

**REQUEST FOR PROPOSALS**  
From Qualified Engineering Consulting Firms to Conduct  
**LEED CERTIFICATION FUNDAMENTAL BUILDING SYSTEMS COMMISSIONING**  
For the  
**SAN MATEO COUNTY YOUTH SERVICES CENTER**  
A 240-bed, new juvenile offender facility at  
**21 Tower Rd., San Mateo, CA**

September 27, 2002

**Issuance Date: Sept. 27, 2002**

**Closing Date: Oct. 17, 2002, 5:00 PM**

**A - Project Description:**

The County of San Mateo is soliciting proposals from qualified engineering consulting firms to conduct building systems commissioning for a 240-bed Youth Services Center at 21 Tower Rd., San Mateo, CA.

The Needs Assessment and Program Statement of the Youth Services Center calls for a 240-bed Juvenile Hall of varying levels of security of 73,844 g.s.f. Other components are a Girls Camp, (30 beds included in the bed-count), 21,697 g.s.f.; an Assessment Center, 7,231 g.s.f.; Intake-Release, 4,959 g.s.f.; Visiting, 4,195 g.s.f.; Laundry, Housekeeping, Storage 7,889 g.s.f.; Health Service, 3,631 g.s.f.; Mental Health Services; 7,370 g.s.f.; Food Service, 10,332 g.s.f.; Programs, 13,926 g.s.f.; Education, 17,282 g.s.f.; Facility Administration, 23,808 g.s.f.; Outside the secure perimeter, but part of the total bed-count is a Dual Diagnosis, substance abuse treatment center (30 beds) and two Group Receiving Homes (24 beds), not included in the bed-count, 24,387 g.s.f..

The Program Statement envisions a campus-like setting with individual buildings no more than two-stories in height. The Juvenile Hall (total gross area of 196,165 g.s.f.) with Receiving Homes (total area of 24,387 g.s.f.) are the first component of the project. Estimated construction cost is \$52,000,000.

The Construction Manager for the project is Turner Construction Co. The project is being conducted under a modified design/build method, requiring the CM to have single-point responsibility at the onset of the project, for the management of design and budget and, prior to construction, pre-qualifying selected, individual contractors. The lowest responsible bidder of each trade is awarded the separate construction contract, and upon the assignment by the County, will be under Turner's management and supervision during construction. Turner's selected architect for the project is Kaplan-McLaughlin-Diaz (KMD) of San Francisco. The Mechanical Engineer is TMAD Oakland.

**1 - Background:**

The County is committed to adhere to its Sustainable Building Policy as adopted by the San Mateo County Board of Supervisors. The Policy requires pursuit of sustainable building practices in the project's design, construction and operation, using the U.S. Green Building Council's LEED rating system. It encourages Design and Project Management teams to achieve certification at the highest practicable LEED rating level.

A prerequisite for LEED certification at any level is fundamental building system commissioning to verify and ensure that building elements and systems are designed, installed and calibrated to operate as intended. In addition, the County intends to do additional commissioning as outlined in LEED EA Credit 3, which calls for the entire building(s) to be designed, constructed and calibrated to operate as intended. The County wishes to engage the commissioning process at the onset of design, in full conformance with LEED principles.

**2 - Review Agencies and Regulations:**

- a) The National Environmental Policy Act (NEPA) process and the California Environmental Quality Act (CEQA).
- b) The California Board of Corrections (BOC) oversees the operation and construction of juvenile justice facilities and will grant approval to proceed with construction when the NEPA/CEQA process is finalized and approved.
- c) Other regulations that must be met include:
  - Minimum Standards for Juvenile Facilities, Title 15 - Crime Prevention and Correction.
  - Board of Corrections, Title 24- Juvenile Facility Regulations
  - ACA Standards for Juvenile Detention Facilities, Third Edition.
  - ACA Standards for Community Residential Facilities, Third Edition
  - Institute for Medical Quality Accreditation Standards for Juvenile Facilities
  - State Fire Marshal (within BOC)

