

# NATIONAL RENEWABLE ENERGY LABORATORY

Golden, Colorado

Design-Build Delivery Method for the Research Support Facility (RSF)

Firm Fixed Price of \$64,261,000.00

## LESSONS LEARNED

December 2010

### PRE-AWARD

- **Project Objectives Checklist**: The RFP should contain a Project Objectives Checklist outlining Mission Critical, Highly Desirable and If Possible categories. Items within each category should be prioritized. NREL found that when there is more scope than money (which is normally the case for owners), it's helpful to provide a Project Objectives Checklist which outlines the scope of the work that is desired. In a competitive environment, the marketplace will respond by trying to give the owner as much scope as they possibly can knowing that this will improve their standing during the competition. NREL structured the Project Objectives Checklist with each item being prioritized within each category to inform the marketplace on what scope items were more important to NREL.
- **Performance Based Criteria** is considered a Best Practice of the Design-Build Institute of America (DBIA). Performance Based Criteria outlines what the end product should do, not what it should be. The performance criterion does not include drawings and specifications, but outlines the performance requirements of the facility. NREL had historically used drawings and specifications in a design-bid-build delivery method. The use of performance specifications was new and NREL subcontracted with a design-build criteria consultant to assist in writing our first performance specification.
- **Programming**: The programming requirements for the facility should be completed prior to the development of the RFP. NREL believed we had completed the programming effort with our own resources, but when the design-build criteria consultant came on board, NREL discovered that design-build requires much more detail in the programming information.
- **Stipends**: The use of stipends is considered a Best Practice by DBIA and is useful on large complex projects. NREL had never paid stipends before the RSF project. Initially, NREL/DOE struggled with the concept of what value the Government would receive from the payment of stipends. However, because the type of design-build projects NREL

were pursuing included facilities which would require innovative and cutting edge design solutions to meet aggressive energy and sustainability goals, the amount of information required in the firm's technical proposal far exceeded normal solicitation requirements. As such, offerors responding to the RFP could easily experience significantly greater costs in proposal preparation than in design-bid-build, or more standard design-build projects. As such, NREL determined this would discourage firms from participating in the larger, complex design-build projects. As a result, stipends (\$200,000) were paid to help offset the high costs offerors incurred to participate in NREL's solicitations. Another benefit to payment of stipends centered on NREL's ownership of the design solutions submitted in response to the RFP. By payment of a stipend to the unsuccessful offerors, NREL acquired ideas from the unsuccessful designs for future use, if needed.

- **Evaluation Criteria.** NREL strived to select the best design-build team for the project. Evaluation criteria which were outlined in the RFP, contained information that was critical during the evaluation. Two criteria that NREL found to be helpful in the evaluation of competing design-build teams were:
  - Past performance on design-build projects performed by any individual design-build team member; and
  - Past performance on design-build projects by the collective design-build team.

Design-build can also be pursued utilizing "Bridging Documents" which is not performance based design-build. NREL found that design-builders who claim they have design-build experience utilizing Bridging Documents may not have experience utilizing performance based specifications.

NREL found that it's important that the Key Personnel have prior experience in a performance based design-build projects. Structure the RFP evaluation criteria to gain insight into the skill set of the key personal proposed. Evaluate and select the right team for the project and try not to focus completely on the proposed design.

- **Short-listing to 3 firms:** NREL crafted the RFP submittal requirement to include a full conceptual design. NREL learned that although the stipend is intended to help offset the higher proposal costs of competing offerors, the actual cost a firm will incur for the complex project far exceeds the stipend paid. NREL determined that by limiting the number of short-listed firms to no more than 3 (also a DBIA best practice), offerors realize that they have a 1 in 3 chance of being successful, and are more likely to take the financial risk involved with these types of competitions.
- **One-on-One Meetings during the Competition:** NREL found that this DBIA best practice is somewhat hard to implement under Federal Acquisition Regulation

competition constraints. NREL did not clearly inform competing firms of the limitations on conversation at the one-on-one meetings and the design-builder came to the meeting anticipating an opportunity to discuss details on their proposed design. The design-builder needs to be made aware of the format of the One-On-One meetings and what can/cannot be discussed at these meetings. The format of the one-on-one meetings is to discuss the requirements of the RFP. NREL came prepared to answer questions and provide clarification on the RFP. These meetings proved to be useful to NREL as we were able to identify ambiguities within the RFP or requirements that were not well defined. This allowed NREL to amend the RFP requirements prior to the submission of technical proposals. NREL also used this information to improve future RFP documents.

