria in sufficient detail to allow the Designer to carry out the design.
- C. **Suggested agenda for a Pre-Design Conference:**
  - 1. Procedures:
    - a. The State as Owner: roles of the State Building Commission, the User Agency, and Real Property Administration; sources of funding; and, whether project centralized or non-centralized.
    - b. Processing of A/E Agreement (if not completed).
    - c. The Designers' Manual (latest edition).
    - d. Supplemental A/E Agreement and additional services.
    - e. General Procedures (See page 3.01).
    - f. Designer Invoices and Payments.
    - g. Procedures for design phase reviews.
    - h. Resolution of conflicting instructions.
  - 2. The Program:
    - a. Discussion of Program and Scope constraints.
    - b. Time and Budget constraints and allocations.
    - c. Owner's "needs" and preliminary concepts for developing design "solutions".
    - d. Energy budget or energy efficiency goals, if applicable.
    - e. Real property considerations.
  - 3. Team and Strategy:
    - a. Special consultant(s) and their contractual relationship with Designer.
    - b. Obtaining soils testing, surveys, information on utilities, etc.
    - c. Code compliance, [Sustainable Design Guidelines](#), Fire Marshal approvals, and accessibility.
    - d. Applicability of and criteria for Owner's energy efficiency design requirements.
    - e. Applicability of and criteria for building commissioning.
    - f. Establishment of schedule for design and construction.
    - g. Potential matters beyond the scope of contract that may be required of Designer.
- D. **Designer shall verify the Program.** A Program Phase review meeting(s) may be required; depending on the complexity of the project and the extent to which the Owner needs to clarify the Program. Ultimately, verification includes:
  - 1. Designer articulation of the functional and departmental objectives of the project based on the Program in a narrative presentation.
  - 2. Designer advisement with respect to confirmation of: time and budget, the selection of the site, the relationship of the project to other structures and facilities, and the scope and functional aspects of the Program - thus leading to a successful design solution.
  - 3. Designer acknowledgement of energy efficient design requirements and energy budget or goal. Additionally, the verification shall address any commissioning requirements.
  - 4. Designer shall reconfirm schedule and request written approval from RPA and, if non-centralized, the User Agency, of the Program Phase before proceeding with the Schematic Design Phase.



**A. Early in SDP, prepare and submit to Owner a proposal for:**

- surveying;
- geotechnical / hazardous materials investigations;
- and other such special services as may be needed.

The proposal may recommend preliminary scope of work, with detailed follow-up studies and reports. Discuss service and price with several (usually, at least three) qualified firms. Obtain prior approval of firm and cost before authorizing work to proceed. In the proposal:

1. Identify the firms that submitted proposals, their prices, and the recommended firm for providing services. Cost should be considered as one of the factors in determining which firm to recommend; however, cost may not necessarily be the controlling factor.
2. Identify a timetable for obtaining services that provides adequate time for Owner to review and approve proposal.
3. Have an attached itemization of direct costs from the firm.
4. Identify the projected maximum Owner's cost including applicable Designer multiplier.
5. [Identify Sustainable Design Guidelines Checklist items to be utilized for the project.](#)

**B. Develop a Schematic Design, which normally includes:**

- An analysis of the site, including flood zone designation(s).
- Conceptual diagrams, visual studies, and schematic drawings of the approved design concept.
- A narrative description of building systems, including energy efficiency and water conservation design strategies considered and adopted for integration into the design.
- An estimate of probable project construction cost (including site, utilities, built-in equipment), and utility operational cost.
- Additional consultant services, reimbursable expenses, etc.

Once developed, a review meeting will be scheduled, normally within 7 days, so that the Designer may show the progress to date, confirm the remainder of the schedule, and obtain written approval before proceeding with the Design Development Phase.

**C. Suggested agenda for an SDP review:**

1. Consideration of Program Requirements.
2. Conceptual diagrams of alternate approaches to program requirements.
3. Analysis of site.
4. Determine highest risk flood zone designation for insurance purposes.
5. Relationship to master plans, land use, local zoning, permits, environment, circulation, mass transportation, traffic, parking, telecommunications, utilities, fire & life safety.
6. Integration of the commissioning process.
7. Review conceptual [Sustainable Design Guidelines](#) and energy analysis and proposed energy efficiency and water conservation design strategies.
8. Functional Relationships.
9. Visual studies in diagrammatic form or in model form.
10. Determine if the project requires review now by regulatory authorities or State coordinating authorities.
11. Cost Estimate and Unit Costs.
12. Selection of a Design concept and completion of schematics.
13. Confirm schedule.
14. Written approval from the Owner.

