Appendix A
CONCEPTUAL DOCUMENTS

TABLE OF CONTENTS

INTRODUCTION

The National Renewable Energy Laboratory (NREL) is the nation's primary laboratory for renewable energy and energy efficiency research and development.

NREL's mission and strategy are focused on advancing the U.S. Department of Energy's (DOE) and our nation's energy goals. The laboratory's scientists and researchers support critical market objectives to accelerate research from scientific innovations to market-viable alternative energy solutions. At the core of this strategic direction are NREL's research and technology development areas (www.nrel.gov/science_technology/). These areas include renewable electricity and fuels, and ultimately the use of renewable electricity and fuels in homes, commercial buildings, and vehicles. The laboratory thereby directly contributes to our nation's goal for finding new renewable ways to power our homes, businesses, and vehicles.

Research Support Facilities

The Research Support Facilities (RSF) will be a very significant building for DOE and NREL. It is envisioned as a "national showcase" to demonstrate how high-performance buildings can be aesthetically compelling, acquired at a competitive first-cost and lifecycle cost, and through integrated design, how high-performance buildings can reduce performance risks to the Owner and constructor. The RSF will be designed to meet the Leadership in Energy and Environmental Design (LEED™) "Platinum" rating as defined by the US Green Buildings Council LEED™ rating system and designed to use as little as 25 kBTU per square foot per year of energy (demand side) including the Data Center. The building will be a showcase of sustainable high-performance design. It will demonstrate the integration of high performance design features and practices, showcase technology advances, and capture the public's imagination for renewable and energy efficient technologies.

Design-Build as Delivery Model

NREL has selected "Best Value Design-Build/Fixed Price with Award Fee" as the delivery model for the RSF for several key reasons. Chief among these are maximizing the project's design and construction value related to prioritized needs, expectations, and goals within the context of the known challenges, constraints (including price), and project risks. This model delivery approach requires the Owner to list the specific quality/quantity requirements (programmatic as well as general project expectations) throughout this RFP, and checklists of the same are attached to the "Proposal Form" Section. Responses to these checklists are critical to the evaluation of the Offeror.

Project Information

Ideally, the RSF will house up to 800 DOE and NREL staff in approximately 220,000 usable square feet without sacrificing high priority special spaces and shared spaces that assist in optimizing human performance, enhance creativity while recruiting for the workforce of tomorrow. The RSF is required to be a Leadership in Energy and Environmental Design (LEED™) "Platinum" office building(s) with "Platinum" as defined by the US Green Buildings Council LEED™ rating system, and to consume as little as 25 kBTU per square foot per year (demand side) including the Data Center. It is also required to be a showcase of sustainable high-performance design which will demonstrate the integration of high performance building design and practices, showcase technology advances, and capture the public's imagination for renewable and energy efficient technologies. The RSF is required to incorporate the best in energy efficiency, environmental performance, and advanced controls using a "whole building" integrated design approach, and must comply with ENERGY STAR standards.

Solicitation Process

The competition and award of this subcontract will have a two phase approach. Phase I of the solicitation process will include the following:

1. A total of two One-on-One meetings will be conducted with limited but meaningful collaboration during competition.
2. Offerors are to respond to RFP requirements with a conceptual approach including a fixed price with proposed scope of work defined by Project Objectives Checklist (Mission Critical, Highly Desirable, and If Possible).
3. Offerors are to include in their price proposal cost and schedule to complete preliminary design.
4. Offerors are to include in their price proposal cost element breakdown including:
    a. Overhead, G&A, Profit and Handling Fees
    b. Fully burdened rates for staff
    c. General construction costs
    d. Costs associated with self performance of work
    e. Indirect work costs
5. Selection for award will be based on offerors response to the evaluation criteria, conceptual approach, preliminary design cost and cost proposal.
6. A Stipend in the amount of $200,000.00 will be paid to unsuccessful offerors at the conclusion of Phase I who submit a responsive proposal in response to this RFP. Should an offeror decide to withdraw from this competition, the stipend amount of $200,000.00 shall be forfeited.

Phase II of the solicitation process will include award of the subcontract for preliminary design of the RSF With the successful offeror which includes the following:

1. Successful Offeror will develop preliminary design.
2. NREL/DOE engages in complete collaboration during Phase II.
3. Offeror provides price proposal to include:
    a. Firm-Fixed Price
    b. Actual scope of work defined by Project Objectives Checklist (Mission Critical, Highly Desirable, and If Possible).
    c. Number of occupants defined by Planning Units Checklist
    d. Preliminary design substantiation

The successful offeror shall complete preliminary design and define the scope of work for design development and construction (Phase II of the Subcontract) for the RSF. Negotiations will be entered into with the successful offeror for design development and construction (Phase II of the Subcontract) work at the completion of preliminary design of the RSF. Negotiations will be deemed successful for Phase II of the Subcontract work if NREL/DOE and the Subcontractor agree to a complete scope, firm-fixed price, and a fixed schedule.

Unsuccessful negotiations for Phase II work will result in the completion of the subcontract. In the event of unsuccessful negotiations for Phase II work, NREL/DOE will agree to pay up to half (1/2) of the

proposed amount of preliminary design.

If NREL/DOE should unilaterally decide not to pursue the Phase II work with the successful offeror, the offeror will be entitled to the stipend in the amount of $200,000.00 and up to half (1/2) of the fixed-price amount of preliminary design.

Prior to subcontract execution for preliminary design (Phase I), terms and conditions relevant and applicable to Phase I of the subcontract will be specified in Article 34 – Alterations to Terms and Conditions.

END OF SECTION - INTRODUCTION

PART 1-PROCEDURES

INSTRUCTIONS TO OFFERORS

National Renewable Energy Laboratory

Request for Proposals Number RFJ-8-77550

"RESEARCH SUPPORT FACILITIES"

REQUEST FOR PROPOSALS

READ THIS DOCUMENT CAREFULLY

- **This solicitation is being conducted under the procedures for competitive subcontracts established by the National Renewable Energy Laboratory (NREL).**
- **NREL will award a subcontract based on the following.**
  - The best combination of:
    - Technical factors (based on qualitative merit criteria)

      And
    - Evaluated price
  - All Conceptual Documents (Appendix A) requirements being met
- **Definition of "Owner": For purposes of this RFP, Conceptual Documents, and any resultant Subcontract, the term "Owner" means the National Renewable Energy Laboratory Division of Midwest Research Institute acting in furtherance of the performance of the work provided for under Department of Energy M&O Contract No. DE-AC36-99GO10337.**

Issue Date: 02/07/08 Due Date: 03/27/08 Time Due: 4:00 P.M. Mountain Standard Time

Technical Questions must be received in writing no later than March 17, 2008.

1. Solicitation Type Best Value Selection
Fixed Price with Award Fee

Submit offers to and request information from the Owner RFP Contact below

2. **Owner RFP Contact**

Karen Leitner, Sr. Subcontract Administrator
National Renewable Energy Laboratory
1617 Cole Boulevard, Mailstop 1632
Golden, CO 80401-3393
Phone: (303) 275-4288
Fax: (303) 275-3109
Email: karen_leitner@nrel.gov

Electronic (PDF) copies of forms and appendices can be found at:

http://www.nrel.gov/business_opportunities/related_docs.html

3. Project Description

As specified in the Research Support Facilities Conceptual Documents, which consists of Part 1 Procedures, Part 2-Program, and Part 3-Performance Specifications**.**

4. Conceptual Document Organization

These documents constitute a Request for Proposal (RFP) for the design and construction of the Research Support Facilities for the National Renewable Energy Laboratory Division of Midwest Research Institute (NREL) (Owner) located in Golden, Colorado. The Conceptual Documents are organized by three primary Parts: Part 1-Procedures, Part 2-Program, and Part 3-Performance Specifications.

Part 1-Procedures contain critical procedural requirements that establish the roles, responsibilities, and accountabilities of the two contracted entities; the Owner and the Design-Builder. Procedures also include a basis of Project understanding from the Owner's perspective by inclusion of pre-existing reports, drawings, and other information that assist the Owner in describing the Project needs. Finally, this section describes the basis for evaluation of the submitted proposals, the required proposal format, and other information necessary for the Owner to select the Design-Builder.

Part 2-Program contains the traditional programmatic needs of the Owner/User including; spatial metrics and capacities, spatial relationship requirements, furnishings / fixtures / equipment requirements, special ambient and environmental requirements, and specific aesthetic requirements. In addition, the Program contains a 'Risk Analysis Report' (RAR). The RAR is the Owner's analysis of the impact to project cost, quality, and schedule that would result based on known conditions and assumptions unique to this project. Finally, the RAR is an essential tool used by the Owner to establish many evaluation components used in the selection of the Design-Builder as detailed in the Procedures section.

Part 3-Performance Specifications contain design, construction, and other criteria requirements the Design-Builder will be contractually obligated to fulfill. The Performance Specifications contain general facility requirements, and specific requirements organized in a 7 Division Uniformat. The specifications also identify specific elements of design, construction, and commissioning that are required to be submitted to the Owner for substantiation of compliance with the RFP. These required substantiation submittals begin at the Proposal Stage, and occur (post-award) throughout the design, construction, and occupancy of the facility.

5. Proposed Subcontract Award and Period of Performance

It is the intent of the Owner to award one firm fixed price with award fee type subcontract under this solicitation. The proposed subcontract award will be for the preliminary design of the RSF in accordance with the Conceptual Documents to be delivered with a firm fixed price, best value subcontract, exclusive of any Award Fee incentive payment. The Subcontract includes the flexibility to incorporate optional scopes of work. Those options are for the final design and construction of the RSF and for site improvements. The target substantial completion date for construction is May 2010.

6. Pre-Proposal Schedule

A **mandatory attendance**, Pre-Proposal Briefing was held on November 13th 2007 in the Denver West Complex, Golden, Colorado. A project site visit was held at the conclusion of this briefing.

Two **mandatory attendance,** Pre-Proposal Meetings (No. 1 and No. 2) will be held at the NREL's Visitors' Center Auditorium, 15013 Denver West Parkway, Golden Colorado 80401. Pre-Proposal Meeting No. 1 will be held approximately 3 (three) weeks after issuance of the RFP. Pre-Proposal Meeting No. 2 will be held approximately 5 (five) weeks after issuance of the RFP. Specific date/time information will be provided at a later date.

Representatives of the Owner will be present at the pre-proposal briefing and meetings.

a. Owner will transmit, to all prospective Offerors of record, such solicitation Amendment(s) as the Owner considers necessary in response to questions arising at the briefing and meetings.

b. Oral statements made at the pre-proposal briefing and meetings may not be relied upon and will not be binding or legally effective.

ATTENTION: Due to security measures at NREL, all Offerors attending the pre-proposal briefing and meetings must submit, via e-mail to the Subcontract Administrator 3 (three) days before the pre-proposal briefing and each pre-proposal meeting, a list of the individuals who will attend and their telephone numbers. On the day of the pre-proposal briefing or meetings, the attendees will be required to report to the NREL Site Entrance Building and will be required to show proper picture identification to obtain a visitor's badge. Examples of proper picture identification include Driver's License. Any individual not listed will be denied access to the NREL site and will not be permitted to attend the pre-proposal briefing or meetings.

If an Offeror intends to send an individual who is not a U.S. citizen, the Offeror should contact the Subcontract Administrator as soon as possible to arrange for the appropriate approvals from the Department of Energy (DOE) for admittance.

All questions concerning the solicitation and its requirements received during, or prior to, the pre-proposal briefing and meetings will be responded to in writing by the Owner. Written questions received at least 10 (ten) days prior to pre-proposal briefing and meetings will be responded to in writing and distributed to all attendees prior to the meeting. Owner intends to issue amendment(s) to this solicitation document following the pre-proposal briefing and meetings that will formally provide answers to all questions received in writing or verbal questions at the time of the briefing and meetings.

7. Competitive Negotiated Subcontract using Best Value Selection

This solicitation shall be conducted using Best Value Selection that results in an award that is most advantageous to Owner based on the best value combination of (a) evaluated qualitative merit and (b) evaluated price and profit of the offers submitted.

8. Qualitative Merit Criteria for Best Value Selection

The Conceptual Documents in this Request for Proposal serves as DOE/NREL (Owner) 'baseline' requirements. 'Best Value' will be categorically evaluated based on the following Qualitative Merit Criteria.

The Qualitative Merit Criteria establishes what the Owner considers the technical factors valuable in an offer. These Qualitative Merit Criteria are performance-based and permit selection of an offer that provides higher qualitative merit.

The following Qualitative Merit Criteria (and contextually related sub-factor) will be used by evaluators to determine the technical value of the offer in meeting the objectives of the solicitation.

Each qualitative merit criteria (factor) and its assigned weight are provided below:

8.1. Demonstrates an approach for integrated safety and health into the design and construction of the project (15 Points Maximum)

A. Documented a clear and realistic approach to implementing Safe Design Concepts and elements.

B. Documented, in narrative form, an approach to proactively respond to safety issues and the offeror policy that addresses safety prevention, correction, and reporting activities.

C. Provide offeror and project construction safety goals and expectations for injury, illness and lost time accident prevention.

D. Provide a copy of Offeror's Safety Management plan.

E Documented approach to incorporate best management practices not required by code into the site and building design, construction and operations and coordination with jurisdictional safety policies and procedures.

8.2. Demonstrates an approach to obtaining energy goals, including LEED™ "Platinum" designation (as defined in the US Green Buildings Council LEED™ rating system), **the use of ENERGY STAR appliances at all applications when possible and to incorporate as little as 25 kBTU per square foot per year into the design solution (15 Points Maximum)**

A. Address and identify an approach to mitigating the risks as identified in the Risk Analysis Report (Part 2-Program) while tightly maintaining costs related to the Budget Goals of the project. Specifically identify a cost monitoring/reporting strategy to assist NREL in decision-making.

B. Approach to obtain aggressive energy goals including as little as 25 kBTU per square foot per year and assurance that the requirements will be met.

C. Documented approach to obtaining a LEED™ certified facility with 6 (six) or more energy credits and a minimum Platinum rating. Demonstrate an approach to obtaining all 6 LEED™ topical areas.

D. Document LEED™ professionals on the Design-Builders team (including sub-consultants). Offeror shall provide a list of names and certification/experience of LEED™ certified or experienced personnel on Offeror's staff.

E. Identifies the application and demonstrates the understanding of utilizing the ENERGY STAR rated appliances throughout the facility to assist in the reduction of energy costs.

8.3. Demonstrates an approach for the design and construction for this project that meets the needs of the "workforce of today and tomorrow" (15 Points Maximum)

A. Creates an office facility that supports the work and work processes of up to a Highly Desirable staff of 800.

B. Creates a flexible environment that honors the future needs of "the work force of tomorrow"; including workplace trends in culture, creativity, collaboration, productivity and worker-satisfaction related to the current and next generation of NREL staff.

C. Provides and facilitates opportunities to integrate state-of-the-art communication infrastructure, future technologies related to creativity, collaboration, productivity and worker-satisfaction.

D. Provides and facilitates opportunities to integrate with outside private and academically based entities, within "security requirement" limitations.

E. Provides the Offeror's design-build vision to meeting the "future trends in workplace" within the constraints of budget and schedule defined by this RFP.