**3 - Project Schedule: \*(Design Phase dates pending)**

- |  |           |
|--|-----------|
| a) Sign contract with Commissioning Agent (CA) | 11/1/02   |
| b) Complete Architectural Program/Master Plan  | 11/1/02   |
| c) Complete Schematic Design                   | 12/30/02* |
| d) Complete Design Development                 | 3/28/03*  |
| e) Complete Construction Documents             | 7/30/03*  |
| f) Start Construction                          | 12/1/03   |
| g) Substantial Completion                      | 11/30/05  |
| h) Occupy facility                             | 3/1/06    |

**B - Proposal Contents:**

**1 - Scope**

The consultant will be an independent third-party and as Commissioning Authority (CA), report directly to the County's Project Manager (PM), but will be responsible for coordinating its activities with the County's Construction Manager (CM), Turner Construction Co. The consultant shall prepare a proposal that includes all phases of the work identified herein. The consultant shall carry a minimum of \$1,000,000 in general liability insurance and agree to sign the County's Standard Form of Agreement with Independent Contractor. Copies can be obtained, upon request, from contact person named herein.

The CA will, but not necessarily be limited to, perform the following:

- Ensure that the design objectives and intent are clearly documented.
- Perform a focused review of design development.
- Develop a Commissioning Plan.
- Conduct a scoping meeting, review commissioning process with the commissioning team members.
- Receive submittals of equipment documentation during normal submittals, including detailed start-up procedures.
- Work with the subcontractors in developing start-up plans and start-up documentation formats.
- Provide checkout and performance verification, with pre-functional checklists completed before functional testing.
- Documents that the checklists and startup were completed according to the approved plans, witnesses startup of selected equipment.
- Develop specific equipment and system functional performance test procedures, document procedures executed by the subcontractors.
- Review the O&M documentation for completeness. Commissioning is completed before Substantial Completion.
- Review, pre-approve and coordinate the training provided by the subcontractors and verify that it was completed.

## **2 - Commissioning Authority Responsibilities**

The commissioning authority/firm (CA) will have the following responsibilities:

The CA is not responsible for design concept, design criteria, compliance with codes, design or general construction scheduling, cost estimating, or construction management. The CA may assist with problem-solving or resolving non-conformance or deficiencies, but ultimately that responsibility resides with the general contractor and the A/E. The primary role of the CA is to develop and coordinate the execution of a testing plan, observe and document performance—that is determine whether systems are functioning in accordance with the documented design intent and in accordance with the Contract Documents. The Contractors will provide all tools or the use of tools to start, check-out and functionally test equipment and systems, except for specified testing with portable data-loggers, which shall be supplied and installed by the CA.

## **3 - Programming and Design Development Phase**

**“LEED” Requirements:** *“The CA shall review the design, prior to the construction documents phase, to ensure that each commissioned feature or system meets the design intent relative to functionality, energy performance, water performance, maintainability, sustainability, system cost, indoor environmental quality and local environmental impacts. This review shall be fully documented.”*

Detailed Tasks include:

- 3.1 Coordinate the commissioning work during design
- 3.2 Develop a design-phase commissioning plan.
- 3.3 Perform a focused design review at the end of Design Development.
- 3.4 Assist design team members in developing their portions of the design intent. Approve their submissions.

#### **4 - Construction Document Phase:**

**“LEED” Requirements:** *“The CA shall review the construction documents to ensure that commissioning is adequately specified, that each commissioned feature or system can be commissioned and meets the design intent relative to functionality, energy performance, water performance, maintainability, sustainability, system cost, indoor environmental quality and local environmental impacts. This review shall be fully documented.”*

