GREEN TEAM
CONCORD
MASSACHUSETTS

Green Team Recommendations for RFP's

Introduction

Integrated Design: The success of a project is a result of the collaboration between disciplines. Conventionally, each phase of conceptualizing, designing, engineering, constructing, landscaping, equipping, commissioning and occupying the project is handled sequentially. This approach fails to consider the interdependence of project components and their effect on the entire development and the iterative nature of design decisions. The opportunity to optimize building system integration and design is in the early phase of the project. The project schedule and budget should be allocated to invest its total resources more intensely at the front end, and less towards the end. Program options and cost-recovery potential diminishes exponentially during the life of the project. The team must be brought together as early as possible in the design process (even before site selection, if possible) to maximize the benefits of integrated design. The team must not only physically meet together, but must understand the constraints and objectives of the other members. The team members should include the owner/client, facilities manager, architect, consulting engineers, contractor (and critical subs, if possible), energy and daylight modelers, and commissioning agent. This does not imply an increase to schedule or budget, but an emphasis on a front-loaded process.

Commissioning: The crux of commissioning is to engage an independent commissioning agent (NOT the mechanical engineer) early in the design process and to conduct detailed tests on all the components and systems as they are installed during the construction phase. Through the commissioning process, all project team members realize that they must resolve any problems that are detected. Commissioning takes extra time and money, but usually pays for itself by correcting problems and ensuring over time that the building systems are properly operating throughout different seasons and usage patterns. Commissioning occasionally can save very large amounts of money, if serious defects are found in the operation of systems.

The Best Design Available: Hire an architect with a commitment to sustainable design and experience in how to do it; one who has a history of being a leader in creating outstanding projects.

From the Green Team's Top Ten Priorities (1/15/05)

The design of new construction projects should reflect a vision of the future, with creative, efficient and fully functional facilities – buildings with a true sense of place and the preservation of existing facilities should be given high priority in order to maintain the quality of the Town's character.

From the Town's Facilities Planning Committee Report (6/25/03)

Green Team Recommendations for all Town RFP's:

A. Scope of Work

1. Explicitly consider L.E.E.D. ("Leadership in Energy & Environmental Design") standards when designing Town buildings. From the Town's Facilities Planning Committee Report (6/25/03) and from Green Team Top Ten Priorities (1/15/05)

2. …Optimize lifecycle and operating costs through the careful selection of building materials and building systems. Calculate the "payback" for tradeoffs between initial costs and long-term savings…analyze energy cost tradeoffs, materials costs vs. maintenance cost savings, and the like. From the Town's Facilities Planning Committee Report (6/25/03) and from Green Team Top Ten Priorities (1/15/05)

Use a payback period of at least the duration of the bond by which the project will be financed. from Green Team Top Ten Priorities (1/15/05)

3. Energy Modeling: Employ energy modeling techniques to evaluate optimal systems for the project. If client selects renewable energy system(s), the fee will be adjusted as required by negotiation. From Green Team Top Ten Priorities (1/15/05)

4. Enclosure: Provide a high performance enclosure, including airtight construction, high insulation levels, and high performance glazing.
Adapted from the Police / Fire Station RFP (November 2002)

Provide a low-albedo (light-colored) roof to reduce heat gain and to reduce the heat island effect.

5. Orientation and Daylight: Orient the building to maximize use of solar energy in winter and minimize solar gain in summer and to maximize the use of daylighting.
Adapted from the Police / Fire Station RFP (November 2002)

Use light shelves and vision/daylight division in windows and skylights to provide daylight deep into the interior while controlling glare. Use exterior shading devices (preferred), or interior blinds or shades with automated control systems connected with the interior lighting in exterior zones to conserve energy, provide comfort, and control glare.

6. Employ high efficiency lighting systems and controls, mechanical and electrical equipment and appliances and heat recovery techniques such that the energy requirements for new town buildings and buildings undergoing major renovation use 20% to 30% less energy than a similar building that meets Massachusetts current energy code. Substantiation for this performance improvement is identified through building energy modeling and integrated engineering recommendations outlined above and includes examination of improved building heat recovery techniques employed in town buildings."
Note: The State School Building Assistance Program is undergoing review and will probably offer communities up to 2% more funding for meeting energy performance criteria.

7. Indoor Environment: Use high standards for indoor air quality (including mechanical air conditioning), acoustic and thermal comfort, and daylighting for more engaged and better-performing students and teachers [occupants]. From Green Team Top Ten Priorities (1/15/05)

8. Siting: Site projects in an environmentally responsive way, including consideration of conservation of wetlands. From Green Team Top Ten Priorities (1/15/05)

9. Water Usage: use green roofs and limited paving areas and porous paving to limit runoff and recharge ground water and use drought-tolerant plant species (xeriscaping) and "gray water" to limit water use. Capture roof drainage for gray water uses.

10. Ventilation Effectiveness: Design buildings with either natural (preferred) or mechanical ventilation so that the movement of air within occupied spaces does not just hug ceilings and fail to provide any noticeable local air velocities to the occupants and also design them to avoid excessive drafts that affect occupant comfort. Buildings shall provide generous amounts of outdoor air for ventilation with a minimal energy cost when the outdoor air conditions allow it. Provide a CO_2 monitoring system to ensure adequate fresh air and save energy when spaces are not occupied.

11. Materials: Use recycled and durable materials to lessen environmental impact. Use materials with no or low volatile organic compounds to avoid polluting indoor air.

From Green Team Top Ten Priorities (1/15/05)

12. Construction Procedures: Use construction procedures that recycle materials and that avoid adversely impacting occupants of occupied buildings.

From Green Team Top Ten Priorities (1/15/05)

13. Existing Conditions: Define the existing systems including the type, capacity, age, condition, and efficiency (where relevant) of all major pieces of equipment for mechanical, electrical, and plumbing systems plus the insulation levels for all elements of the building thermal envelope. Include analysis of existing elements and equipment in the value engineering described above and below. As part of the schematic design phase provide a description of the existing systems with the value engineering options and life cycle cost analysis. Describe how the recommended systems will integrate with or complement the existing systems in the narrative.

From the Police / Fire Station RFP (November 2002)

B. Submission Requirements

Include the following:

1. Cover letter.
2. Explanation of approach and philosophy.
3. Explanation of work to be performed.
4. Description of integrated design process to be used.
5. Project schedule (based on basic dates provided).
6. List of high-performance design tools the team will use and why appropriate.
7. Statement of qualifications.
8. List of sub-consultants and qualifications.
9. Compensation (broken down by phase).
10. Resumes of key personnel.
11. Sample projects or other relevant experience.
12. Names and telephone numbers of references.
13. Qualifications of mechanical engineer (or other consultant) regarding energy modeling and design for natural ventilation, including the use of computational fluid dynamics.