8.4. Demonstrates an approach to achieve a "creative architectural image" that is contextually appropriate with the site's natural environment and the Owner's identity to showcase energy efficiency and renewable energy technology (15 Points Maximum)

A. Provides a methodology for design that builds upon and strengthens the image of the existing integrated campus architecture.

B. Demonstrate that the building(s) location, form, and massing, etc. are compatible with the natural features of the site and the existing facilities on the NREL Campus.

C. Demonstrate an approach to develop architectural images consistent with Owner's identity, building-design that is aesthetically pleasing, and will withstand the test of time.

D. Demonstrate an approach of integrating energy efficiency and renewable energy features into the building architecture.

8.5. Documents a Design-Build "team structure" indicating responsibility, accountability, communication, and collaboration (15 Points Maximum)

A. Documented partnership arrangements with proposed team members. Offeror shall describe its organizational approach to management of this project, including design-build team partnership arrangements, reporting relationships and involvement of the Offeror's executive management.

B. Documents a strategy (including quality control procedures) for converting the Owner's conceptual requirements into design documents, substantiation submittals; and constructing a facility that incorporates those design requirements. Demonstrate a "systematic" approach that assures all cost and schedule needs are met, via collaboration with NREL.

C. Documentation of specific individuals designated for the following positions: (1) Lead Architect, (2) Project Manager, (3) Construction Superintendent, (4) Project Engineer, (5) MEP Engineer, and (6) Safety Management Professional. As part of this proposal provide assurances to NREL that Key Personnel proposed in response to the Pre-Solicitation Notice will remain assigned for the period of performance for work identified under this proposed subcontract. Furthermore, identify the amount of work to be self-performed (% of the total project work) by the firm's resources. Please note there is a minimum of 20% of the total amount of work to be self-performed under this subcontract (See Article 15 – Performance of Construction Work by the Subcontractor in the Subcontract Schedule).

D. Documented narrative of the Offeror's approach to the following key aspects of this project: conflict resolution (How will disputes be managed within the Design-Builders team?) lower-tier subcontractor selection, including efforts to award to small business, disadvantaged small business, woman owned small business, veteran owned, disabled veteran owned small business, and HUB Zone small business; quality standards applicable to design and construction; value engineering; and safety management.

8.6. Demonstrates an approach to incorporate project needs specific to the region such as local codes, water laws, and local climate (10 Points Maximum)

A. Demonstrates an understanding and knowledge of local/regional codes and conditions for Denver area front range weather conditions.

B. Demonstrates an approach to satisfying local/regional soil conditions, design solutions and local/regional water laws; including detention, retention, and storm water management.

C. Demonstrates an approach to satisfying local/regional climate conditions and their effect on energy strategies and occupant comfort.

8.7. Schedule (10 Points Maximum)

A. Provides a preliminary project schedule in accordance with requirements of the RFP and demonstrate an approach to include the necessary tasks, logic, and durations to adequately plan and demonstrate the ability to complete the work, including the energy and technical requirements, within the required time frame

B. Provides an acceptable schedule and approach to improve the required schedule compatible with the NREL Earned Value Management System.

C. Documents the capacity and approach in meeting Owner's schedule requirements and substantial completion date of May 2010.

8.8. Demonstrates approach to collaborate with, and incorporate ideas from diverse expert sources (5 Points Maximum)

A. Demonstrates an approach and ability to collect and utilize information from a diverse base of experts and NREL as collected from the meetings and identified in the proposal documents.

B. Identifies the procedures and steps of documentation for the purpose of creating a “How to manual” and Public Relations campaign.

C. Demonstrates an approach for collaboration with energy efficiency and renewable energy subject matter experts for integration into the design and construction of this ‘showcase’ facility.

8.9 Merit Evaluation and Confidence Factors

Scoring of each Offeror’s proposal will take place in 2 measures.

Measure 1: In consideration of all required proposal documents, the Selection Evaluation Team (SET) member will apply a score to each of the eight categories listed above based on the context of the sub-category descriptions.

Measure 2: The Selection Evaluation Team (SET) member will apply a Confidence Factor to each of the eight categories listed above based on the realism of achieving objectives, implementing strategies, and the practicality of the Design-Builders methodologies within the context of the “design-build industry” and market-place.

Confidence Factors Scale

Adjective Score	*Definition*
High Confidence 80 to 100	Evaluated that virtually no doubt exists that the Offeror will successfully perform the required effort with no potential cause for disruption of schedule, increased cost or degradation in performance. No owner oversight or intervention is expected to be required in achieving the proposed level of performance.
Significant Confidence 60 to 79	Evaluated with a certainty that the Offeror will successfully perform the required effort with minor potential cause for disruption of schedule, increased cost, or degradation in performance. Little owner oversight or intervention is expected to be required in achieving the proposed level of performance.
Confidence 40 to 59	Offeror can successfully perform the required effort with little cause for disruption of schedule, increased cost, or degradation in performance. Some owner oversight and/or intervention is expected to be required to meet the contract requirement.
Little Confidence 20 to 39	Substantial doubt exists that the Offeror will successfully perform the required effort with likely potential cause for disruption of schedule, increased cost or degradation in performance. Substantial owner oversight or intervention is expected to be required to meet the contract requirements. Changes to the Offeror's existing approach may be necessary in order to achieve contract requirements.
No Confidence 0 to 19	Extreme doubt exists that the Offeror will successfully perform the required effort with significant potential cause for disruption of schedule, increased cost or degradation in performance. Regardless of the degree of owner oversight or intervention, successful performance is doubtful.

9. Total Price and Profit Evaluation for Best Value Selection

After evaluation of the qualitative merit criteria, the following price and profit evaluation will be used to determine the best value of the offer in meeting the objectives of the solicitation.

The combined qualitative merit value (including Confidence Factors) will be considered substantially more important than the total price and profit.

10. Evaluation Process

Owner will evaluate offers in three general steps:

Step One—Initial Evaluation

An initial evaluation will be performed to determine if all required information has been provided for an acceptable offer. Offerors may be contacted only for clarification purposes during the initial evaluation. Offerors shall be notified if their offer is determined not acceptable and the reasons for rejection. Unacceptable offers will be excluded from further consideration.

Step Two—Technical Evaluations

In addition to the technical proposal, oral presentations will be used to evaluate an Offeror's technical capabilities based on the merit criteria listed above. Each Offeror whose submitted

proposal is deemed acceptable will be contacted by the Subcontract Administrator and scheduled to provide a 2 (two) hour presentation addressing the merit criteria listed herein. The presentation will be conducted as follows:

(a) Owner will determine the order in which Offerors will give their presentation by drawing of lots;

(b) Rescheduling of appointments will only be allowed in extreme circumstances as approved by the Owner;

(c) All oral presentations will be given at NREL. Owner will provide the conference room. Each Offeror shall provide all other materials as required;

(d) After the Offeror's 2 (two) hour presentation, Owner evaluators will have a maximum of 1 (one) hour for a question and answer session (the one hour does not includes time for Owner evaluators to caucus in order to determine questions to be asked).

Step Three--Discussion, Selection, Negotiation, and Award

All acceptable offers will be evaluated against the requirements set forth by the Conceptual Documents and the qualitative merit criteria listed above. Based on this evaluation, the Owner has the option, depending on the specific circumstances of the offers received, to use one of the following methods of selection:

(a) Make an individual selection, conduct discussions/negotiations, proposal revisions, selection, and make an award;

(b) Conduct negotiations with the next ranked firm should negotiations fail with the higher ranked firm;

(c) Make no award(s).

11. Proposal Preparation Information

A. The proposal must include a title page, including the RFP title and number, name of your organization and Offeror's Point of Contact (with postal address, telephone and fax numbers, and email address).

B. Letter of Mutual Commitment: NREL requires that each prospective Offeror execute a Letter of Mutual Commitment establishing a commitment on the part of NREL and prospective Offerors to proceed in good faith to initiate and complete the solicitation process envisioned under this RFP. Each prospective Offeror shall provide, on company letterhead and signed by an official authorized to bind the company, a Letter of Mutual Commitment to NREL containing the commitments specified below. Upon receipt, NREL will countersign the Letter of Mutual Commitment and return a copy to the prospective Offeror.

NREL shall commit to:

(1) Compensate by paying a stipend in the amount of $200,000.00 (Two Hundred Thousand Dollars) to an Offeror if that Offeror's proposal is determined by NREL to be acceptable but is not subsequently selected by NREL for award. Additionally, any Offeror who withdraws from competition under this RFP shall forfeit the entire stipend.

(2) If an Offeror elects to receive the stipend outlined above, all conceptual design documents contained in the proposal and submitted in response to the RFP will become the property of NREL/DOE.

Prospective Offerors shall commit to:

(1) Participate in NREL's briefing and meetings as specified in this RFP.

(2) Acknowledge and honor NREL's right to reject any or all proposals received. Such rights include without limitation, rejection based on NREL's sole determination that such

proposal: (a) is judged nonconforming, nonresponsive, or incomplete with respect to this RFP; (b) appears unbalanced with respect to quality, cost and schedule; (c) contains excessive conditional limitations; (d) demonstrates that the Offeror is unqualified or of doubtful financial ability; (e) demonstrates that the Offeror fails to meet other pertinent standards or criteria of capability or capacity; or (f) fails to meet the requirements of the evaluation criteria, the proposal substantiation requirements, or financial criteria established in this RFP.

(3) Prepare and submit to NREL pricing and a priced proposal for the Preliminary Design of the project in accordance with this RFP.

(4) Sustain the integrity of the solicitation process and abide by the rules of this RFP, including but not limited to, restricted contact with NREL representatives except as such contact is envisioned under this RFP.

C. Formatting instructions:

- A page is defined as one side of an 8 ½" x 11" sheet of paper or an 11" x 17" bi-fold.
- Maintain at least 1-inch margins on all sides.
- Copies may be either single or double-sided.
- All proposal documents shall be easy to read, evaluate, duplicate, and handle.

D. A **technical proposal** in an **original and 10 (ten) copies** directed toward meeting the requirements of Owner's RFP.

E. A completed **Proposal Form** (refer to Section 23 – Terms and Procedures, Item J) in an **original and 10 (ten) copies** submitted with the proposal. The Offeror's price/cost and delivery terms must be valid for 90 days from the due date of the offer. The proposal form should include support documentation for all categories of the proposed total price and profit. The proposal form should separate price and profit for lower-tier subcontract(s) and include support documentation for all categories of the proposed lower-tier subcontract(s) price and profit.

F. A completed "**Representations and Certifications**" form in an **original and 1 (one) copy.** (See NREL website).

G. An updated "Organizational Conflicts of Interest Disclosure Statement" (see NREL website) which includes any additional disclosure information not previously provided in the Preliminary Organizational Conflicts of Interest Disclosure Statement.

H. A cover letter including a **summary statement** indicating acceptance of the proposed Conceptual Documents or any change with the reason(s).

I. A cover letter including a **summary of deviations/exceptions** (if any) to the subcontract schedule and the standard terms and conditions and the intellectual property terms and conditions in the appendices. The Offeror will explain any exceptions (including deviations and conditional assumptions) taken with respect to the subcontract schedule and terms and conditions. Any exceptions must contain sufficient amplification and justification to permit evaluation. Such exceptions will not, of themselves, automatically cause an offer to be termed unacceptable. A large number of exceptions or one or more significant exceptions not providing any obvious benefit to the Department of Energy or the Owner may, however, result in rejection of such offer as unacceptable.

J. This solicitation does not allow the submittal of facsimile or electronic proposals.

K. Except for NREL's commitment to pay a stipend as stated above, this solicitation does not commit NREL to pay costs incurred in the preparation and submission of a proposal in response to this RFP.

L. If the successful Offeror, upon acceptance of its proposal by the Owner within the period specified for acceptance, fails to execute all subcontract documents, the Offeror is liable to NREL for any cost of acquiring the work.

M. If the successful Offeror, upon acceptance of its proposal by the Owner within the period specified for acceptance, fails to furnish executed performance and payment bonds within the time specified in the subcontract, the Owner may terminate for default and the Offeror is liable to NREL for any cost of acquiring the work.

12. Information Regarding the Buy American Act (derived from FAR 52.225-12)

Notice of Buy American Act Requirement—Construction Materials Under Trade Agreements (Jan 2004)

A. Definitions. "Construction material," "designated country construction material," "domestic construction material," "foreign construction material," and "FTA country construction material," as used in this provision, are defined in the clause of Appendix B-10 entitled "Buy American Act--Construction Materials under Trade Agreements" (derived from Federal Acquisition Regulation (FAR) clause 52.225-11).

B. Requests for determination of inapplicability. An Offeror requesting a determination regarding the inapplicability of the Buy American Act should submit the request to the Owner's Subcontract Administrator in time to allow a determination before submission of offers. The Offeror shall include the information and applicable supporting data required by paragraphs (c) and (d) of the clause of Appendix B-10 entitled "Buy American Act--Construction Materials under Trade Agreements." If an Offeror has not requested a determination regarding the inapplicability of the Buy American Act before submitting its offer, or has not received a response to a previous request, the Offeror shall include the information and supporting data in the offer.

C. Evaluation of offers.

1. The Owner, will evaluate an offer requesting exception to the requirements of the Buy American Act, based on claimed unreasonable cost of domestic construction materials, by adding to the offered price the appropriate percentage of the cost of such foreign construction material, as specified in paragraph (b) (4) (i) of the clause of Appendix B-10 entitled "Buy American Act--Construction Materials under Trade Agreements."

2. If evaluation results in a tie between an Offeror that requested the substitution of foreign construction material based on unreasonable cost and an Offeror that did not request an exception, the Owner will award to the Offeror that did not request an exception based on unreasonable cost.

D. Alternate offers.

1. When an offer includes foreign construction material, other than designated country or FTA country construction material, that is not listed by the NREL in this solicitation in paragraph (b) (3) of the clause of Appendix B-10 entitled "Buy American Act--Construction Materials under Trade Agreements," the Offeror also may submit an alternate offer based on use of equivalent domestic, designated country, or FTA country construction material.

2. If an alternate offer is submitted, the Offeror shall submit a separate FAR Standard Form 1442 for the alternate offer, and a separate price comparison table prepared in accordance with paragraphs (c) and (d) of the clause of

Appendix B-10 entitled "Buy American Act--Construction Materials under Trade Agreements" for the offer that is based on the use of any foreign construction material for which NREL has not yet determined an exception applies.

3. If the Owner determines that a particular exception requested in accordance with paragraph (c) of the clause of Appendix B-10 entitled "Buy American Act--Construction Materials under Trade Agreements" does not apply, NREL will evaluate only those offers based on use of the equivalent domestic, designated country, or FTA country construction material, and the Offeror shall be required to furnish such domestic, designated country, or FTA country construction material. An offer based on use of the foreign construction material for which an exception was requested may be accepted if revised during negotiations.

13. Information Regarding Performance and Payment Bonds.

A. Performance Bond

A performance bond secures performance and fulfillment of the subcontractor's obligations under the subcontract. A performance bond is required in connection with this subcontract in accordance with FAR 28.102-2. The subcontractor shall submit the performance bond to the Subcontract Administrator within 14 calendar days following the execution of the subcontract. The penal sum of the Performance Bond shall be one hundred percent (100%) of the original subcontract price. If the subcontract price is increased during the performance of the subcontract, the subcontractor shall obtain additional performance bond protection equal to one hundred percent (100%) of the increase in subcontract price.