*“The Commissioning Plan is created during the design phase. It includes the following: an overview of the commissioning process, a list of all commissioned features and systems, identification of primary commissioning participants and their responsibilities, a description of the management, communication and reporting of the plan, an outline of the commissioning process scope, including submittal review, inspection, start-up, testing, training, O&M documentation and warranty period activities, a list of the expected written work products, an activity schedule, and a description of the rigor and scope of testing. In circumstances when the decision to pursue a LEED rating is made after the design phase, a commissioning plan should be completed prior to the installation of any commissioned elements.”*

#### **Detailed Tasks include:**

- 4.1 Coordinate the commissioning work during this phase.
- 4.2 Perform a focused review of the drawings and specifications when 50% and 95% .
- 4.3 Assist, review and approve the development of the design intent and operating parameters documentation by all design team members.
- 4.4 Develop a draft commissioning plan for the construction phase of the project .
- 4.5 Develop full commissioning specifications for all commissioned equipment. The commissioning specification will include a detailed description of the responsibilities of all parties included in the commissioning process; details of the commissioning process; reporting and documentation requirements, including formats; deficiency resolution; prefunctional checklist and startup requirements; the functional testing process; specific functional test requirements, including testing conditions and acceptance criteria for each piece of equipment being commissioned.
- 4.6 Have the commissioning specifications approved by the A/E team and included in the A/E construction specifications.

#### **5 - Construction and Acceptance Phase**

##### **“LEED” Requirements**

**The LEED program mandates levels of participation by the Commissioning Authority. Per the Prerequisite language “Verify the Installation, Function, Performance, Training and Documentation. The following shall be completed on each commissioned component, equipment, system or feature:**

**Focused Review of Submittals.** *“The contractor standard submittals of commissioned features and systems shall receive documented review by the CA to ensure that the feature being provided will meet the specifications and design intent, particularly as it relates to the environmentally responsive characteristics.”*

**Installation Inspections.** *“The commissioned features and systems shall be inspected by the Commissioning authority during installation to ensure that they are properly installed according to the contract documents and manufacturer’s instructions, and that other building systems or components are not compromising the efficacy of the feature.”*

**Start-up and Checkout.** *“The contractor completes the start-up and initial checkout of all items listed in the contract documents. The start-up and checkout results shall be clearly documented according to the manufacturer’s written instruction and the contractor documents. The commissioning authority then applies appropriate sampling techniques to verify that start-up and initial checkout of all commissioned equipment is successfully completed. The commissioning authority shall ensure that the control system has successfully passed a complete point-to-point checkout and that each control point is commanding, reporting and controlling according to the intended purpose. For the LEED™ prerequisite, the commissioning authority shall verify that all sensors have been calibrated to ensure that the reported value in the control system represents the actual local value. Verify that all actuators have been adjusted to fully close and open dampers and valves and the reported values in the control system are correct, verified through visual observation.”*

**Functional Testing:** *“Functional testing, written, repeatable test procedures, prepared specifically for each project, shall be used to functionally test components and systems. These tests shall be documented to clearly describe the individual systematic test procedures, the expected system response or acceptance criteria for each procedure, the actual response or findings, and any pertinent discussion. After the initial checkout has been approved by the commissioning authority, the following modes shall be tested by the contractor:*

*“Each sequence in the sequence of operations and other significant modes. Sequences and control strategies not mentioned in the written sequences including startup, shutdown, unoccupied and manual modes, modulation up and down the unit’s range of capacity, power failure, alarms, component (unit and pump) staging and backup upon failure, interlocks with other equipment, and sensor and actuator calibrations.*

*“All larger equipment will be individually tested. Similar units that are numerous (e.g., many smaller rooftop packaged units, air terminal units, and exhaust fans) may have an appropriate sampling strategy applied. Heating equipment must be tested during the winter and air conditioning equipment must be tested during the summer, as appropriate to demonstrate performance under near-design conditions.”*

**O&M Manuals:** *“The commissioning authority shall review the O&M manuals for all commissioned features and systems to be provided to the facility staff for completeness and applicability. The O&M data shall be bound in spine-labeled three-ring binders, liberally divided with tabs to provide efficient access. Manuals will include: name, address and telephone number of the manufacturer or vendor and installing contractor, submittal data, operations and maintenance instructions with the model and features for this site clearly marked.”*

