Ten steps to a successful building project

The undertaking of a building project is a complex process that requires a *definition of the project requirements* and the *assembly of many different resources*. Risks can be minimized and rewards maximized by becoming familiar with the design & building process, and making informed decisions along the way.

Step 1: To build or not to build. That is the question. If you have already made up your mind to build, skip to Step 2 below. If not, you may need to do some research before you can make an informed decision. If the building project you are considering is a single family residence for yourself, the required research may be as simple as surveying the available existing homes on the market and determining which ones match your requirements for quality, design, lot size, amenities, location, price and other requirements you may have. If the building project you are considering is a commercial, industrial or institutional building project, the same requirements are pertinent, but the decision to build may require more extensive research, such as Market Research or an Economic Feasibility Study.

Step 2: Building Program. Before a new building, a building addition or a building remodel project can be designed, the design requirements must first be established and documented. The document containing the detailed requirements for the design is called the Building Program. It is created by, or through consultation with the Owner. Typically, Building Programs are created by architects or other trained design professionals that have a comprehensive understanding of the design and construction process. The Building Program will include information such as design criteria, area & space requirements, relationship of spaces, equipment, site work, budget and schedule requirements.

Step 3: Survey & Analysis of Existing Conditions. If a building site has already been selected or predetermined, a Site Survey (for new buildings), or an Existing Facility Survey (for additions or remodels) will be required. For new buildings, an ALTA Survey, or Topographical Survey will be needed, and can be provided by a licensed Surveyor. For building additions and remodels, an existing facility survey can be performed by anyone, but should be performed by the same person that will be providing design services for the project. For new buildings and building additions, a Soils Investigation Report, as provided by a Geotechnical Engineer may be required. If a building site has not yet been selected, Site Analysis and Site Selection Services are available from trained real estate or design professionals. Market Research may be needed to determine the social, economic and political need for, as well as how the project will be received by the anticipated users and others. An Economic Feasibility Study may be in order to determine the estimated project cost, financing requirements, return on investment and equity requirements.

Step 4: Project Administration & Management. Once the decision has been made to move forward with a building project, someone must manage the project. The better a project is managed, the more predictable the results will be. Good project administration & management will be represented by a proactive approach to communications and

coordination of engineering and other design professionals during the design phase. It will include thorough research and consulting with agencies having jurisdiction over the project from initial review through final approval. Among other tasks within this category are coordination of owner-supplied data, project scheduling, preliminary cost estimating and presentations of project data and recommendations to all of the various entities having an interest in the project to include owners, users and financial institutions.

Step 5: Site Development. Site Development Planning and Site Utilization Studies can be a critical element in the overall design of a facility. On phased projects, for example, a master plan may be required in order to optimize the utilization of the site. Infrastructure, open space, parking and areas for future building pads must be planned and reserved for phase four before construction on phase one can begin. On-site and off-site utility studies may be required to determine the feasibility of the proposed project, with respect to the required vs. the available utilities. Applications may be required to meet zoning regulations in the jurisdiction where the project will be constructed. These applications usually require a substantial amount of work well in advance of the detailed design of the project. For some projects, a public hearing is required, and will be scheduled a month or more after the date of the application.

Step 6: Design. On a single family residential project, a single designer or architect may have the ability to complete the entire set of design & construction drawings himself. On larger projects, however, a wide array of design professionals may be required to provide design and construction documents for the project. Architectural Design & Documentation, Structural Engineering, Mechanical Engineering, Electrical Engineering, Civil Engineering, Landscape Architecture, Interior Design, special Systems Design and Material Research & Specifications are among the various disciplines required for Commercial, Industrial, Institutional & complex Residential projects. In most cases, the authorities having jurisdiction over the project (Building Dept., Planning & Zoning and others) will require licensed professionals to provide the design for these disciplines.

Step 7: Bidding or Negotiation for the Construction Contract. After the construction documents have been prepared, and the authorities having jurisdiction over the project have approved the plans, the next step is to hire a general contractor to construct the project. Using as a conventional project delivery method, A general contractor would be selected by putting the project out for bid, or by negotiating a contract with a pre-selected general contractor. *An alternate method of project delivery is called "Deign-Build", where an owner enters into a contract with a Design-Builder at the beginning of the process (somewhere between steps 1 & 4 above). The Design-Builder would provide the design as well as the construction, hiring an architect and the required engineers to provide design services, and hiring a general contractor to provide the construction.* If the project is to go out for bid, bid documents must be prepared and distributed. During the bidding process, questions from bidding contractors inevitably come up. Those questions must be answered in writing, and distributed, along with supplemental information, to all bidders in the form of Addenda. During the bidding or negotiation process, bidders will often times propose alternates or substitutions for materials that are specified on the construction documents. Analysis of the alternates/substitutions is required before an informed decision can be made. Bid

Evaluation and Contract Award services are often included in this step.

Step 8: Contract Administration. After the construction contract has been awarded to a general contractor, the contract must be administered in order to insure that it is constructed per the contract documents. Evaluation of product submittals, observation of the contractor's performance, inspection & testing of construction materials, change orders, contract cost accounting and installation of furnishings & equipment must all be scrutinized in order to insure that the owner is getting what was designed and provided for in the contract documents. The contractor must also be scrutinized, in order to verify that his work is in full compliance with the contract documents. Once the construction has been satisfactorily completed, Project Closeout is required to verify conformity of the work to the contract documents, issue a certificate of substantial completion, transmittal of warranties to owner, and issuance of final certificates for contractor payment.

Step 9: Post Contract Services. After the construction of a project, additional facility-related services are often desired by an owner. Services such as Operation & Maintenance Program Review, Building Commissioning, Record Drawing Services and Warranty Review can add value to the success of a building project.

Step 10: Supplemental Services. Supplemental Services are available to meet special requirements of some building projects. Tenant related services, furnishings & equipment services, arts & crafts procurement, graphic design, renderings, scale model construction, photography, life-cycle cost analysis and energy studies are among the many supplemental services that can be provided to meet project requirements.