B. Payment Bond

A payment bond assures payments as required by law to all persons supplying labor or material in the prosecution of the work provided for in the subcontract. A payment bond is required in connection with this subcontract's requirement in accordance with FAR 28.102-2. The subcontractor shall submit the payment bond to the Subcontract Administrator within 14 calendar days following the execution of the subcontract. The penal sum of the Payment Bond shall be one hundred percent (100%) of the original subcontract price. If the subcontract price is increased during the performance of the subcontract, the subcontractor shall obtain additional payment bond protection equal to one hundred percent (100%) of the increase in subcontract price.

14. Information Regarding Insurance Requirements

The Offeror shall be required to provide, maintain, and verify coverage of at least the kinds and minimum amounts of insurance required in any resultant subcontract. Specifically, the Offeror's team will be required to provide Workers' Compensation Employer's Liability, Commercial General Liability, Automobile Liability; Architect/Engineer Professional Liability and Errors and Omissions, and "All Risk" Builder's Risk insurance coverage in at least the amounts specified in the Appendix B-10 clause titled "Insurance - Work on a Government Installation."

Certificates of Insurance shall list the National Renewable Energy Laboratory Division of Midwest Research Institute and successor contractor, and the U.S. Department of Energy as additional insured's and contain an endorsement that any cancellation or material change in the coverage adversely affecting NREL's and the Government's interest shall not be effective unless the insurer or the subcontractor gives written notice of cancellation or change with 30 days advance written notice to the NREL Subcontract Administrator.

15. Davis-Bacon Wage Determination

Pursuant to the provisions of the Davis-Bacon Act, 40 U.S.C. 276 (a)-276(a)-7, as amended, the Secretary of Labor has determined that rates of wages and fringe benefits listed in the enclosure entitled "Davis-Bacon Wage Determination", are those prevailing for the specified classifications in the locality of the work covered by this RFP's specifications. Such rates of wages and fringe

benefits listed in the Davis-Bacon Wage Determination shall be the minimum rates per hour to be paid for the work covered by this RFP's specifications. Refer to the clause entitled "Davis-Bacon Act" of the Appendix B-10 Standard Terms and Conditions for Construction Subcontracts for additional requirements.

The latest wage rate determination made by the Secretary of Labor for Jefferson County, Colorado, is included herein. The complete Davis-Bacon Wage Determination is incorporated in this RFP and shall be incorporated into any subsequent subcontract, regardless of whether the Offeror / Subcontractor will employ all the classifications of laborers and mechanics listed in the Davis-Bacon Wage Determination.

16. Responsibilities for Completion Delay and Safety or Environmental Occurrences

The subcontract will include an article delineating the Subcontractor's responsibilities for completion delay and environmental, safety and health violations. Please refer to the article "Allocation of Liability and Responsibility for Violations of Safety and Environmental Requirements" in the subcontract schedule.

17. Solicitation Provisions—full text provided

A. Withdrawal of offers is discouraged

All Offerors are required to submit a letter of mutual commitment under this solicitation and withdrawal of offers is discouraged and will result in the non-payment by NREL of a stipend. Notwithstanding, offers may be withdrawn by written notice received at any time before award. Offers may be withdrawn in person by an Offeror or an authorized representative, if the representative's identity is made known and the representative signs a receipt for the offer before award.

B. Restrictions on disclosure and use of data

Offerors who include in their proposals data that they do not want disclosed to the public for any purpose or used by the government or the Owner, except for evaluation purposes shall—

1. Mark the title page with the following legend:

"This offer includes data that shall not be disclosed outside the government or the Owner and shall not be used or disclosed—in whole or in part—for any purpose other than to evaluate this offer. If, however, a subcontract is awarded to this Offeror as a result of—or in connection with—the submission of this data, the government or the Owner shall have the right to duplicate, use, or disclose the data to the extent provided in the resulting subcontract. This restriction does not limit the government or the Owner's right to use information contained in this data if obtained from another source without restriction. The data subject to this restriction are contained on pages [insert page and line numbers or other identification of pages] of this offer"; and

2. Mark each page of data it wishes to restrict with the following legend:

"Use or disclosure of data contained on this page is subject to the restriction on the title page of this offer."

C. Disclaimer

NEITHER THE UNITED STATES; NOR THE DEPARTMENT OF ENERGY; NOR MIDWEST RESEARCH INSTITUTE, NATIONAL RENEWABLE ENERGY LABORATORY DIVISION OR SUCCESSOR CONTRACTOR; NOR ANY OF THEIR CONTRACTORS, SUBCONTRACTORS, OR THEIR EMPLOYEES MAKE ANY WARRANTY, EXPRESS OR IMPLIED, OR ASSUME ANY LEGAL LIABILITY OR RESPONSIBILITY FOR THE ACCURACY, COMPLETENESS, OR USEFULNESS FOR ANY PURPOSE OF ANY OF THE

TECHNICAL INFORMATION OR DATA ATTACHED OR OTHERWISE PROVIDED HEREIN AS REFERENCE MATERIAL.

D. Solicitation disputes

The General Accounting Office and the Department of Energy do not accept or rule on disputes for solicitations for Requests for Proposals issued by Management and Operating Contractors for the Department of Energy (operators of Department of Energy National Laboratories). Should an Offeror have any concerns regarding the Owner's solicitation process or selection determination, the Offeror may contact Marty Noland, Advocate for Commercial Practices, at (303) 384-7550. The Owner will address each concern received from an Offeror on an individual basis.

18. Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity for Construction (derived from FAR 52-222-23, Feb 1999)

A. The Offeror's attention is called to the Equal Opportunity clause in Section I of Appendix B-10 and the Affirmative Action Compliance Requirements for Construction clause in Section III of Appendix B-10.

B. The goals for minority and female participation, expressed in percentage terms for the Subcontractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Goals for Minority Participation for Each Trade	Goals for Female Participation for Each Trade
6%	5%

These goals are applicable to all of the Subcontractor's construction work performed in the covered area. If the Subcontractor performs construction work in a geographical area located outside of the covered area, the Subcontractor shall apply the goals established for the geographical area where the work is actually performed. Goals are published periodically in the Federal Register in notice form, and these notices may be obtained from any Office of Federal Contract Compliance Programs office.

C. The Subcontractor's compliance with Executive Order 11246, as amended, and the regulations in 41 CFR 60-4 shall be based on: (1) its implementation of the Equal Opportunity clause, (2) specific affirmative action obligations required by the clause entitled "Affirmative Action Compliance Requirements for Construction,'' and (3) its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the subcontract, and in each trade. The Subcontractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Subcontractor to Subcontractor, or from project to project, for the sole purpose of meeting the Subcontractor's goals shall be a violation of the subcontract, Executive Order 11246, as amended, and the regulations in 41 CFR 60-4. Compliance with the goals will be measured against the total work hours performed.

D. The Subcontractor shall provide written notification to the Deputy Assistant Secretary for Federal Contract Compliance, U.S. Department of Labor, within 10 (ten) working days following award of any construction lower-tier subcontract in excess of $10,000 (at any tier) for construction work under the subcontract resulting from this solicitation. The notification shall list the --

1. Name, address, and telephone number of the lower-tier subcontractor;

2. Employer's identification number of the lower-tier subcontractor;

3. Estimated dollar amount of the lower-tier subcontract;

4. Estimated starting and completion dates of the lower-tier subcontract; and

5. Geographical area in which the lower-tier subcontract is to be performed.

E. As used in this Notice, and in any subcontract resulting from this solicitation, the "covered area" is in Jefferson County, State of Colorado.

19. (Lower-Tier) Small Business Subcontracting Plan

The following requirement does not apply to small business Offerors.

Upon issuance of a Notice of Award to the successful Offeror, the successful Offeror shall provide a lower-tier subcontracting plan, within 7 calendar days after the issuance of the Notice of Award that separately addresses lower-tier subcontracting with small business, small disadvantaged business, and women-owned small business concerns. If the Offeror is submitting an individual subcontract plan, the plan must separately address lower-tier subcontracting with small business, small disadvantaged business, and women-owned small business concerns, with a separate part for the basic subcontract and separate parts for each option (if any). The plan shall be included in and made a part of the resultant subcontract. The lower-tier subcontracting plan shall be negotiated within the time specified by the Owner Subcontract Administrator. Failure to submit and negotiate a lower-tier subcontracting plan shall make the Offeror ineligible for award of a subcontract. (See NREL website)

20. Solicitation Provisions—Incorporated by Reference—general access

This solicitation incorporates one or more solicitation provisions by reference with the same force and effect as if they were given in full text. The following documents can be downloaded from the NREL **general access** website at http://www.nrel.gov/business_opportunities/related_docs.html or the Owner RFP Contact (see item 2) will make full text available upon request.

- NREL Standard Terms and Conditions:
  - Appendix B-10 (12/14/07)
- NREL Intellectual Property Provisions:
  - Appendix C-3 (10/22/98)
- NREL Terms and Conditions for Subcontracts in excess of $500,000.00
  - Appendix D-1 (11/01/03)
- NREL Representations and Certifications for Subcontracts (5/10/07)
- NREL Small Business (Lower-tier) Subcontracting Plan Requirements (03/03/05)

21. This Competitive Procurement is Open to Large and Small Businesses

A. The North American Industry Classification System (NAICS) code [formerly standard industrial classification (SIC)] for this solicitation is 541310 for A & E firms and 236220 for General Contractors;

B. The small business size standard for 541310 is $4,000,000.00 in annual receipts. The small business size standard for 236220 is $28,500,000.00 in annual receipts (Annual receipts of a concern means the annual average gross revenue for the last three fiscal years.)

22. Competition Process

A. Project Schedule

1. Proposals Due Date: March 27, 2008

2. Pre-proposal Meeting No. 1: March 3 and 4, 2008

3. Pre-proposal Meeting No. 2: March 17 and 18, 2008

B. Oral Presentation: Prior to final evaluation; attendance mandatory.

a. Time and location for interviews to be determined. Interviews will take place approximately 1 (one) week after Proposal Due date.

C. Owner intends to issue a Notice of Award following the completion of selection process.

D. Required Substantial Completion Date for occupancy: Not later than May 2010.

E. Desired Final Completion Date: 730 calendar days from Notice to Proceed.

F. The Owner reserves the right to change the schedule or terminate the entire competition process at any time.

23. Terms and Procedures

A. Copies of RFP Documents: Complete sets of Documents may be obtained from the Owner at the address indicated in Section 2 of Part 1-Procedures (Owner RFP Contact).

1. Documents will not be issued to sub-tiers or suppliers.

2. Complete sets of RFP Documents must be used in preparing proposals. Neither the Owner nor any consultant of the Owner who might have been involved in the preparation of the RFP Documents assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of RFP Documents.

B. Questions: All questions about the meaning or intent of the RFP Documents are to be directed to the Owner's Subcontract Administrator identified in Section 2 of Part 1-Procedures.

1. Interpretations or clarifications considered necessary by the Owner in response to such questions will be issued by Amendment faxed or mailed to Offerors recorded by Owner as having received the RFP Documents.

2. Offerors may arrange for courier delivery at their own expense.

3. Questions received less than 10 (ten) days prior to the due date of proposals may not be answered.

4. Only questions answered by formal written Amendment will be binding; oral and other interpretations or clarifications will be without legal effect.

5. Amendments may also be issued to modify the RFP Documents as deemed advisable by the Owner.

C. Examination of RFP Documents and Site: It is the responsibility of each Offeror, before submitting a proposal, to:

1. Examine thoroughly the RFP Documents;

2. Visit the site to become familiar with and satisfy the Offeror as to the general, local, and site conditions that may affect cost, progress, or performance of the work.

3. Consider federal, state, and local laws and regulations that may affect cost, progress, and performance of the work;

4. Study and carefully correlate the Offeror's knowledge and observations with the RFP Documents and other related data;

5. Promptly notify the Owner of all conflicts, errors, ambiguities, and discrepancies which the Offeror has discovered in the RFP Documents.

D. Information Relating to Existing Surface and Subsurface Conditions and Structures: The Owner has identified certain reports and/or tests, which have been utilized by the Owner in preparation of the

RFP Documents.

1. The Offeror may rely on the general accuracy of the technical data contained in such reports but not upon other data, design approaches, interpretations, or opinions contained in such reports, nor upon the completeness thereof for the purposes of preparing its proposal, for design, or for construction.
2. Where such reports are not included in the RFP Documents, copies will be made available by the Owner to any Offeror on written request.
3. These reports are not part of the Subcontract Documents; the Offeror is responsible for any interpretation or conclusion drawn from such reports.

E. Supplementary Investigations: Before submitting a proposal each Offeror will be responsible for obtaining such additional or supplementary examinations, investigations, explorations, tests, studies, or data concerning conditions (surface, subsurface, and underground facilities) at or contiguous to the site or otherwise, which may affect cost, progress, or performance of the work, or which relate to any aspect of the means, methods, techniques, sequences, or procedures of construction to be employed by the Offeror and safety precautions and programs incident thereto, or which the Offeror deems necessary to prepare its proposal for performing the work in accordance with the time, price, and other terms and conditions of the RFP Documents.

F. Access to Site: On request, the Owner will provide each Offeror access to the site to conduct such examinations, investigations, explorations, tests, and studies as each Offeror deems necessary for submission of a proposal. Offeror must fill all holes and clean up and restore the site to its former condition upon completion of such explorations, investigations, tests, and studies.

G. Work at the Site by Others: See Design and Construction Procedures (Part 1-Procedures) for identification of the general nature of work that is to be performed at the site by the Owner or others that relates to the work for which a proposal is to be submitted. On request, the Owner will provide the Offeror access to or copies of the subcontract documents for such work (other than portions thereof related to price).

H. Availability Of Site For Work: The site upon which the work is to be performed, rights-of-way and easements for access thereto, and other areas designated for use by Design-Builder in performing the work are identified in the "Site Use Plan".

1. All additional land or areas and access thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment to be incorporated into the work are to be obtained and paid for by Design-Builder.

I. Subcontract Completion Time: The time within which the work is to be completed will be incorporated into the Subcontract Agreement.

1. See Project Information for completion time(s).
2. See Proposal Form for intermediate milestones relating to completion; see RFP Document Definitions (Part 1-Procedures) for definitions of milestones.
3. The successful Offeror will be required to satisfy the Owner that it will be able to achieve Substantial Completion and Final Completion within the designated or proposed times.

J. Proposal Form: The Proposal Form is included in the Part 1-Procedures.

1. All blanks on the Proposal Form must be hand printed in black ink or typed.
   a. In addition to signatures, names must be typed or printed in blank ink.
   b. The address and telephone number for communications regarding the proposal must be shown.
   c. State contractor license must be shown.

d. Design professional registration numbers must be shown.

2. Proposals by partnerships must be executed in the partnership name and signed by a partner, whose title must appear under the signature.

   a. The official address of the partnership must be shown below the signature.

3. Proposals by corporations must be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal must be affixed and attested by the secretary or an assistant secretary.

   a. The corporate address and state of incorporation must be shown below the signature.

   b. If the Offeror is an out-of-state corporation, evidence of authority to conduct business in the state where the work is to be performed must be attached.