**Training:** *“The commissioning authority shall assemble written verification that training was conducted for all commissioned features and systems. The training shall be performed by qualified individuals for a sufficient duration to ensure that facility staff has all the information they need to optimally operate, maintain and replace the feature or system.*

*“Training shall include, as appropriate: general purpose of the system (design intent), use of the O&M manuals, review of control drawings and schematics, start-up, normal operation, shutdown, unoccupied operation, seasonal changeover, manual operation, controls set-up and programming, troubleshooting, alarms, interactions with other systems, adjustments and optimizing methods for energy conservation, relevant health and safety issues, special maintenance and replacement sources, tenant interaction issues and discussion of why this feature is environmentally responsive.”*

**6 - Commissioning Report:** *“A commissioning report shall be delivered to the Owner after all but seasonally deferred functional testing is complete. The report shall include a list of each commissioned feature or system, and the disposition of the commissioning authority regarding the feature or system’s compliance with the contract documents. The following areas need to be addressed in the report: 1) design intent, 2) product specification, 3) installation, 4) functional performance and efficiency, 5) O&M review and recommendations, and 6) operator training. A written list of all outstanding commissioning issues and any testing that is scheduled for a later date,*

*justified by seasonal conditions shall be included. A list of any compromises in the environmentally responsive features shall be given. All outstanding environmentally responsive feature deficiencies shall have been corrected or listed in the commissioning report. LEED TM staff will determine if any outstanding issues will delay LEED TM certification. An appendix shall contain all completed functional tests.”*

Detailed Tasks Include:

- 6.1 Coordinate and direct the commissioning activities in a logical, sequential and efficient manner using consistent protocols and forms, centralized documentation, clear and regular communications and consultations with all necessary parties, frequently updated timelines and schedules and technical expertise.
- 6.2 Coordinate the commissioning work and, with the construction manager (CM), ensure that commissioning activities are being scheduled into the master schedule.
- 6.3 Revise, as necessary, the current draft of the construction phase commissioning plan developed during design.
- 6.4 Plan and conduct a commissioning scoping meeting.
- 6.5 Request and review additional information required to perform commissioning tasks, including O&M materials, contractor start-up and checkout procedures.
- 6.6 Before startup, gather and review the current control sequences and interlocks and work with contractors and design engineers until sufficient clarity has been obtained, in writing, to be able to write detailed testing procedures.
- 6.7 Review and approve normal Contractor submittals applicable to systems being commissioned for compliance with commissioning needs, concurrent with the A/E reviews.
- 6.8 Write and distribute prefunctional tests and checklists.
- 6.9 Develop an enhanced start-up and initial systems checkout plan with Subs.
- 6.10 Perform site visits, as necessary, to observe component and system installations. Attend selected planning and job-site meetings to obtain information on construction progress. Review construction meeting minutes for revisions/substitutions relating to the commissioning process. Assist in resolving any discrepancies.
- 6.11. Witness all or part of the HVAC piping test and flushing procedure, sufficient to be confident that proper procedures were followed. Document this testing and include documentation in O&M manuals. Notify owner’s project manager of any deficiencies in results or procedures.
- 6.12. Witness all or part of any ductwork testing and cleaning procedures, sufficient to be confident that proper procedures were followed. Document this testing and include documentation in O&M manuals. Notify owner’s project manager of any deficiencies in results or procedures.
- 6.13. Approve prefunctional tests and checklist completion by reviewing prefunctional checklist reports or by direct site observation.
- 6.14. Approve systems startup by reviewing start-up reports and by selected site observation.
- 6.15. Review testing, adjusting and balancing (TAB) execution plan.
- 6.16. Oversee sufficient functional testing of the control system and approve it to be used for TAB, before TAB is executed.
- 6.17. Approve air and water systems balancing by spot testing and by reviewing completed reports and by selected site observation.
- 6.18. With necessary assistance and review from installing contractors, write the functional performance test procedures for equipment and systems. This may include energy management control system trending, stand-alone data-logger monitoring or manual functional testing. Submit to CM for review, and approval if required.
- 6.19. Analyze any functional performance trend logs and monitoring data to verify performance.
- 6.20. Coordinate, witness and approve manual functional performance tests performed by installing contractors. Coordinate retesting as necessary until satisfactory performance is achieved.
- 6.21. Maintain a master deficiency and resolution log and a separate testing record. Provide to the CM written progress reports and test results with recommended actions.

