



BETTERBRICKS
Bottom line thinking on energy.

INTEGRATED DESIGN STEPS FOR DESIGNERS

The following describes key steps for the design team throughout the Integrated Design process. The steps are organized as a checklist for each of the traditional phases of design.

PRE-DESIGN

- Hold an early planning meeting (or Charrette) with the planning team (owner and planning consultants)
- Develop high performance goals, including a measurable energy performance goal, such as 25% less energy use than required by code
- Commit to an Integrated Design process
- Assemble a team experienced with Integrated Design or willing to spend the time to learn
- Identify roles and responsibilities for team members, including a champion for the Integrated Design process
- Determine financial criteria and priorities for design decisions
- Assess adequacy of the project budget and schedule, allow for additional time during Schematic Design for Integrated Design
- Encourage the owner to contract with a commissioning provider beginning with documentation of design intent and owner's project requirements during Schematic Design
- Gather climate and utility cost data
- Talk to local utilities, non-profits, state and federal agencies about available incentives and tax credits

SCHEMATIC DESIGN

- Hold a full design Charrette with all team members, including the users, and construction side, to kick-off the conceptual design
- Confirm and refine high performance goals and criteria
- Refine the building program and space functions, consider energy impacts of proximities
- Schedule periodic team meetings and support brainstorming and collaborative problem-solving
- Develop several design options that reduce loads on the building, look for synergies between climate, use, loads and systems
- Conduct simplified energy modeling and Life-Cycle Cost Analysis for design alternatives in order to make objective choices between options
- Compare results of this phase to the high performance goals

DESIGN DEVELOPMENT

- Discuss potential building systems and identify high efficiency options
- Conduct whole-building energy modeling to confirm the design meets the high performance goals, and to confirm eligibility for rating systems, incentives and tax credits
- Verify, with the owner, that the design documents at this stage contain the strategies to meet the performance goals
- Ask the whole team to help assess the preliminary cost model
- During value engineering, vigorously defend the value of high performance features as being integral to the whole building design and function

CONSTRUCTION DOCUMENTS

- Invite the commissioning provider, and maintenance and operations staff to conduct a document review of building systems
- Hold frequent coordination meetings to keep communication flowing among team members
- Update the cost model and schedule with input from the team
- Request documentation from the team that indicates how the project compares to the high performance goals set in Pre-Design
- Verify that the construction documents contain the strategies to meet the performance goals (consider asking the commissioning provider and contractor, to conduct this review)

CONSTRUCTION

- Conduct a construction kick-off meeting with the contractors and subcontractors to secure their commitment to the high performance goals before construction starts
- Review submittals and substitution requests for impact on the performance goals
- At the end of construction and prior to occupancy, allow time for the commissioning provider to complete functional testing and O&M training
- Review the commissioning report with the owner and have the contractor address any recommended repairs or alterations

OCCUPANCY

- Assist the owner and facility team to establish an ongoing energy management program, including training and periodic re-commissioning
- After the warranty period shakedown, verify that high performance goals were met, assess occupant satisfaction, and share feedback with the whole team