4. The Proposal Form shall contain an acknowledgement of receipt of all Amendment(s), the numbers of which must be filled in on the Proposal Form.

K. Proposal Exhibits: See the Proposal Form for Exhibits that must be attached to or submitted with each Proposal; NO OTHER EXHIBITS ARE ALLOWED.

1. All materials submitted will become the property of the Owner.

2. Owner reserves the right to publish or display publicly all exhibits.

L. Submission: Proposals shall be enclosed in an opaque sealed envelope or box, marked with the project title and the name and address of the Offeror.

1. If the submission is sent through the mail or other delivery system, the sealed envelope or box shall be enclosed in a separate envelope marked "PROPOSAL ENCLOSED".

2. All Exhibits shown on the Proposal Form shall accompany the Proposal Form in the same envelope or box; each separate item clearly identified with the Offeror's name and project name.

M. Withdrawal or Modification after Submission: Proposals may not be modified after submission; withdrawal of proposal after submission will result in forfeiture of the stipend.

N. Disqualification: Any Offeror may be disqualified due to submittal of a non-responsive proposal, resulting in forfeiture of the stipend.

O. Execution of Subcontract:

1. The Design-Builder shall sign and deliver the required number of copies of the Subcontract and attached documents to Owner with the required performance and payment bonds.

   a. The form of the Performance and Payment Bonds are provided as follows:

Standard Form 25

PERFORMANCE BOND *(See instructions on reverse)*	DATE BOND EXECUTED *(Must be same or later than date of contract)*	OMB No.: 9000-0045

Public reporting burden for this collection of information is estimated to average 25 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the FAR Secretariat (MVR), Federal Acquisition Policy Division, GSA, Washington, DC 20405

PRINCIPAL *(Legal name and business address)*	TYPE OF ORGANIZATION *("X" one)* ☐ INDIVIDUAL ☐ PARTNERSHIP ☐ JOINT VENTURE ☐ CORPORATION STATE OF INCORPORATION
SURETY(IES) *(Name(s) and business address(es))*	PENAL SUM OF BOND MILLION(S) | THOUSAND(S) | HUNDRED(S) | CENTS
	CONTRACT DATE | CONTRACT NO.

OBLIGATION:

We, the Principal and Surety(ies), are firmly bound to the United States of America (hereinafter called the Government) in the above penal sum. For payment of the penal sum, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally. However, where the Sureties are corporations acting as co-sureties, we, the Sureties, bind ourselves in such sum "jointly and severally" as well as "severally" only for the purpose of allowing a joint action or actions against any or all of us. For all other purposes, each Surety binds itself, jointly and severally with the Principal, for the payment of the sum shown opposite the name of the Surety. If no limit of liability is indicated, the limit of liability is the full amount of the penal sum.

CONDITIONS:

The Principal has entered into the contract identified above.

THEREFORE:

The above obligation is void if the Principal -

(a)(1) Performs and fulfills all the undertakings, covenants, terms, conditions, and agreements of the contract during the original term of the contract and any extensions thereof that are granted by the Government, with or without notice to the Surety(ies), and during the life of any guaranty required under the contract, and (2) performs and fulfills all the undertakings, covenants, terms conditions, and agreements of any and all duly authorized modifications of the contract that hereafter are made. Notice of those modifications to the Surety(ies) are waived.

(b) Pays to the Government the full amount of the taxes imposed by the Government, if the said contract is subject to the Miller Act, (40 U.S.C. 270a-270e), which are collected, deducted, or withheld from wages paid by the Principal in carrying out the construction contract with respect to which this bond is furnished.

WITNESS:

The Principal and Surety(ies) executed this performance bond and affixed their seals on the above date.

PRINCIPAL

SIGNATURE(S)	1. (Seal)	2. (Seal)	3. (Seal)	Corporate Seal
NAME(S) & TITLE(S) *(Typed)*	1.	2.	3.	

INDIVIDUAL SURETY(IES)

SIGNATURE(S)	1. (Seal)	2. (Seal)
NAME(S) *(Typed)*	1.	2.

CORPORATE SURETY(IES)

SURETY A	NAME & ADDRESS		STATE OF INC. / LIABILITY LIMIT $	Corporate Seal
	SIGNATURE(S)	1.	2.	
	NAME(S) & TITLE(S) *(Typed)*	1.	2.	

AUTHORIZED FOR LOCAL REPRODUCTION
Previous edition not usable

STANDARD FORM 25 (REV. 5-96)
Prescribed by GSA FAR (48 CFR) 53.228(b)

STANDARD FORM 25 (BACK)

CORPORATE SURETY(IES) *(Continued)*

SURETY B	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT $	Corporate Seal
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) *(Typed)*	1.	2.		
SURETY C	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT $	Corporate Seal
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) *(Typed)*	1.	2.		
SURETY D	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT $	Corporate Seal
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) *(Typed)*	1.	2.		
SURETY E	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT $	Corporate Seal
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) *(Typed)*	1.	2.		
SURETY F	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT $	Corporate Seal
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) *(Typed)*	1.	2.		
SURETY G	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT $	Corporate Seal
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) *(Typed)*	1.	2.		

BOND PREMIUM	RATE PER THOUSAND ($)	TOTAL ($)

INSTRUCTIONS

1. This form is authorized for use in connection with Government contracts. Any deviation from this form will require the written approval of the Administrator of General Services.

2. Insert the full legal name and business address of the Principal in the space designated "Principal" on the face of the form. An authorized person shall sign the bond. Any person signing in a representative capacity (e.g., an attorney-in-fact) must furnish evidence of authority if that representative is not a member of the firm, partnership, or joint venture, or an officer of the corporation involved.

3. (a) Corporations executing the bond as sureties must appear on the Department of the Treasury's list of approved sureties and must act within the limitation listed therein. Where more than one corporate surety is involved, their names and addresses shall appear in the spaces (Surety A, Surety B, etc.) headed "CORPORATE SURETY(IES)." In the space designated "SURETY(IES)" on the face of the form, insert only the letter identification of the sureties.

(b) Where individual sureties are involved, a completed Affidavit of Individual Surety (Standard Form 28) for each individual surety, shall accompany the bond. The Government may require the surety to furnish additional substantiating information concerning their financial capability.

4. Corporations executing the bond shall affix their corporate seals. Individuals shall execute the bond opposite the word "Corporate Seal", and shall affix an adhesive seal if executed in Maine, New Hampshire, or any other jurisdiction requiring adhesive seals.

5. Type the name and title of each person signing this bond in the space provided.

STANDARD FORM 25 (REV. 5-96) BACK

Standard Form 25A

PAYMENT BOND *(See instructions on reverse)*	DATE BOND EXECUTED *(Must be same or later than date of contract)*	OMB No.:9000-0045

Public reporting burden for this collection of information is estimate to average 25 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the FAR Secretariat (MVR), Federal Acquisition Policy Division, GSA, Washington, DC 20405

PRINCIPAL *(Legal name and business address)*	TYPE OF ORGANIZATION *("X" one)* ☐ INDIVIDUAL ☐ PARTNERSHIP ☐ JOINT VENTURE ☐ CORPORATION STATE OF INCORPORATION
SURETY(IES) *(Name(s) and business address(es))*	PENAL SUM OF BOND MILLION(S) | THOUSAND(S) | HUNDRED(S) | CENTS CONTRACT DATE | CONTRACT NO.

OBLIGATION:

We, the Principal and Surety(ies), are firmly bound to the United States of America (hereinafter called the Government) in the above penal sum. For payment of the penal sum, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally. However, where the Sureties are corporations acting as co-sureties, we, the Sureties, bind ourselves in such sum "jointly and severally" as well as "severally" only for the purpose of allowing a joint action or actions against any or all of us. For all other purposes, each Surety binds itself, jointly and severally with the Principal, for the payment of the sum shown opposite the name of the Surety. If no limit of liability is indicated, the limit of liability is the full amount of the penal sum.

CONDITIONS:

The above obligation is void if the Principal promptly makes payment to all persons having a direct relationship with the Principal or a subcontractor of the Principal for furnishing labor, material or both in the prosecution of the work provided for in the contract identified above, and any authorized modifications of the contract that subsequently are made. Notice of those modifications to the Surety(ies) are waived.

WITNESS:

The Principal and Surety(ies) executed this payment bond and affixed their seals on the above date.

PRINCIPAL				
SIGNATURE(S)	1. (Seal)	2. (Seal)	3. (Seal)	Corporate Seal
NAME(S) & TITLE(S) *(Typed)*	1.	2.	3.	

INDIVIDUAL SURETY(IES)		
SIGNATURE(S)	1. (Seal)	2. (Seal)
NAME(S) *(Typed)*	1.	2.

CORPORATE SURETY(IES)				
SURETY A	NAME & ADDRESS		STATE OF INC. / LIABILITY LIMIT $	Corporate Seal
	SIGNATURE(S)	1.	2.	
	NAME(S) & TITLE(S) *(Typed)*	1.	2.	

AUTHORIZED FOR LOCAL REPRODUCTION
Previous edition is usable

STANDARD FORM 25A (REV. 10-98)
Prescribed by GSA FAR (48 CFR) 53.228(c)

STANDARD FORM 25A (BACK)

CORPORATE SURETY(IES) *(Continued)*

SURETY B	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT $	Corporate Seal
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) *(Typed)*	1.	2.		
SURETY C	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT $	Corporate Seal
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) *(Typed)*	1.	2.		
SURETY D	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT $	Corporate Seal
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) *(Typed)*	1.	2.		
SURETY E	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT $	Corporate Seal
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) *(Typed)*	1.	2.		
SURETY F	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT $	Corporate Seal
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) *(Typed)*	1.	2.		
SURETY G	NAME & ADDRESS		STATE OF INC.	LIABILITY LIMIT $	Corporate Seal
	SIGNATURE(S)	1.	2.		
	NAME(S) & TITLE(S) *(Typed)*	1.	2.		

INSTRUCTIONS

1. This form, for the protection of persons supplying labor and material, is used when a payment bond is required under the Act of August 24, 1935, 49 Stat. 793 (40 U.S.C. 270a-270e). Any deviation from this form will require the written approval of the Administrator of General Services.

2. Insert the full legal name and business address of the Principal in the space designated "Principal" on the face of the form. An authorized person shall sign the bond. Any person signing in a representative capacity (e.g., an attorney-in-fact) must furnish evidence of authority if that representative is not a member of the firm, partnership, or joint venture, or an officer of the corporation involved.

3. (a) Corporations executing the bond as sureties must appear on the Department of the Treasury's list of approved sureties and must act within the limitation listed therein. Where more than one corporate surety is involved, their names and addresses shall appear in the spaces (Surety A, Surety B, etc.) headed "CORPORATE SURETY(IES)." In the space designated "SURETY(IES)" on the face of the form, insert only the letter identification of the sureties.

(b) Where individual sureties are involved, a completed Affidavit of Individual Surety (Standard Form 28) for each individual surety, shall accompany the bond. The Government may require the surety to furnish additional substantiating information concerning their financial capability.

4. Corporations executing the bond shall affix their corporate seals. Individuals shall execute the bond opposite the word "Corporate Seal", and shall affix an adhesive seal if executed in Maine, New Hampshire, or any other jurisdiction requiring adhesive seals.

5. Type the name and title of each person signing this bond in the space provided.

STANDARD FORM 25A (REV. 10-98) **BACK**

END OF SECTION - INSTRUCTIONS TO OFFERORS

RFP DOCUMENT DEFINITIONS

DOCUMENTS

A. RFP Documents:

1. The obligations of the Design-Build Subcontractor are identified in the:
    a. Subcontract (including documentation as outlined in the Article titled Applicable Documentation, of the subcontract)
    b. Conceptual Documents, including:
        1) Part 1-Procedures
        2) Part 2-Program
        3) Part 3-Performance
2. At the time of execution of the Subcontract, the Subcontract Documents consist of the following:
    a. The Subcontract (including documentation as outlined in the Article titled Applicable Documentation, of the Subcontract).
    b. The Conceptual Documents.
    c. The Proposal and Proposal Exhibits, except for provisions that contradict the requirements of the Conceptual Documents and that are not specifically accepted by the Owner by means of written incorporation prior to execution of the Subcontract.
3. From time to time after execution of the Subcontract, and only with approval by the NREL Subcontract Administrator, the following types of documents may be incorporated into the Subcontract by reference:
    a. Drawings and other documents documenting the design.
    b. Construction drawings and specifications detailing the execution of the design.

B. Proposal: The Proposal Form and Exhibits, which comprise the information prepared by the prospective Design-Builder to show the method of complying with the terms of the Subcontract and all applicable documents.

1. The Proposal period is the time frame during which prospective Offerors prepare their Proposals.
2. Substantiation submittals specified to occur during the Proposal period are intended to accompany the Proposal.
3. The Proposal period ends at the time the Preliminary Design Documents are submitted.

DESIGN AND CONSTRUCTION PHASES OR STAGES

A. Preliminary Design: The process of finalizing the design criteria (both program and performance specifications) and preparing preliminary drawings and written descriptions to illustrate the proposed design of the work or a portion of the work to the Owner.

1. Objective: To define the general scope, scale, functional relationship, traffic flow and cost of the Project components. The preliminary design shall be documented in sufficient detail to convey a clear and comprehensive representation of the design-builder's solution. The documents will identify area allocations, conceptual organization of exterior and interior spaces, conceptual image and building massing, usage of and features of the interior and exterior materials, selection of structural, mechanical, plumbing and electrical system concepts. Upon acceptance of the Schematic Design Package, the owner will approve the conceptual direction for further development during Phase II of the subcontract.

2. Deliverable: This Phase should clearly indicate the improvements and construction anticipated for the project and provides sufficient information and alternatives so that a clear direction for subsequent phases can be determined. The Preliminary Design should incorporate all items outlined in the Scope of Work detailed in the RFP. The Preliminary Design documents may be submitted in booklet form or as plans with other narrative materials; whichever best presents and conveys the necessary information. The Preliminary Design should be presented with sufficient information to allow a reviewer to fully understand the main design concepts and orientation. All lower-tiers are to produce their schematic plans following the same format, scale and drawing positioning as the architectural drawings. The design-builder shall insure all lower-tier work is coordinated.
3. The end of the Preliminary Design period is a milestone.
4. The end of the Preliminary Design period occurs before the beginning of the Design Development period.

B. Design Development: The process of determining the form, arrangement, size, and materials of the work or a portion of the work.

1. The end of Design Development occurs before the beginning of preparation of construction documents.
2. The end of Design Development for the project as a whole is a Milestone.

C. Construction Documents: The process of preparing working drawings, specifications, and other documents describing the work or a portion of the work in sufficient detail to allow accurate and complete construction.

1. The end of Construction Documents for the project as a whole is a Milestone.
2. The end of Construction Documents is the time at which all portions of the Construction Documents are complete.

D. Construction:

1. The Construction period is the time from the beginning of work on the project site until acceptance by the Owner.

E. Substantial Completion: As defined in the Subcontract; prerequisites include:

1. Design-Builder's complete punch list of items to be completed.
2. Owner's complete punch list of items to be completed.
3. Compliance with requirements of governing authorities, for submittals, inspections, and permits.
4. Compliance with Owner's requirements for access to areas occupied by the Owner.
5. Final cleaning.
6. Operation and Maintenance manuals.
7. Warranties.
8. Spare parts and extra materials.
9. Maintenance supplies and tools.
10. Project record documents.
11. Final site survey.
12. Training of Owner's personnel.
13. Maintenance plan.