- 6.22. Witness performance testing of smoke control systems by others and all other owner contracted tests or tests by manufacturer's personnel over which the CA may not have direct control. Document and include in Commissioning Record in O&M manuals.
- 6.23. Review equipment warranties to ensure that the Owner's responsibilities are clearly defined.
- 6.24. Oversee and approve the training of the Owner's operating personnel.
- 6.25. Compile and maintain a commissioning record and building systems book(s)
- 6.26. Review and approve the preparation of the O&M manuals.
- 6.27. Provide a final commissioning report. The report shall include an executive summary, list of participants and roles, brief building description, overview of commissioning and testing scope and a general description of testing and verification methods. For each piece of commissioned equipment, the report should contain the disposition of the commissioning authority regarding the adequacy of the equipment, documentation and training meeting the contract documents in the following areas: 1) Equipment meeting the equipment specifications, 2) Equipment installation, 3) Functional performance and efficiency, 4) Equipment documentation and design intent, and 5) Operator training. All outstanding non-compliance items shall be specifically listed. Recommendations for improvement to equipment or operations, future actions, commissioning process changes, etc. shall also be listed. Each non-compliance issue shall be referenced to the specific functional test, inspection, trend log, etc. where the deficiency is documented. The functional performance and efficiency section for each piece of equipment shall include a brief description of the verification method used (manual testing, BAS trend logs, data loggers, etc.) and include observations and conclusions from the testing.  
Appendices shall contain acquired sequence documentation, logs, meeting minutes, progress reports, deficiency lists, site visit reports, findings, unresolved issues, communications, etc. Prefunctional checklists and functional tests (along with blanks for the operators) and monitoring data and analysis will be provided in a separate labeled binder.

## 7 - Near-Warranty End or Post-Occupancy Review

**“LEED” Requirements** *“The Commissioning Authority shall return to the site at 10 months into the 12-month warranty period and review with facility staff the current building operation and the condition of outstanding issues related to the original and seasonal commissioning.*

*“Also, the CA will interview facility staff and identify problems or concerns they have operating the building as originally intended. The CA shall provide suggestions for improvements and for recording these changes in the O&M and Re-commissioning Management manuals. Identify areas that may come under warranty or under the original construction contract. Assist facility staff in developing reports, documents and requests for services to remedy outstanding problems.”*

### Detailed Tasks include:

- 7.1 Coordinate and supervise required seasonal or deferred testing and deficiency corrections and provide the final testing documentation for the commissioning record and O&M manuals.
- 7.2 Return to the site at 10 months into the 12 month warranty period and review with facility staff the current building operation and the condition of outstanding issues related to the original and seasonal commissioning. Also interview facility staff and identify problems or concerns they have with operating the building as originally intended. Make suggestions for improvements and for recording these changes in the O&M manuals. Identify areas that may come under warranty or under the original construction contract. Assist facility staff in developing reports and documents and requests for services to remedy outstanding problems.
- 7.3 Assist in the development of a preventative maintenance plan, a detailed operating plan or an energy and resource management plan.