### 3.04 EARLY DESIGN STAGE PRESENTATION (EDP)

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- A. The design must follow **three** prescripts** as required by the State Building Commission (SBC):
- the design shall be within the project Scope;
  - the design's construction cost estimate shall be within the Target, i.e., the Maximum Allowable Construction Cost (MACC) less contingency.
  - [The design has met the requirements as indicated in the Sustainable Design Guidelines and Checklist / Tracking Form.](#)
1. A cost estimate that is less than the *Budget* Target does not allow for the addition of out-of-scope design elements unless approved by the SBC. Likewise, a cost estimate that is greater than the *Budget* Target must be approved by the Contracting Agency and the State Architect for Owner assurance that a sufficient contingency will be available to complete the construction work.
  2. Bid alternates are used only to bring the base bid cost estimate to within the *Bid* Target, i.e., the MACC less the Owner-approved contingency. Bid alternates are used only for in-scope items, shall be no more than three in number, and the item(s) listed in descending order of need.
- B. Presentation of the design concept to the State Building Commission (SBC)** is normally required during the Design Development Phase for any new facility or major addition.
1. The Designer shall make such presentation during a regular-scheduled SBC meeting. Presentation of this "Early Design Stage" may occur as soon as the Schematic Design Phase is complete, and is required before the Design Development Phase can be approved as complete.
  2. Under special circumstances, such presentation may be required within the course of other design phases, or at other forums.
- C. Prepare to discuss** any aspect of the design and to present:
1. **Preliminary drawings**, prepared in any medium, conceptual and accurate, but not so detailed as to detract from the legibility and functional relationships of structures. A perspective study is not required and may be included only if it helps explain the project. Normally, neither renderings nor models shall be presented. Include:
    - a. site plan (show relationship to adjacent buildings);
    - b. floor plan(s);
    - c. elevations; and,
    - d. typical exterior wall or building section(s).
  2. **A two- or three-page summary** of the building and related features, briefly explaining:
    - a. the Program and the facility function;
    - b. orientation map, sufficient to acquaint SBC members of the project location;
    - c. the site, its location, and the results of geotechnical investigations and other test reports;
    - d. the facility plan, relation to Master Plan, and major functional relationships of the building;
    - e. the systems used for foundation, structure, walls, roof, windows, finishes, plumbing, HVAC, and electrical service; and,
    - f. [the proposed Sustainable Design Guidelines to be incorporated in the project design.](#)
    - g. energy efficiency and water conservation measures, fire protection systems, barrier-free accommodations, and other special features contributing to the solution.
    - h. commissioning scope, if required.
  3. **Statistical analysis** of gross, net, and usable square footage, SBC approved construction cost versus Designer's estimate, cost per sq. foot, and energy analysis.



### 3.05 DESIGN DEVELOPMENT PHASE (DDP)

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- A. Develop and submit to the Owner a fully developed design concept** based on the approved Schematic Design Phase. When required, include exterior perspective drawings and working models and/or renderings at a mutually agreed scale.
- B. Specialized consultation with the following F&A teams** (see 1.03) may be required. Each team has specific design requirements that must be incorporated into the design.
1. **F&A Office of Information Resources (OIR)** shall be consulted whenever a project involves telecommunications/computer networks.
  2. **RPA Interior Design** shall be consulted whenever a project involves space utilization (but normally office space) involving complex spatial relations.
  3. **RPA State Building Energy Management** shall be consulted whenever a project involves new construction or energy related renovation or modification.
  4. **RPA State Environmental Management** shall be consulted whenever a project involves the installation or removal of hazardous substances or their containers (such as fuel storage tanks.)
- C. If a building plaque is required by the Owner**, then Owner will provide a conceptual plaque layout. Refer to the sample plaque in Appendix 1. The layout will include the verbiage required and general order of appearance necessary for the Designer to develop a scaled design.
- D. Update narrative description, utilizing Sustainable Design Guidelines, of building systems;** including energy use analysis, projected utility operational costs, energy efficiency and water conservation approach & design features, and energy management systems to demonstrate compliance with Owner's energy efficiency design requirements.
- E. Arrange a concept review with the State Fire Marshal's office** once design development is considered by the Designer to be complete, and the Designer has submitted the required documents and materials to the Owner.
- F. Following receipt of the Designer's DDP submittal** by the Owner (and after the concept review with Fire Marshal) a review meeting will be scheduled, normally within 7 days. The Designer shall show the progress to date, confirm the remainder of the schedule, and obtain written approval before proceeding with the Construction Document Phase.
- G. Suggested agenda for a DDP review:**
1. Site plan, with contours and applicable cross-sections.
  2. Elevations, exterior perspectives, model, or renderings.
  3. Floor plans, gross & net area, circulation, building sections, design details.
  4. Preliminary furnishings and equipment list and plans, if required.
  5. Plumbing, Electrical, Mechanical, and Structural Plans.
  6. Preliminary specifications.
  7. [Sustainable Design Guidelines](#).
  8. Building systems narrative and energy use analysis.
  9. Preliminary quantity-based cost estimate, with escalation factors to projected bid date, and final fee adjustment, if needed.
  10. Internal and external coordination issues such as for telecommunications, land acquisition, [utility](#) connections, site staging & closures, equipment, furniture, etc.
  11. Special quality control issues/requirements and possible third party delivery methods.
  12. Bidding and Contract Documents:
    - a. Evaluate administrative and procedural needs.
    - b. Begin defining Allowances, Alternates, and Unit Prices, if any are to be used.
    - c. Select front-end documents to use based on cost and scope.
    - d. Confirm that Designer has current Designers' Manual, plus updates (esp. updated Wage Rates & Regulatory Requirements.)
    - e. Agree on overall format, organization, compilation, and production.
  13. Confirm status of reviews by regulatory authorities.
  14. Confirm schedule.
  15. Written approval from Owner.