14. Keys and the keying schedule.
15. Compliance with all occupancy and life safety requirements.

F. Final Completion and Closeout: The process of completing all details of both construction and commissioning.

1. The Final Completion and Closeout period is the time from the Date of Substantial Completion until receipt of Release of Claims and final payment, both as required by the Subcontract.
2. Before and during the Final Completion and Closeout period, the Owner will ascertain whether the completed project is in compliance with the Subcontract.
3. Damages will be assessed as outlined in the article titled “Responsibilities for Completion Delay and Safety or Environmental Occurrences” of the Subcontract if the subcontractor fails to substantially complete the work on or before sixty calendar days following the Substantial Completion date, or any extension, specified in the subcontract.

G. Occupancy: The period during which the project is occupied for its intended purpose.

1. The Occupancy period begins at the Date of Substantial Completion, as defined by the Subcontract.
2. Move-in will occur before the end of Closeout.

END OF SECTION - RFP DOCUMENT DEFINITIONS

INFORMATION AVAILABLE TO OFFERORS

PRELIMINARY DATA

A. Certain preliminary investigations and studies made by the Owner are available to the Offerors but will not be part of the RFP Documents, as follows:

1. Project Boundaries: Entitled "Site Use Plan". The "Site-Use Plan" is a diagram indicating key elements of the proposed site for the project. Includes identified limits of the NREL Campus that can be used by the Design-Builder for the execution of the subcontracted Project.
2. Geotechnical Report: Entitled “Geotechnical Engineering Report, National Renewable Energy Lab, Science and Technology Facility, Golden, Colorado” and prepared by Professional Services Industries has been prepared to characterize the subsurface conditions at the project site and is available upon request from the Owner.

EXISTING CONDITIONS

A. Certain information relating to existing surface and subsurface conditions and structures is available to Offerors but will not be part of the RFP Documents, as follows:

B. Site and Utility Survey as shown on the "Site Use Plan".

C. Geotechnical Report: Entitled “Geotechnical Engineering Report, National Renewable Energy Lab, Science and Technology Facility, Golden, Colorado” and prepared by Professional Services Industries has been prepared to characterize the subsurface conditions at the project site and is available upon request from the Owner.

END OF SECTION - INFORMATION AVAILABLE TO OFFERORS

PROPOSAL FORM

PROJECT IDENTIFICATION

A. Project Identification: Research Support Facilities (RFJ-8-77550), located at National Renewable Energy Laboratory, 1617 Cole Boulevard, Golden, CO 80401-3393, Attention: Karen Leitner, MS 1632.

B. Proposal To: National Renewable Energy Laboratory.

C. Proposal From: _____

(To be completed by Offeror)

OFFEROR'S OBLIGATIONS AND REPRESENTATIONS

A. The undersigned Offeror proposes and agrees, if this Proposal is accepted, to enter into a 'subcontract' with the Owner in the form included in the RFP Documents to perform all Work as specified or indicated in the RFP Documents, for the Subcontract Price, and within the Subcontract Times specified in this Proposal, in accordance with all other terms and conditions of the Subcontract, and RFP Documents. Further, the offeror agrees to enter into good faith negotiations for performance of Phase II of this Subcontract.

B. The Proposal will constitute one of the Subcontract Documents, except for provisions that contradict the requirements of the Conceptual Documents and that are not specifically accepted by the Owner by means of written Amendment, prior to execution of the Subcontract between the Owner and the Design-Builder.

C. This Proposal will remain subject to acceptance for 90 days after the due date of proposals. The Offeror will sign and deliver the required number of copies of the Subcontract. Fully executed performance and payment bonds required by the Instructions to Offerors shall be submitted within 14 calendar days after the date the subcontract is executed.

D. In submitting this Proposal, the Offeror represents and agrees, as more fully set forth in the Subcontract, that:

1. The Offeror has examined and carefully studied the Subcontract and Terms and Conditions, the RFP Documents, all prerequisite requirements of the RFP Documents (such as site investigation); all of which make up this RFP.
2. The Offeror has visited the site and become familiar with the general, local, and site conditions that may affect management, coordination, cost, progress, and performance of the work.
3. The Offeror is familiar with all applicable federal, state, and local laws and regulations that may affect management, coordination, cost, progress, and performance of the work.
4. The Offeror has carefully studied all data relating to existing surface and subsurface conditions and structures which have been identified or made available by Owner.
5. The Offeror is aware of the general nature of the work to be performed by the Owner and others at the site as it relates to the work for which this Proposal is submitted.
6. The Offeror has correlated the information known to the Offerors, information and observations obtained from visits to the site, reports and drawings identified in the RFP documents, and all additional examinations, investigations, explorations, tests, studies, and data with the RFP documents.
7. The Offeror has given the Owner written notice of all conflicts, errors, ambiguities, and discrepancies that the Offeror has discovered in the RFP documents and the written resolution thereof by the Owner is acceptable to the Offeror, and the RFP documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing the work as outlined in this RFP.
8. This Proposal is genuine and is not made in the interest of, or on behalf of, any undisclosed

individual or entity and is not submitted in conformity with any agreement or rules of group, association, organization, or corporation; the Offeror has not directly or indirectly induced or solicited any other Offeror to submit a false or sham Proposal; the Offeror has not solicited or induced any individual or entity to refrain from submitting a Proposal; and the Offeror has not sought by collusion to obtain for itself any advantage over any other Offeror or over the Owner.

SUBCONTRACT PRICE -- THE OFFEROR WILL COMPLETE THE WORK IN ACCORDANCE WITH THE SUBCONTRACT FOR THE FIXED PRICE OF:

A. Phase I scope includes all preliminary design work described by the Subcontract and Conceptual Documents for the fixed price of ***** dollars and ***** cents ($*****).

B. DECISIONS UNDER THIS SUBCONTRACT

Phase II: In addition to Phase I work (preliminary design for the Research Support Facilities), the Offeror will complete this Phase II Scope of Work in accordance with the terms and conditions of the Subcontract for the cost elements identified below. At the time of this RFP, this Phase II Scope of Work is defined by the following "Cost Breakdown", quantities of which will be determined by Owner during the execution of the Phase I subcontract. The Scope of Phase II is generally defined as "Design Development and Construction of the RSF". All work identified as Phase II is an option to this Subcontract and does not imply any obligation on the part of the Owner to place any of the Phase II work with the Subcontractor. Phase II scope is contingent upon the successful price negotiation for this work with the Subcontractor. The total budget for all work (conceptual design, preliminary design, final design, and construction of the RSF) is $64,261,000.00. Cost Breakdown for this Phase II work is as follows (fill in the rate and the values).

Scope of Work	**Value**
Final Design Effort	$
Mobilization	$
Proposed Profit Rate on Mobilization - _____%	
General Conditions	$
Substructure	$
Shell	$
Interiors	$
Services	$
Furniture, Fixtures & Equipment	$
Site	$
Landscape Allowance (plants, plantings, irrigation)	$150,000.00*
Phase II Total	$

* This Fixed Price includes a 'landscape allowance' of $150,000.00 (one hundred fifty thousand dollars), the specific scope of which will be determined during the design of the subcontract.

Add-Alternate No. 1: In addition to the Phase I and II work (described in the Conceptual Documents), the Offeror will complete the alternative Scope of Work in accordance with the terms and conditions of the Subcontract for the Unit Prices listed below. At the time of this RFP, the alternative Scope of Work is defined by the following "Unit Breakdown", quantities of which will be determined by Owner during the execution of the base subcontract. The Scope of this Alternate is generally defined as 'Site Improvements', including design services, infrastructure, utilities, roads, parking, grading, and related site improvements. All work identified as Add-Alternate No. 1 is an option to this Subcontract and does not imply any obligation on the part of the Owner to place any of the Add-Alternate No. 1 work with the Subcontractor. Add-Alternate No. 1 is contingent upon receipt of adequate funding for that work effort. For purposes of completing the Proposed Unit Prices below, assume a budget of Thirteen Million Dollars ($13,000,000.00) for work identified in Add-Alternate No. 1.

Proposed Unit Prices: The Subcontractor proposes the following Unit Prices (fill in all blanks);

a) Design-Builder's profit: _____% (percent) of the proposed price

b) General Conditions: _____% (percent) of the proposed price

c) Design Services: _____% (percent) of the proposed price

d) Excavation: $_____ per cubic yard

e) Structural fill $_____ per cubic yard

f) Vehicular paving

1. Flexible $_____ per square yard
2. Rigid $_____ per square yard
3. Paving base $_____ per square yard

g) Curb & gutter $_____ per linear foot

h) Trench & backfill

1. to 4 inches $_____ per linear foot
2. 4 to 8 inches $_____ per linear foot
3. 8 to 12 inches $_____ per linear foot
4. over 12 inches $_____ per linear foot

SUBCONTRACT TIMES -- THE OFFEROR AGREES THAT THE WORK WILL BE:

A. Substantially complete in accordance with the Subcontract within _____ calendar days after the Notice of Award (enter the number of calendar days).

B. Completed and ready for final payment in accordance with the Subcontract within _____ calendar days after Substantial Completion (enter the number of calendar days).

C. The Offeror accepts the provisions of the Subcontract as to liquidated damages in the event of failure to complete the work within the times specified in the Subcontract. The Offeror accepts the provisions of the Subcontract as to actual damages for environmental, safety and health violations.

D. Intermediate Milestones (as defined in the Conceptual Documents): (Offeror to enter number of calendar days after Notice of Award)

1. Proposal Submittal: As of the date of this Proposal
2. Preliminary Design: ____ calendar days after Notice of Award.
3. Design Development: ____ calendar days after Notice of Award.
4. Construction Documents: ____ calendar days after Notice of Award.
5. Substantial Completion: ____ calendar days after Notice of Award.

EXHIBITS - THE FOLLOWING DOCUMENTS ARE ATTACHED TO AND MADE A CONDITION OF THIS RFP:

A. Proposal Exhibits and Proposal Exhibits Checklists (see attachments at the end of this Proposal Form)

1. Proposal Phase Substantiation Checklist
2 Proposal Breakdown
3 Project Objectives Checklist
4. Planning Units Checklist

B. A confirmation list of the principal entities involved in the project, including the constructor entity, all design professionals, major subcontractors, and suppliers of large equipment.

1. Design-Builder of Record:
2. Prime Constructor of Record:
3. Architect of Record:
4. LEED Accredited Professional of Record:
5. Structural Engineer of Record:
6. Energy Consultant of Record:
7. Mechanical Engineer of Record:
8. Electrical Engineer of Record:
9. Geotechnical/Civil Engineer of Record:

C. A letter from the Design-Builder's surety stating the bonding availability as of the date of the Offeror's Proposal.

D. A table indicating fully-burdened rates for all key personnel in accordance with Article 6 of the Subcontract.

1. A build-up of fully-burdened rates shall include: base rate, overhead, general and administrative, and profit. DCAA audited rates are acceptable. If proposing DCAA audited rates, provide a copy of the applicable DCAA audit to support proposed rates.

MISCELLANEOUS

A. Communications concerning this RFP shall be directed to the address, phone number, and facsimile number of the Offeror indicated below.

B. The terms used in this Proposal which are defined in the Subcontract have the meanings assigned to them in the Subcontract documents. Terms defined in the Instructions to Offerors are used with the same meanings in this RFP.

C. Offeror understands and agrees to the submission of an acceptable Lower-Tier Small Business Subcontracting Plan in accordance with Item 20 of the Instructions to Offerors within 14 calendar days, after receipt of the Notice of Award.

SUBMITTED BY (OFFEROR TO FILL IN ALL BLANKS)

A. By: _____ (SEAL)

1. (Firm Name)

B. Signature: _____

C. _____

1. (Typed or Printed Partner or Officer's Name)

D. Title: _____

E. Address: _____

F. Phone No.: _____ Facsimile No.: _____

G. State of Incorporation: _____

H. Out-of-State Corporation Business Authorization: Attached? Yes no

I. State Contractor License No. _____

J. Architect Registration Name/Number: _____

K. Engineer Registration Name/Number: _____

L. Submitted on _____ (Offeror to enter date of signature)

END OF SECTION – PROPOSAL FORM

ATTACHMENTS TO PROPOSAL FORM

PROPOSAL PHASE SUBSTANTIATION CHECKLIST

This substantiation checklist is to be submitted with the Proposal Form for evaluation purposes. Each item shown on the list must be submitted as part of the Proposal in order to be "responsive".

RFP Chapter	Subsection #	Description	Milestone	Submitted Date
SUBCONTRACT	Article 18	Provide a schedule for construction from preliminary design through closeout in accordance with the requirements of Article 18 of the Subcontract		
PROPOSAL- Part 3- Performance Specifications				
EXECUTION	C.6.a	Corporate health and safety program		
FACILITY PERFORMANCE	A.4.g.1	LEED Checklist annotated to show specific credits to be achieved with brief description of how they will be achieved.		
	F.1.a.1	Calculation of Gross Building Area, Building Common Area and Floor Common Areas, and net area of each space		
	F.2.b.1	Calculation demonstrating the "btu/sf/year" of the proposed design concept.		
	F.2.b.2	Identification of method of calculation of energy efficiency to be employed.		
	F.3.a.1	Estimated quantity of water that will be used in the first year of operation, divided into domestic water, HVAC water, and other water categories, with quantity of water recycled, if any; include basis of estimates		
	F.4.c.1	Type of operating personnel and amount of training required; identification of each equipment item or system for which more than one day of training is required; identify source of data		
SUBSTRUCTURE	D.5.a	Identification of major structural materials and systems		
SHELL	B.5.d.1	Identification of spaces relying on natural ventilation with description of ventilation concept and required building elements.		
	B.8.c.1	Concept drawings of proposed solution indicating overall building configuration, massing, scale, materials, and relationship to surrounding buildings		
	B.8.D.1.b.1	Identification of major structural materials and systems		
INTERIORS	B.1.a.1	Information on overall building configuration that will permit natural ventilation of all major spaces		
	B.4.d.1	Information on overall building configuration that will permit daylighting to levels specified		
SERVICES	F.1.g.1	Description of systems required, sources, input-side capacities, and means of distribution		
EQUIPMENT AND FURNISIHNGS	D.1.a.1	Identification of proven-in-use assemblies of the same type, for inspection by Owner.		