## **8 - Systems To Be Commissioned**

The following systems, including all components and controls, will be commissioned:

- 8.1 Central building automation systems, including linkages to remote monitoring and control sites (this excludes any security-related control systems or interlocks).
- 8.2 All equipment of the heating, ventilating and air conditioning systems.
- 8.3 Refrigeration systems.
- 8.4 Interface with Building Management System (BMS) for life safety systems (fire alarm, egress pressurization, fire protection)
- 8.5 Domestic and process water pumping systems.
- 8.6 Interface with BMS for emergency power and uninterruptible power supply (UPS) systems.
- 8.7 Lighting control systems

## **C - DESIRED QUALIFICATIONS**

It is the County's desire for the firm designated as the site commissioning authority to satisfy as many of the following requirements as possible:

1. Acted as the principal commissioning authority for at least three (3) projects over 100,000 SF
2. Acted as the principal commissioning authority for at least (1) LEED™ Certified Project
3. Extensive experience in the operation and troubleshooting of HVAC systems, energy management control systems, and security systems.
4. Extensive field experience is required. A minimum of five (5) full years in this type of work is required.
5. Knowledgeable in building operation and maintenance and O&M training.
6. Knowledgeable in test and balance of both air and water systems.
7. Experienced in energy-efficient equipment design and control strategy optimization.
8. Direct experience in monitoring and analyzing system operation using energy management control system trending and stand-alone data logging equipment.
9. Excellent verbal and writing communication skills. Highly organized and able to work with both management and trade contractors.
10. Experienced in writing commissioning specifications.
11. A bachelor's degree in Mechanical Engineering is strongly preferred, and P.E. certification is desired, however, other technical training, past commissioning, and field experience will be considered.
12. Membership of the Building Commissioning Association will be considered a plus.

The required expertise for this project will be based on skill and experience set of the prime firm making the proposal. A member of that firm will be the designated Commissioning Authority. The Commissioning

Authority must be fully qualified to commission most of the above listed systems. If the Commissioning Authority or prime firm does not have sufficient skills to commission a specific system, the prime firm shall subcontract with a qualified party to do so. That party's qualifications shall be included and clearly designated in the response to this RFP.

## **D - PROPOSAL**

Proposals shall succinctly provide sufficient information to allow San Mateo County to evaluate the Consultant's approach, experience, staff and availability. Proposals shall include the following information:

- Discussion of Consultant's approach to the Project. For example, what information is needed, how functional tests are developed, and what test equipment is typically used for this type of Project.
- Description of relevant Projects the Consultant(s) has accomplished including a client contact and phone number for at least three projects.
- Resumes of staff to be assigned to the Project and a statement regarding availability of staff to begin the Project.
- Cost estimate needed to accomplish the scope of work based on the LEED™ Certification Fundamental Building Systems Commissioning Requirement broken down into the following components:
  - 1) Review design intent and basis of design documentation
  - 2) Develop a commissioning plan
  - 3) Develop commissioning requirements to be included in the bid documents
  - 4) Verify installation, functional performance, training, and documentation during construction
  - 5) Complete and submit the commissioning report and letter of certification for LEED™
- Cost estimate needed to accomplish the scope of work based on the LEED™ Additional Commissioning Credit Requirements
- Cost estimate needed to accomplish the scope of work based on the LEED™ Measurement and Verification Credit
- Timeline for completing the work.
- Hourly Rates of staff to be assigned to the project.
- Reimbursable expenses, including mark-up.
- Proof of Professional Liability Insurance.

**E - County Contact:**

All interested proposers should contact Frank Battipede, Design Manager, San Mateo County Capital Projects Division

**Tel. No.** 650/363-4524

**Fax No.** 650/363-4832

**e-mail:** [fbattipede@co.sanmateo.ca.us](mailto:fbattipede@co.sanmateo.ca.us)

Four double-sided copies of the proposal shall be submitted by 5:00 PM, **Oct.17, 2002** to Frank Battipede, Capital Projects Division, 455 County Center, 5<sup>th</sup>.Fl., Redwood City, CA 94063. County staff will interview a short list of consultants soon thereafter, with anticipated contract signing no later than **Nov.1, 2002**