### 3.06 CONSTRUCTION DOCUMENTS PHASE (CDP)

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- A. Upon approval of the Design Development Phase**, and authorization to proceed with the Construction Documents Phase, proceed to prepare preliminary Bidding and Contract Documents for review.
- B. Prepare the Project Manual** in accordance with Chapter 4 - *Project Manual Guide*, and utilizing [Appendix 3 - Bidding Documents](#); as included in the current Designers' Manual.
- Project Manual format** shall be 8.5 inch wide by 11-inch pages, printed two-sided with each section beginning on a right-hand page, and bound on the left margin, unless approved otherwise.
- C. Prepare the Drawings**, unless otherwise approved, to include a title sheet, site location map, and list of drawings matching that in the Project Manual.
- Drawing sheet dimensions** for the bidding documents should be determined after consulting with the Project Manager. Half-size sets may be requested of bid document sets larger than 11X17.
- D. Final Revision of building systems narrative**; including energy use analysis, projected utility operational costs, energy efficiency and water conservation approach & design features, and energy management systems to demonstrate compliance with Owner's energy efficiency design requirements and [Sustainable Design Guidelines](#).
- E. Submit a minimum of 3 sets** of preliminary Bidding and Contract Documents, plus the DDP markup set, to RPA for review. Upon submission, a review meeting will be scheduled, normally within 7 days, and held at RPA with Designer and Owner in attendance.
- F. Suggested agenda for a CDP review:**
- Confirm DDP cost estimate, [Sustainable Design Guidelines](#), and energy analysis, and advise RPA in writing of any change.
  - Verify that submittals have been made to proper authorities, such as Fire Marshal, and that approvals are in-hand or are due prior to release for bids.
  - Review of final draft bidding documents.
  - Confer and agree on construction timetable, Contract Days, and Liquidated Damages.
  - Confer and agree on cost and number of bid sets.
  - Determine if a Pre-Bid Conference is to be held. In either case the Designer shall notify holders of record documents in writing.
  - Review information required in the Invitation to Bid and Advertisement for Bids for completeness (except establishment of bid date).
  - Review Instructions to Bidders, and applicable supplementary instructions.
  - Discuss Bidding Phase, with particular emphasis on public advertisement, document distribution, Pre-Bid Conference and agenda, bid opening procedures and Bid Tab, notifications, and recommendations.
  - Determine timetable for completion of CDP and commencing to Bid Phase as outlined in Part 3.07 on the following page. Designer is to make revisions identified by Owner prior to printing.
  - Contract award process and Pre-Construction Conference.
  - Confirm Design Team's Representatives for the Construction Phase.
  - Discuss commissioning specifications and implementation issues, if required.
  - Verify that all [Sustainable Design Guidelines](#) and energy saving design features is reflected in the construction documents and that Owner's energy efficiency design requirements have been achieved.



- A. **Following is a typical sequence of events** for completing Construction Document Phase and commencing Bidding Phase, after the CDP review meeting:
1. Designer takes comments received from Owner regarding the draft Bidding Documents, and proceeds with revisions.
  2. Owner obtains from Department of Labor and Workforce Development, Division of Labor Standards the forms:
    - Wage Rate Determination,
    - Notice of Pre-Construction Conference, and
    - Job-Site Postingsand forwards these to Designer.
  3. Designer receives Wage Rate Determination and incorporates this section in the Bidding Documents, and completes other final revisions.
  4. Also, Designer receives the additional required Labor Standards documents to issue at a later date, as follows:
    - a. Notice of Pre-Construction Conference - to be completed by the Designer and returned to Labor Standard Division per instructions.
    - b. Job-Site Postings - Building Rates and/or Highway Rates provided in English and Spanish for issue at the Pre-Construction Conference to the Contractor for posting at the Job Site.
  5. Designer submits final, signed and sealed, draft Bidding Documents, plus the CDP markup set, to RPA.
  6. RPA confirms revisions per CDP review meeting, assigns Bid Date, and informs Designer and User Agency.
  7. Designer completes **00 11 00** Invitation to Bid and transmits to plan rooms, User Agency, and RPA.
  8. Advertisement for Bids is published in newspaper(s) by RPA.
  9. **Confirm with Project Manager the number of bid sets to be printed. Obtain an estimate from the printer prior to proceeding. If the estimated amount exceeds \$1,200.00, written pre-approval from the Project Manager must be obtained prior to execution of printing.**

**See Chapter 5 - Bidding,**

*for further and more detailed instructions with some of the above items ...*

**CHAPTER 3 END**