SUBMITTED BY

A. By: _____

1. (Firm Name)

B. Signature: _____

C. _____

1. (Typed or Printed Partner or Officer's Name)

PROPOSAL BREAKDOWN

Provide the following cost information as part of this proposal (all shaded areas shall be filled in):

Preliminary Design Firm-Fixed Price: $_____

General:

	Design	Construction
Overhead Rate	%	%
G&A Rate	%	%
Profit Rate	%	%
Handling Fee on Materials	%	%
Handling Fee on Sub-tiers	%	%

Fully Burdened Rates for Staff

Discipline	Base Rate	Overhead	G&A	Profit	Fully Burdened Rate
Project Manager	$	%	%	%	$
Superintendent(s)	$	%	%	%	$
Asst. Superintendent(s)	$	%	%	%	$
Project Engineer(s)	$	%	%	%	$
Safety Coordinator(s)	$	%	%	%	$
Administrative Support	$	%	%	%	$
Contract Administrator	$	%	%	%	$
Purchasing Agent	$	%	%	%	$
Cost Control/Estimating	$	%	%	%	$
Scheduling	$	%	%	%	$
Others	$	%	%	%	$
	$	%	%	%	$
	$	%	%	%	$
	$	%	%	%	$
	$	%	%	%	$
	$	%	%	%	$

Construction Cost Factors (fill in all shaded areas)

Direct Work:

Subcontractor bids, material purchases, equipment purchases and allowances: $

Self-Perform Work:

Labor, materials, equipment, and construction equipment $

Self-Perform general conditions _____%

(Percentage mark-up for self-perform wages and Salaries of personnel supervising the actual self-Perform work and related administrative personnel and general conditions reimbursable expenses. Percentage is to be applied to total cost for self-Perform labor, materials, equipment and Construction equipment.)

Self-Perform Overhead and Profit _____%

(Percentage mark-up for subcontractor's overhead & profit (fee) on any self perform work. Percentage Is to be applied to total cost for self-perform labor, Materials, equipment, and construction equipment And self-perform general conditions).

Total Self-Perform work $

Total Direct Work (subcontractor bids, material purchases, equipment purchases, Allowances and self-perform work). $

Indirect Work:

Project general conditions	(based on total general conditions cost)		$_____
Project Overhead and Profit	(Percentage is to be applied to sum of total direct work and project general conditions based on total project cost of $64 Million)	_____%	$
Project Bonds	(Percentage is to be applied to sum of total direct work, project general conditions and project overhead and profit based on total project cost of $64 Million)	_____%	$
Project Insurance	(Percentage is to be applied to sum of total work, project General conditions and project overhead and profit based on total project cost of $64 Million)	_____%	$

Total Indirect Work (project general conditions, project overhead and profit, project Bonds and project insurance) $

Total Subcontract Amount (includes pre-design cost, design cost, direct costs and

Indirect costs) $_____

The not-to-exceed project budget for conceptual design, preliminary design, final design and construction of the RSF is $64,261,000.00.

A. AMENDMENT

Offeror acknowledges receipt of the following amendment(s) covering revisions to the Proposal Documents, and states that the costs, if any, of such revisions have been included in the Base Proposal and other prices quoted:

[If no Amendments have been received, write in "None".]

Amendment No. _____ Dated: _____

Amendment No. _____ Dated: _____

Amendment No. _____ Dated: _____

B. ALTERNATES

Owner reserves the right to take no alternates, select individual alternates, or all add alternates in whatever order best suits the Owner, whether or not the choice of alternates selected changes the apparent successful Offeror.

C. ATTACHMENTS

Offeror shall provide all applicable price/cost documentation necessary to support their proposed price/cost, which can include, but is not limited to the following:

a. Lower-tier price proposals

b. Bill of Material (BOM)

c. Negotiated labor union labor rates

d. Published billing rates

e. Overhead, G&A, profit rate

f. Quotes

PROJECT OBJECTIVES CHECKLIST

This Project Objectives Checklist is to be submitted with the Proposal Form for evaluation purposes. Offeror's proposal must meet all Mission Critical Objectives in order to be "responsive". Objectives noted as "Highly Desirable" or "If Possible" will be evaluated as part of the Best Value Selection process. Write either "included" or "not included" corresponding to each objective your proposal will achieve or not achieve respectively. Each of the "included" objectives must have a corresponding narrative (one or two paragraphs) on how your proposal achieves the objective.

MISSION CRITICAL	
Attain Safe Work Performance/Safe Design Practices	
LEED™ Platinum	
ENERGY STAR First "Plus", unless other system outperforms	
HIGHLY DESIRABLE	
Up to 800 Staff Capacity	
25 kBTU/sf/year	
Architectural Integrity	
Honor "Future Staff" Needs	
Measurable ASHRAE 90.1-50% plus	
Support culture and amenities	
Expandable building	
Ergonomics	
Flexible workspace	
Support future technologies	
Documentation to produce a "How to" manual	
"PR" campaign implemented in real-time for benefit of DOE/NREL and DB	
Allow secure collaboration with outsiders	
Building information modeling	
Substantial Completion by May 2010	

IF POSSIBLE	
Net Zero/Design approach	
Most energy efficient building in the world	
LEED™ Platinum Plus	
ASHRAE 90.1 plus 50%+	
Visual displays of current energy efficiency	
Support public tours	
Achieve national and global recognition and awards	
Support personnel turnover	

PLANNING UNITS CHECKLIST

This Planning Units Checklist is to be submitted with the Proposal Form for evaluation purposes. The Planning Units are listed in order of priority for "Programmatic Inclusion" in the project. In order to meet the Fixed Price and Performance Requirements of the project, use this list to indicate what Planning Units are included in your proposal. Write either "included" or "not included" corresponding to each Planning Unit.

Mission Critical		
NREL	Executive Managers	
NREL	Public Affairs Office	
NREL	Legal Office	
NREL	Systems Integration	
NREL	Environmental, Health and Safety & Quality	
NREL	Deputy Director & Requisition Management	
NREL	Laboratory Development Office	
NREL	Information Systems Office	
NREL	ISO (Systems & Networks)	
NREL	ISO--Library\Pubs\PIX\Print	
NREL	Security and Emergency Preparedness	
NREL	Human Resources & Education	
NREL	Site Operations	
NREL	Technology Transfer Office	
NREL	Finance Office	
NREL	Contracts and Business Services	
NREL	Program Support Office	
GO	Laboratory Operations (OLO)	
GO	Manager	
Highly Desirable		
NREL	Strategic Energy Analysis & Applications Center (SEAAC)	
NREL	Center for Builds and Thermal Research	
If Possible		
GO	Management and Administration	
GO	Office of Commercialization and Contract Management	
GO	Acquisition and Financial Assistance	

END OF SECTION – ATTACHMENTS TO PROPOSAL FORM

DESIGN AND CONSTRUCTION PROCEDURES

MANAGEMENT AND COORDINATION

Project Management

A. Coordination with Occupants:

1. In Existing Buildings on NREL Campus: Owner intends to continue to occupy existing and adjacent buildings and site during the construction period.
2. Existing Utility, Life Safety, and Fire Safety System Elements:
    a. All activities that require interruption of existing services or operations i.e. electrical power, gas, sewer, water, traffic, etc shall be scheduled with the NREL Construction Manager at least two (2) weeks in advance.
    b. No disruption of services to areas that continue to be Owner occupied during normal operational hours; all disruptions be arranged at least two (2) weeks in advance with the Owner. The Owner desires no disruption of services during occupational hours, however, if required all disruptions must be coordinated and arranged at a minimum of 2 weeks in advance and can only take place during non-operational hours.
    c. Prevent accidental disruptions to facilities outside the project limits by investigation of existing utilities and protection during construction; remedy accidental disruptions at no cost to Owner.
    d. Normal working hours for NREL personnel are 8:00 am to 4:30 pm, Monday thru Friday, except holidays. Subcontractor personnel are not allowed on site during non-work hours unless arrangements have been made, in advance, with the NREL Project Manager. When subcontract personnel are approved to work other than normal hours, the NREL Security Desk shall be advised, in advance, by telephone at 303-384-6811.

B. Existing Operation(s):

1. Site Demolition and Development: Owner will/has contract(ed) with separate entity for demolition and development of the site, parking and roadways, infrastructure, and other improvements.
2. Emergency Routes Required by Code: Maintained open during construction period.
3. Existing Site Access: Maintained open during construction period; protected from activities, kept clear of construction debris and stored materials, and with safe route surfaces in accordance with Manual on Traffic Control Devices – Department of Transportation (MUTCD-DOT).

C. Progress Schedule: As specified in the RFP Documents, including:

1. Schedules include: general progress schedule, submittal schedules, design schedules, construction activities schedules, or other schedules required by the RFP Documents.
2. Submit updated schedule whenever adjustments that change the contract times and/or milestones are realized.
3. Updates shall be submitted within 7 (seven) days after discovery of required changes.
4. Submitted adjusted schedules are subject to approval by the Owner if the originally submitted schedule being updated was required to be approved by the Owner, or is a part of the RFP Proposal by the Design-Builder.

D. Progress Documentation for Owner Information:

1. During Preliminary Design, Design Development, and Construction Documents Periods: Provide graphic displays sufficiently detailed to allow individual "Planning Units" to identify the

status and organization of the design of their new spaces.

2. Weekly progress meetings shall be held to review preliminary through final design and during construction. All meetings shall be documented by the subcontractor with copies provided to NREL.

3. The subcontractor shall update the NREL Project Manager weekly throughout the duration of the subcontract.

E. Progress Documentation for Owner's Project Record:

1. During Construction: Daily digital photographic record of each portion of the work, taken from consistent locations, distances, and angles.

2. During Closeout: Detailed digital photographic record of each interior room and space, each exterior elevation, the roof, and the site immediate to the facility.

3. Photographs and Videos: Include the date taken, a short title of the view, and the compass orientation in each view; data must be in the actual photograph or frame, rather than added after printing (hand-printed lettering on an erasable marker board is acceptable).

4. The subcontractor shall provide a project schedule for the entire effort from Conceptual Design through Closeout. A resource loaded project schedule (RLS) shall identify all resources and activities required for the design as well as for construction and occupancy and commissioning portions of the project. The RLS will be used to establish subcontractor progress and must be updated at each pay application.

QUALITY REQUIREMENTS

A. Design Criteria: During Preliminary Design, the design and performance criteria must be refined, finalized, and documented for approval by the Owner. These refinements will not be considered changes to the "RFP Documents" requirements; rather they are a routine part of performance-based design-build delivery.

1. Owner will appoint representatives of the following work groups to provide details of functional needs:

   a. Planning Unit (user) groups.

   b. Operations staff.

   c. Maintenance staff.

   d. Owner's commissioning agent.

   e. Owner's Representative

2. Design Documentation: Record all design and performance criteria that will be of use during occupancy and operation of the project, including all items specified for maintenance manuals below.

   a. Design Criteria Documentation Included in Construction Documents: Organized logically (from the point of view of Operations staff) and placed in a prominent location in drawing sets.

   b. If desired, documentation may consist of annotated modifications to, and amplification of, the Conceptual Documents, with changes that affect Subcontract Times or Subcontract Price documented as required for modifications.

   c. If required, shop drawings may be used to accomplish design documentation.

   d. Owner will maintain the project program document, modified to reflect changes made during refinement of the design.

e. Drawings: Prepared using AutoCAD 2008, using Owner's specified drawing and layering conventions and following the NREL CAD manual.

f. Shop Drawings: Prepared using same CAD software.

g. Mock-Ups: Where necessary to clarify design intent, construct Mock-Ups that may be incorporated into the work.

B. Substantiation Requirements: See Facility Performance (Part 3-Performance Specifications) for definitions and basic requirements; see other Sections for specific items of substantiation required; see Design and Construction Procedures (Part 1-Procedures) for time periods relating to submission times.

C. Substantiation Submittal Procedures:

1. Time Frames: As specified. If there is a conflict between the degree of detail or completion specified and the progress of the design or construction, obtain a clarification before submitting.

2. Recipient: Senior Subcontract Administrator, Karen Leitner, at 1617 Cole Blvd, Golden Colorado, 80401.

3. Number of Copies: 3 (three) hardcopies for Owner's use and records and 1 (one) electronic form; Owner will return not more than 1 (one) copy.

4. For time periods that constitute Milestones, all substantiation submittals required during that period must be complete and accepted before the Milestone can be considered achieved. The absence of properly submitted and accepted substantiation materials shall NOT be the sole basis for acquiring time extensions (as defined by the RFP Documents).

5. Substantiation Submittals are the primary means for the Owner to measure and understand the design and construction intent of the Design-Builder. All substantiation submittals must be submitted in both hardcopy and electronic forms. Absence of properly submitted substantiation (as identified and required by the RFP Documents) by the Design-Builder will be a basis for the Owner to measure non-compliance of the Subcontract requirements of the Design-Builder.

6. Submit complete sets of documents containing all substantiation at end of the following periods:

a. Proposal period.

b. Preliminary Design period.

c. Design Development period.

d. Construction Documents period.

e. Closeout period.

7. Resubmissions: Clearly identified as such, with all changes made since the original submittal clearly marked.

D. Owner's Review of Substantiation: Unless otherwise indicated, Owner will make formal acceptance of substantiation submittals.

1. If a submittal is not acceptable Owner will notify Design-Builder promptly.

2. Allow minimum of 15 working days for review of major "end of period" submittals.

E. Substantiation Schedule: Prepare and maintain a complete schedule of substantiation items, showing:

1. Contents, for each item:

a. Anticipated and actual item, with Section and paragraph number and drawing identification, if any.

b. Anticipated submittal date, or time period(s) during which submittal is required.

c. Actual submittal date.

d. Action taken or other status.

e. Identification of future re-submission requirement, if any.

2. If desired, schedule may be incorporated into overall progress schedule, provided substantiation data can be reported separately from other progress information.

3. Submission: To Owner, within 30 days after Notice of Award.

4. Form: Computer database format for Owner's use in tracking submittals; database structured so Owner's added information will not be overwritten or deleted by incorporation of updated data from Design-Builder.

5. Updates: To Owner, monthly in hard copy. Updates are required irrespective of any changes to the schedule.

F. Field Testing and Inspection: Provide a schedule that identifies all testing, observation, and inspection required by code and as specified. The Design-Builder will conduct all testing and commissioning activities and the Owner will employ the services of an independent commissioning agent as required by the subcontractor's schedule. The Owner's independent commissioning agent will be present and document the results of the commissioning activities.

1. The Design-Builder will provide a full Commissioning Plan prior to construction start, with each function to be tested described separately. For systems composed of more than one item or system, an individual component test for proper operation and interconnection shall be completed before beginning system testing (e.g. point to point testing).

2. Exception: Only those tests and inspections indicated to be performed by the Owner's commissioning agent in concert with the Design-Builder and in excess of the Design-Builder's commissioning plan.

a. Owner's Commissioning Agent: TBD.

3. All code required testing and inspections shall be reported to the Owner's Representative upon completion of each test and inspection.

4. Testing and Inspection Schedule: Prepare and maintain a schedule including:

a. Anticipated and actual element tested or inspected.

b. Basis of testing and inspection.

c. Results of testing and inspections.

d. Dates of anticipated and actual tests and inspections.

5. Qualifications of Testing/Inspection Agencies:

a. Qualified and equipped to perform applicable tests/inspection.

b. Regularly engaged in testing and inspection activities on a commercial basis.

c. Independent of Design-Builder and his contractors' organizations.

d. Employed by Design-Builder directly.

e. Authorized to operate in the State of Colorado.

f. Acceptable to Owner.

g. Substantiation: Submittal of qualifications, based on ASTM E 329 and ASTM E 548.

6. Reports: Written report of each test/inspection; including complete details of conditions,

methods, and results, signed by responsible individual.

G. Reference Standards: Where products or workmanship is specified by reference to a document not included in the Contract Documents, comply with the requirements of the document, except where more stringent requirements are specified.

1. Date of Issue: As indicated in each instance except where a specific date is established by code.

2. Copies on Site: Keep copies of referenced standards that prescribe installation or workmanship standards on site until completion.