## **POST AWARD**

- **Award Fee:** Use of an Award/Incentive Fee is considered a Best Practice by the DBIA and has been determined to be a good way to modify subcontractor behavior. In a design-build delivery method, the design-builder could, once the procurement is awarded, move ahead with the project without giving the owner a voice in the design or construction phases. This is particularly true when utilizing performance criteria. Once the performance criteria are established, some design-build teams may not see a need for owner involvement. Because NREL is a research and development laboratory which employs several subject matter experts (SMEs) in the field of energy, sustainability, etc., it was determined that an award fee program would ensure that the NREL SMEs would have input into the design of the facilities. NREL SMEs serve as technical advisors to the NREL Award Fee Board and have direct input into the award fee feedback and scoring which determines how much award fee the design-builder earns during an evaluation stage.
- **Technical Direction:** The owner should not give the design-builder technical direction in design-build type procurements. If the owner has very specific technical requirements that need to be incorporated into the design, the owner should consider the use of bridging documents rather than performance criteria. NREL has found that when the end users are the SMEs in a particular facet of the design of a facility, there is a tendency for the users to offer technical guidance to the design-builder. This results in a possible shift of risk back to NREL in that if the technical guidance impacts another part of the design, NREL becomes responsible for a “change”. This “change” to the performance requirements could end up costing the owner more money. Also, NREL has found that when the owner lacks experience with the management of a design-build project, they are likely to rely on the experience they have in another delivery method which is not applicable to design-build.

- **Market Pricing:** Because the A/E and constructor partner together on a design-build team, current market pricing is provided to the A/E by the constructor during the design. Also, with this collaboration, the constructor has input on the constructability of the facility, as well as cost estimating input, during the design phase.
- **Partnering:** NREL found that partnering is critical to success, as it builds trust between the design-build team and the owner. NREL learned that it's important that all parties have a "working together" approach and interactions should be collaborative, not adversarial. The creation of an integrated project team which consists of the design-build team, the owner's representative team, and the owner (including end users) to develop solutions and work together is critical in the successful outcome of a project.
- **Partnering Sessions:** NREL included in the subcontract the requirement for at least one partnering session. However, NREL found that partnering sessions should be held on an as-needed basis to assure the integrated project team continues to work as a team. NREL learned the importance for the entire team including the constructor, designers, NREL and DOE, to work well together and function as a team rather than separate entities with competing interests.

## GENERAL

- **Phasing:** NREL learned through the competition phase of the RSF project that on some complex projects, the risk is too great for the design-builder to sign a fixed price design-build subcontract for the entire scope of work. To address this issue, NREL crafted a subcontract which would be phased for more complex projects. The phasing consists of the initial subcontract award (Phase I) including the preliminary design of the facility. Phase II would then include the design development and construction of the facility. The phasing allows the owner to opt to not pursue Phase II with the design-builder if the outcome of Phase I is unsatisfactory. The design-builder is normally interested in the award of Phase II since the majority of the dollars are in Phase II. This also assures that the owner has input during the preliminary design phase. Both the design-builder and the owner have an "off ramp" contractually if the project is not proceeding satisfactorily. This also aligns nicely with the Critical Decision (CD) approval process as the subcontract provides natural breaks in the period of performance at the same time the CD approvals are required.
- **Design-Build Experience:** NREL did not have an abundant amount of experience utilizing the design-build delivery method and sought to obtain training from the Design-Build Institute of America (DBIA) or DBIA authorized representatives. Also, staff

members which have design-build experience with bridging documents needed to be trained to the differences when utilizing design-build with performance specifications.

- **Owner's Representative**: NREL obtained the services of an Owner's Representative because NREL did not have the appropriate/experienced staff to adequately oversee all aspects of the design and construction. NREL found that the Owner's Representative is a critical resource for owners and the cost to obtain the Owner's Representative is viewed as money well spent. NREL learned that it is advantageous to have an Owner's Representative (design-build criteria consultant) brought on board early in the process to aid in the development of the programming or the performance specifications.
- **Organizational Involvement**: NREL found that having representatives from all departments within the laboratory participate in the development of the performance specifications to be very beneficial. One group that did not have their requirements input into the design resulted in a change and additional costs when it finally came to light on what their requirements were.
- **CD Approvals**: Allow adequate time in the schedule for CD 1/2/3 approvals. NREL underestimated the amount of time CD 2/3 approval requires, and that an External Independent Review by OECM was required prior to CD 2/3 approval. These approvals were not considered by the design-builder which had negative impacts on their schedule.
- **DOE Involvement**: Involve DOE counterparts in the process – including training in the design-build delivery method. The knowledge DOE gained about this process enabled them to provide input which resulted in DOE and NREL successfully working together toward the same goal.
- **Substantiation of Performance Requirements**: NREL learned of different substantiation methods to include in the performance specifications for key elements of the design/construction. NREL initially obtained assistance from an Owner's Representative since we lacked experience in writing substantiation requirements.
- **Liquidated Damages**: NREL determined to utilize Liquidated Damages (LDs) in our design-build subcontracts. The design-build criteria consultant NREL subcontracted to help with the RFP requirements advised against utilizing liquidated damages and the holding of retainage. However, NREL determined that LDs would be utilized in the subcontract to address the risk faced in continuing to incur costs due to the lease of office space, in the event completion of the building was delayed. NREL provided the design-builder graduated LDs since the costs for NREL would have escalated over time.

- **Retainage**: NREL opted to not withhold retainage on the design-build delivery method subcontracts for major construction. NREL determined that the bonding required under the subcontract, the LDs, and the significant award fee amount would satisfactorily address NREL risk. NREL determined the award fee would be adversely impacted if the design-builder failed to meet the completion schedule which would result in a monetary gain for NREL. The design-build criteria NREL subcontracted to aid with the preparation of the RFP performance criteria had advised that retainage was not necessary in design-build subcontracts.