TEMPORARY FACILITIES AND CONTROLS

A. Owner will provide the following:

1. Electrical power and metering, consisting of availability. The Owner shall provide access to temporary power and gas. The Design-Builder will be required to provide all necessary connections, meters and other elements required by the Design-Builder to gain access to electrical power and gas. The Owner will pay only the utility charges. The Design-Builder will pay for any costs associated with connection.

2. Water supply, consisting of availability. Design-Builder shall provide all necessary connections, meters and other elements required by the Design-Builder to gain access to water supply. The water supply will be made available through the coordination of the Design-Builder and Consolidated Mutual. Terms and agreements for water consumption will be the responsibility of the Design-Builder and the service provider.

B. New permanent NREL facilities may be used during construction.

C. Provide the following for the use of the Owner:

1. Desk space in field office on site, furnished, heated, and cooled.

a. Capacity: 3 (three) persons.

2. Telephone, Internet, and fax service in field office on site.

D. Vehicular Access and Parking: Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.

1. Parking for Design-Build Personnel and Construction Workers: As provided in the "Site Use Plan"

2. Provide 3 (three) parking spaces reserved for use of Owner immediate to the field office.

E. Security: Protect the work, existing facilities, and Owner's operations from unauthorized entry, vandalism, and theft; by Design-Builder.

F. Erosion and Sediment Control:

1. Comply with NREL Storm Water Pollution Prevention for Construction Activities: South Table Mountain, Procedure 6-2.15, Policy 6.2 available through the Environment, Health, Safety, and Quality (ESH&Q) Office.

G. Dust Control:

1. Exterior: Minimize raising dust, preventing dispersal of air-borne dust into atmosphere and over adjacent property.

2. Comply with the NREL Particulate Emissions Control for Construction, Program 6-2.14, Policy 6-2 available through the Environment, Health, Safety, and Quality (ESH&Q) Office.

3. Interior:

a. Provide dust-proof enclosures to prevent entry of dust generated outdoors.

b. Provide dust-proof barriers between construction areas and areas continuing to be occupied by Owner.

H. Noise Control:

1. Outdoors: Limit conduct of especially noisy exterior work to the hours of 8 am to 5 pm.

I. Waste Control: Provide waste storage and removal as required to maintain site in clean and orderly condition.

1. Disposal of Waste Off-Site: Periodic.

2. Waste Removal Service: Daily; including dumpsters.

3. Prohibited: Open free-fall chutes; containers without lids.

J. Pollution Control: Comply with Federal, State, and local regulations.

1. Comply with NREL Storm Water Prevention for Construction Activities: South Table Mountain, Procedure 6-2.15, Policy 6.2 available through the Environment, Health, Safety, and Quality (ESH&Q) Office.

K. Project Identification Sign: By Design-Builder to Owner's design and/or approval.

1. No other signs allowed on site without Owner's permission except those required by law.

L. Removal of Temporary Facilities, Utilities, and Controls: Prior to Substantial Completion; including clean up, restoration of existing facilities used to original condition, and repair of damage.

EXECUTION

A. Pre-Construction Survey: To be prepared by Design-Builder; control and reference points will be based on the "South Table Mountain Overall Site Plan".

B. Work by Owner: The Owner will perform the following work, with his own forces or using other contractors:

1. Site Development of grading, parking, roadways, driveways, and utility infrastructure to within 5 (five) feet of the Design-Builder's proposed building(s).

2. Designs, studies, and other investigations used by the Owner to develop the site (separate contract) will be available to the Design-Builder upon availability to the Owner.

a. The Site Development's Design will be coordinated based on the proposed location of the work as developed by the Design-Builder under this Subcontract.

b. The Design-Builder and Owner's other site subcontractor shall coordinate their work with reasonable care and within the 'standards of care' of the design and construction professions.

C. Health, Safety, and Security:

All work performed under this subcontract must be conducted in accordance with applicable federal, state, and local regulations, Executive Orders, DOE Directives, and NREL Policies and Procedures.

1. Use of explosives is not permitted.

2. Construction operations will comply with all applicable NFPA guidelines.

3. Removal, abatement, handling, and disposal of hazardous materials will comply with all applicable federal, state, and local regulations.

4. Use physical barriers to prevent access to areas that could be hazardous to workers or the public to include delineation of worker access and operating equipment access.

5. Comply with all health, safety, and security protocols established by Owner, including:
    a. Those identified in the Subcontract and Terms and Conditions.
    b. NREL has established security and safety requirements to govern access onto Owner operated facilities by subcontractor's employees (and its lower-tier subcontractor's employees) and their officers, agents, and any other persons representing the subcontractor.
    c. The introduction of certain "controlled" commodities and/or activities on the Owner operated facilities is prohibited. Prohibited articles include cameras, copying machines, reproductive devise, recording devices, radio transmitters, firearms, explosives devices, incendiary devices, dangerous weapons or materials, controlled substances (illegal drugs), alcoholic beverages, and livestock. Owner operated facilitates and DOE-owned or leased property is closed to all hunting.
    d. As a condition of entry to Owner operated facilities, the subcontractor agrees to permit NREL Security Personnel to search the subcontractor's employees (and it's lower-tier subcontractor's employees) and their officers and agents' vehicles, packages, tool boxes, or other containers for the purpose of preventing prohibited articles from being onto Owner operated facilities or to detect or deter the unauthorized removal of Government property from Owner operated facilities.
    e. The subcontractor is solely responsible for the security of the subcontractor's employees (and its lower-tier subcontractor's employees) and their officers and agents' materials and equipment at the Owner operated facilities. Any security system the subcontractor may elect to use (fences, keys, alarms, etc.) must be coordinated with the Owner Construction Manager.
    f. The subcontractor is responsible to immediately advise the Owner Project Manager promptly of any non-routine events, occurrences, incidents, accidents, near misses, etc., particularly in situations involving lost time accidents and ambulance runs, occurring under this subcontract. The subcontractor is responsible to submit a written report within 24 hours that identifies the cause, the actions taken, and systems to be incorporated to prevent further lost time accidents.
    g. NREL security reserves the right to revoke site access authorization for any person violating Owner or DOE safety and security policies and procedures.
6. Substantiation:
    a. Proposal: Corporate health and safety program.
    b. Design Development: Identification of hazards in existing structures and on site, with preliminary plan for abatement.
    c. Construction Documents: Detailed specifications for hazardous material removal, abatement, and disposal.

CLOSEOUT SUBMITTALS

A. Maintenance Manuals: Assemble system design information, operation and maintenance data, and copies of warranties into manuals, organized by functional system (e.g. plumbing, HVAC, etc.) or material type (e.g. flooring, wall finishes, etc.) as appropriate using specification numbers where applicable.
    1. Binders: 3-ring, D-ring, with hard cover, project title on spine, Table of Contents in each volume, and stiff dividers with labeled tabs; contents divided into logical binders not more than 3 inches (75 mm) thick.
    2. Directory: Names, addresses, telephone numbers, of all design and construction entities,

including subcontractors and suppliers, with names of products supplied.

3. Software-Operated Systems and Equipment: Detailed program documentation, a general review of the programming approach, description of use on this project, and description of possible user-modifications.
4. Drawings: Bound into manuals, folded to size of binder.
5. Product Listing: Manufacturer's brand name for each major product actually installed, in alphabetical order by generic product name, cross-referenced to specification numbers and Table of Contents of manuals.
6. Warranties: Photocopies of originals.
7. Video recording of training sessions.

B. Project Record Documents: During construction maintain on site one set of all documents forming the subcontract, including drawings, recording all changes made by amendment, by formal modifications, and in performing the work, for Owner's future reference.

1. Storage: Separately from documents used for construction, in location where they can be kept clean and safe from fire and damage.
2. Changes to be recorded Include:
   a. Actual measured locations (horizontal and vertical) of foundations and concealed utilities and appurtenances, referenced to visible permanent appurtenances.
   b. Field changes of dimension and detail and details not on original documents.
   c. Actual products used, in specification, with brand name or model number.
3. Submittal Copy of Drawings: All marks copied to a clean set of prints.

C. Final Site Survey: Pre-construction survey updated after completion of foundations, verifying location and level of permanent benchmarks and control points, utility access points, and principal improvements.

D. Spare Parts and Extra Materials: As specified for specific products; delivered to location on project site designated by Owner; with receipt from Owner.

E. Maintenance Supplies and Tools: As specified for specific products; delivered to location on project site designated by Owner; with receipt from Owner.

DEMONSTRATION AND TRAINING

A. Coordinate all activities with Owner's Commissioning Agent.

B. Demonstration: For each equipment item and system, demonstrate all operational modes to Owner at time acceptable to Owner; if defects occur during demonstration, demonstration must be rescheduled for a time acceptable to Owner.

C. Training: Perform training of Owner's personnel in operation and maintenance of equipment, consisting of:

1. Training is required for all software-operated systems, HVAC systems and equipment, plumbing equipment, electrical systems and equipment, conveying systems, and other electrically-operated equipment.
   a. Provide supplemental training within 6 months for operations that are seasonal in nature.
2. Instruction in operation, control, adjustment, shut-down, servicing, troubleshooting, and maintenance, for each equipment item for which training is specified.
3. Instruction in care, cleaning, maintenance, and repair of materials, for:

a. Each item for which training is specified.

b. Roofing, waterproofing, other weather-exposed or moisture protection products.

c. Finishes, including flooring.

d. Fixtures and fittings.

e. Items as specified in other Sections.

4. Major Software-Operated Systems: Training by software manufacturer at the Owner's facility for minimum of one Owner staff members, with take-home training materials.

5. Training Location: If not otherwise specified, conduct training in a classroom on site, with videotapes made for future use.

6. Minimum Qualifications of Trainers: Knowledgeable about the project and the equipment and trained by the manufacturers.

7. Maintenance Manuals: Ready for use in training.

OPERATION AND MAINTENANCE

A. Coordinate all activities with Owner's Commissioning Agent.

B. Operation and Maintenance: Design-Builder is responsible for the following:

1. Preparation of maintenance plan for Owner's use, including description of maintenance activities, tools, and supplies required.

2. Periodic maintenance service as specified, for one year from the date of Substantial Completion, for the following:

a. Roofing.

b. Elevators.

c. Escalators.

3. Services will be included under Design-Builder's subcontract with Owner.

4. Individual operation and maintenance subcontracts will be between maintenance organization and Owner.

5. Maintenance Services: Examination at frequency consistent with reliable operation; cleaning, adjusting, and lubricating; replacement of parts whenever required, using parts produced by the original manufacturer.

6. Maintenance Organizations: Approved by manufacturer and Owner; transfer or assignment of subcontracts without prior written consent of Owner not allowed.

C. Post-Occupancy Survey: Conducted by Owner, of actual occupants after minimum of 6 (six) months of full occupancy and operation and again after 1 (one) year.

1. Purpose of Survey: Subjective evaluation of function and quality of occupants' spaces and project as a whole. Survey questions will include but not limited to:

a. Is the room temperature in your work area comfortable? Is the performance of the heating/air conditioning system acceptable?

b. Does the amount of direct lighting in your work area meet your needs and expectations?

c. Does the amount of outside natural light into your work area meet your expectations based on the design and location of your work area?

d. Is noise from other work areas or outside sources not objectionable in your work area?

e. Does the performance of the equipment you use in your work area meet your expectations? (Excluding Owner-provided equipment.)

f. Does the appearance of the building both inside and outside project the appropriate image to the community and our customers?

g. Is the building user-friendly? Have features been placed where they are convenient and readily accessible?

h. Does the quality of construction meet your expectations? Do finishes, trim, and painting demonstrate the expected level of quality?

i. Is the number of corrective repairs or warranty claims during the first 90 days of occupancy less or more than you would expect with a major new facility?

j. How would you rate the new building, overall, on a scale of 1 to 10 (lowest to highest), realizing that it would be impossible to completely please everyone?

END OF SECTION - DESIGN AND CONSTRUCTION PROCEDURES

REFERENCED DOCUMENTS

APPLICABILITY

The following documents form a part of the RFP Documents to the extent they are referenced elsewhere herein.

GOVERNMENTAL REGULATIONS AND PUBLICATIONS

A. CFR - Code of Federal Regulations, United States Government:

1. 10 CFR 851 – Worker Safety and Health.
2. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Consumer Product Safety Commission; current edition.
2. 28 CFR 36 - Nondiscrimination by Public Accommodations and in Commercial Facilities; Final Rule; Department of Justice; current edition.
3. 29 CFR 1904 – Recordkeeping Reporting; current edition
4. 29 CFR 1910 - Occupational Safety and Health Standards; Occupational Safety and Health Administration; current edition.
5. 29 CFR 1926 - Safety and Health Regulations for Construction; Occupational Safety and Health Administration; current edition.
6. 36 CFR 1191 - Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities; Final Guidelines and Amendment to Final Guidelines (ADAAG); Architectural and Transportation Barriers Compliance Board; current edition; reprinted compiling all revisions, September 1994.
7. 36 CFR 1192 - Americans with Disabilities Act Accessibility Guidelines for Transportation Vehicles; Final Guidelines; Architectural and Transportation Barriers Compliance Board; current edition.
8. 40 CFR 122 - NPDES General Permit for Storm Water Discharges from Construction Activities (issued by the EPA).

B. U.S. Government Standards:

1. FHWA FLP-94-005 - Best Management Practices for Erosion and Sediment Control; Federal Highway Administration; 1995.
2. National Priority Project Criteria (Energy Policy Act 2005), Section 1405.

C. Executive Orders:

1. Executive Order 13423, Strengthening Federal Environment, Energy, and Transportation Management.

D. State Government Standards:

1. 5 CCR 1001-5, Regulation 3, section II.D.1.j - Air Emissions Construction Permit for Overlot Grading and Associated Construction Activities (issued by the Colorado Department of Public Health and Environment, Air Pollution Control Division).
2. 7 CCR 1101-14, Article 3 (the requirement for an SPCC Plan is embedded in this regulation at Section 3-6) - Storage Tank Regulations (as administered by the Colorado Department of Labor and Employment, Division of Oil and Public Safety).

MODEL CODE ORGANIZATIONS

A. ICC - International Code Council, Inc.:

1. ICC (IBC) - International Building Code; 2006.
2. ICC (IEC) - International Electrical Code Provisions; 2006.
3. ICC (IECC) - International Energy Conservation Code; 2006.
4. ICC (IFC) - International Fire Code; 2006.
5. ICC (IFGC) - International Fuel Gas Code; 2006.
6. ICC (IMC) - International Mechanical Code; 2006.
7. ICC (IPC) - International Plumbing Code; 2006.

NON-GOVERNMENTAL STANDARDS DEVELOPING ORGANIZATIONS

A. AAMA - American Architectural Manufacturers Association:

1. AAMA 501.2 - Field Check of Metal Storefronts, Curtain Walls, and Sloped Glazing Systems for Water Leakage; 2003.
2. AAMA 1503 - Voluntary Test Method for Thermal Transmission and Condensation Resistance of Windows, Doors, and Glazed Wall Sections; 1998.
3. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels; 2005.
4. AAMA GDSG-1 - Glass Design for Sloped Glazing; 1987.

B. ACI - American Concrete Institute International:

1. ACI 301 - Specifications for Structural Concrete; 2005.
2. ACI 302.1R - Guide for Concrete Floor and Slab Construction; 2004.

C. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers:

1. ASHRAE (HVACA) - ASHRAE Handbook - HVAC Applications; 2003.
2. ASHRAE (FUND) - ASHRAE Handbook - Fundamentals; 2005.
3. ASHRAE Guideline 1 - The HVAC Commissioning Process; 1996
4. ASHRAE Std 15 - Safety Code for Mechanical Refrigeration; 2004.
5. ANSI/ASHRAE Std 55 - Thermal Environmental Conditions for Human Occupancy; 2004.
6. ANSI/ASHRAE Std 62.1 - Ventilation for Acceptable Indoor Air Quality; 2004.
7. ASHRAE Std 90.1 - Energy Efficient Design of New Buildings Except Low-Rise Residential Buildings; latest version.

D. BOMA - Building Owners and Managers Association:

1. ANSI/BOMA Z65.1 - Standard Method for Measuring Floor Area in Office Buildings; 1996.

E. IEEE - The Institute of Electrical and Electronics Engineers:

1. IEEE 81 - IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System (Part 1); 1983.

2. IEEE 142 - IEEE Recommended Practice for Grounding of Industrial and Commercial Power Systems; 1991.
3. IEEE 241 - IEEE Recommended Practice for Electric Power Systems in Commercial Buildings; 1990 (R1997).
4. IEEE 739 - IEEE Recommended Practice for Energy Management in Industrial and Commercial Facilities; 1995.
5. IEEE 1100 - IEEE Recommended Practice for Powering and Grounding Sensitive Electronic Equipment; 2005.

F. NEMA - National Electrical Manufacturers Association:

1. NEMA 250 - Enclosures for Electrical Equipment; 2003
2. NEMA ICS 6 - Industrial Control and Systems: Enclosures; 1993 (R2006).
3. NEMA MG 1 - Motors and Generators; National Electrical Manufacturers Association; 2006.

G. NFPA - National Fire Protection Association:

1. NFPA 1 - Uniform Fire Code; 2006.
2. NFPA 13 - Standard for the Installation of Sprinkler Systems; 2007.
3. NFPA 14 - Standard for the Installation of Standpipe, Private Hydrant, and Hose Systems; 2007.
4. NFPA 17 - Standard for Dry Chemical Extinguishing Systems; 2002.
5. NFPA 20 - Standard for the Installation of Stationary Pumps for Fire Protection; 2007.
6. NFPA 25 - Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems; 2002.
7. NFPA 30 – Flammable and Combustible Liquid Code; 2003.
8. NFPA 51B – Welding, Cutting and Other Hot Work; 2003
9. NFPA 70 - National Electrical Code; 2005.
10. NFPA 70E – Electrical Safety in the Workplace; 2004
11. NFPA 72 - National Fire Alarm Code; 2007.
12. NFPA 80 – Fire Doors and Other Opening Protectives; 2007
13. NFPA 101 – Life Safety Code; 2006
14. NFPA 110 – Emergency and Standby Power Systems; 2005
15. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2004.
16. NFPA 780 - Standard for the Installation of Lightning Protection Systems; 2004.
17. NFPA 1144 – Protection of Life and Property from Wildfire; 2002

H. TIA - Telecommunications Industry Association:

1. ANSI/TIA-569 - Commercial Building Standard for Telecommunications Pathways and Spaces; Rev B, 2004.

I. USGBC - U. S. Green Buildings Council, www.usgbc.org

1. USGBC LEED-NC - LEED Green Building Rating System for New Construction & Major Renovations; Version 2.2, 2005.

J. Particulate Emissions Control for Construction, Program Number: 6-2.14, Policy 6.2. Available at the Environment, Safety, Health and Quality (ESH&Q) Office.

K. Storm Water Pollution Prevention for Construction Activities: South Table Mountain Site, Procedure 6-2.15, Policy 6-2. Available at the Environment, Safety, Health and Quality (ESH&Q) Office.

PRIVATE EVALUATION ORGANIZATIONS

A. FM - Factory Mutual System:

1. FM P7825 - Approval Guide; current edition.

B. UL - Underwriters Laboratories Inc.:

1. UL (EAUED) - Electrical Appliance and Utilization Equipment Directory; current edition.
2. UL (ECMD) - Electrical Construction Materials Directory; current edition.
3. UL (FPED) - Fire Protection Equipment Directory; current edition.
4. UL (FRD) - Fire Resistance Directory; current edition.

END OF SECTION - REFERENCED DOCUMENTS

PART 2-PROGRAM

PROGRAM OVERVIEW

The project information section provides a narrative stating the project intent, including the overall project goals as well as highlighting important performance measures. Within the program narrative, the NREL Mission Statement and Strategy are both presented to provide an understanding of the project's goals.

The Risk Analysis identifies the project risks and provides a basis for the design-build team to demonstrate how they manage or assist the Owner in managing the project risks. Included with the Risk Analysis is a Risk Table that indicates the degree to which the risk may impact cost, quality, and schedule.

Program information includes basic definitions for the project program. The Space Code Summary provides the code for each of the spaces in the facility. The Space Code identified in the Space Code Summary relates to performance requirements identified within Part 3- Performance Specifications of the Conceptual Documents. Also included in program information is general information related to the adjacency diagrams included in the program and general information regarding the information presented in the Space Criteria Sheets and on the Space Criteria Summaries.

The Facility Program is an overview of the program for the entire project. The Facility Summary includes a listing of all Planning Units currently identified to be included in the facility (note that some units may not ultimately be included in the facility). Also identified on the Facility Summary are the shared spaces that are planned to be included in the project. Shared spaces are not assigned to a specific planning unit, but serve the facility. Both the planning units and the shared spaces are assigned a priority number that corresponds to the preference of that space or unit relative to other spaces and units. Accompanying the Facility Summary is an Adjacency Diagram that identifies the adjacencies of the units and the shared spaces. Following the Adjacency Diagram are the Space Criteria Sheets for the shared spaces as well as Space Criteria Sheets for spaces commonly found in the individual planning units.

The Planning Unit programs follow a similar layout to the Facility Program. Each of the 24 planning units have a unit narrative, a summary of unit spaces, an adjacency diagram for the unit, and Space Criteria Sheets for unique spaces located within the unit.

The Planning Unit summaries identify the number of staff projected through 2009, the number of offices needed in each size category; as well as the way in which shared and special needs for each office are currently met. Shared needs include print/copy, mail, and storage of office supplies. Special needs are spaces needed by the particular office to carry out their function. Office kitchenettes and all conference rooms, with few exceptions, will not be "owned" by individual planning units.

In terms of office space configuration, some planning units may be more open to arranging their space in a more collaborative or team based configuration while others might be more interested in a traditional approach to maximize individual space. We are seeking innovation in terms of encouraging an office space layout that promotes teaming, collaboration, and shared spaces in those planning units that desire it while at the same time having the flexibility to allow other planning units to preserve more individual space over collaborative space.

The shared spaces for print/copy and mail define the way space is currently configured to meet the needs for each planning unit. NREL-DOE expects the same functionality in terms of access to shared print and copy, but recognizes that from both an energy and space utilization point of view, providing an individual print and copy space for each planning unit is not optimal. This is an area where we are seeking innovation in terms of both the use of space and the use of energy. We are interested in hearing about other methods that will make the space more efficient, from both a space planning and energy efficiency perspective.

Special spaces have been prioritized. Many planning units have a need for file space and storage. Spaces that are integral to the planning unit's functionality on a daily basis are ranked higher than spaces for file storage that are less often used or other types of storage. In reality, we recognize that some of these spaces will need to be reduced or eliminated.

NREL has a large inventory of unused systems furniture. The inventory includes new, refurbished, and

used furniture. At the discretion of the Design-Builder, as an optional approach to their purchasing all new furnishings under this contract, all or part of this inventory of unused furnishings may be refurbished, augmented, or used for relocation into the new facility.

END OF SECTION - PROGRAM OVERVIEW

PROJECT INFORMATION

The National Renewable Energy Laboratory (NREL), a Division of Midwest Research Institute, which is operated under Prime Contract DE-AC36-99GO10337 with the U.S. Department of Energy (DOE), intends to solicit competitive proposals from prequalified sources for a Conceptual Design and Design-Build subcontract for design and construction for class A office building(s) called the Research Support Facilities (RSF) project. The RSF will be located at NREL's South Table Mountain property in Golden, Colorado. The RSF is envisioned to be the DOE Office of Energy Efficiency and Renewable Energy's (EERE) signature building(s) at NREL, a "national showcase", which will reflect the leadership of EERE, the DOE Golden Field Office (GO), and NREL on national energy, economic, and environmental security matters. Additionally, the RSF building and site design and construction shall be in accordance with the Proposed Action description, commitments, and mitigation measures identified in the DOE South Table Mountain Supplemental Site Wide Environmental Assessment and any resulting decision document, expected to be completed in Spring 2008. It is intended that construction and final completion will be no later than May 2010. The not-to-exceed project budget for the design-build effort is currently estimated to be $64,261,000.00. It is anticipated that the subcontract will be fully funded at time of subcontract award. This is a high visibility project of national scope.

Ideally, the RSF will house up to 800 DOE and NREL staff in approximately 220,000 usable square feet without sacrificing high priority special spaces and shared spaces that assist in optimizing human performance, enhance creativity while recruiting for the workforce of tomorrow. The RSF is required to be a Leadership in Energy and Environmental Design (LEED™) "Platinum" office building(s) with "Platinum" as defined in the US Green Buildings Council LEED™ rating system, and to consume no more than 25 kBTU per square foot per year (demand side) including the Data Center. It is also required to be a showcase of sustainable high-performance design which will demonstrate the integration of high performance building design and practices, showcase technology advances, and capture the public's imagination for renewable and energy efficient technologies. The RSF is required to incorporate the best in energy efficiency, environmental performance, and advanced controls using a "whole building" integrated design approach, and must comply with ENERGY STAR standards.

END OF SECTION - PROJECT INFORMATION

PROJECT OBJECTIVES

The priority list identifies the goals and objectives of NREL and the NREL staff by ranking those goals and objectives into three categories, ("Mission Critical", "Highly Desirable", and "If Possible"). It is important for the Design-Builder to address these items. Should all or some of the objectives be unattainable, the Design-Builder will be required to identify those objectives that will not be provided in the proposal. Reference the Proposal Form for a checklist of these objectives and identify those items that will be incorporated into the design of the Research Support Facilities.

Priority List

	Rank
MISSION CRITICAL	
Attain Safe Work Performance/Safe Design practices	1
LEED™ Platinum	2
ENERGY STAR First "Plus", unless other system outperforms	3
HIGHLY DESIRABLE	
Up to 800 staff capacity	1
25 kBTU/sf/year	2
Architectural integrity	3
Honor "future staff" needs	4
Measurable ASHRAE 90.1-50% plus	5
Support culture and amenities	6
Expandable building	7
Ergonomics	8
Flexible workspace	9
Support future technologies	10
Documentation to produce a "How to" manual	11
"PR" campaign implemented in real time for benefit of DOE/NREL and DB	12
Allow secure collaboration with outsiders	13
Building information modeling	14
Substantial Completion by May 2010	15
IF POSSIBLE	
Net Zero/Design approach	1
Most energy efficient building in the world	2
LEED™ Platinum Plus	3
ASHRAE 90.1 plus 50%+	4
Visual displays of current energy efficiency	5
Support public tours	6

Achieve national and global recognition and awards	7
Support personnel turnover	8

RISK ANALYSIS

The following documents risks identified for the referenced project. Each risk has been identified, described and assigned a relative rating for cost, quality, and project schedule. The report serves to educate both the Owner and the prospective Design-Builders as to the issues that may affect the project's cost, quality, and schedule. The user should note that the report identifies the relative risk but does not assign the risk to a responsible party.

1. Attain Safe Work Performance
    a. The Design-Builder must comply with the standard practices set forth by NREL. These practices include a safety training class, safety reporting procedures, and security measures that are required for site access.
2. LEED™ Platinum Certification.
    a. LEED™ Platinum Certification must be coordinated between the multiple subcontract winners of the project. The two subcontracts, site utilities and RSF, will obtain points as required by the United States Green Building Council (USGBC) to obtain the required certification. The Design-Builder, the utilities subcontractor, and the owner will need to ensure that proper documentation and coordination practices are incorporated to avoid the potential of lost or missed points.
3. 25 kBTU/sf/Year
    a. The Owner's requirements demand innovation and creativity. Unfortunately, the assumption by the industry is that the construction of an efficient facility increases the cost to the project.
    b. The Owner will be required to control the energy consumption at the plug loads which will require the tight interface with the NREL staff and management.
    c. It should be noted that the Data Centers <u>will be</u> included in the facility energy consumption goals.
4. Architectural Integrity
    a. The architectural integrity of the facility may be sacrificed due to the following elements:
        1) The budget limits the aesthetic possibilities.
        2) The demanding schedule may not allow for long lead materials and systems to be implemented for the project's May 2010 substantial completion delivery date.
5. 800 Staff Capacity
    a. The budget may impact the required number of programmed staff spaces.
    b. Space allocation constraints. The shared spaces that are required for the proper functioning of the facility may possibly reduce the number of occupant workstations; however, NREL is committed to allocating many of these spaces as "multi-functioning" areas. Those spaces, identified on the RSF priority list of shared spaces, will be of higher precedence than the staff spaces.
6. Honor the "Future Staff" Needs
    a. The evolution of new and innovative technologies may present an obstacle for both, the owner and the design-build subcontractor. For example, NREL and DOE do not have policies that limit nor define the IT infrastructure. The Design-Builder will require input and foresight into the technological advances that will be required in the facility.
    b. The Furniture, Fixture, and Equipment (FFE) budget may not allow for the innovation of the modern workspace.

7. ENERGY STAR First “Plus” Needs
    a. The incorporation of an ENERGY STAR Rated product may not achieve the maximum benefit of a product that is not ENERGY STAR Rated.

Risk Table

The following Risk Table rates the impact of each Risk Element in relation to project cost, project quality, and project schedule. These ratings are not universally definitive, that is to say each element may not have impact to the degree indicated on this chart. Rather, the ratings indicate special attention should be focused in order to manage the risk, and reduce its impact on the overall project.

The ratings are 1 = low impact, 2 = moderate impact, 3 = high impact.

Risk Element	Cost	Quality	Schedule
Safety	1	1	2
LEED™ Platinum Certification	2	3	1
25 kBTU/sf/year	2	2	2
Architectural Integrity	3	3	1
Honor “Future Staff” Needs	1	3	1
ENERGY STAR First “Plus” Needs	2	1	1

END OF SECTION - RISK ANALYSIS

PROGRAM INFORMATION

Space Code Summary

The Space Code Summary defines all of the space code listing used in the Space Criteria Sheets. This provides the Space Code, the Space Name and a general overview of the space. Each type is color-coded to match the Space Criteria Summary and the Net Diagram for easy reference.

Space Type		Space Code	Space Name	Description of the Space
Interior Space	Personal	SP1	Visitor Contact	Spaces where the occupants meet the public or their customers, including reception desks, showrooms, display areas, exhibit spaces, galleries, point-of-sale workstations, and customer service desks.
		SP2	Occupant Work	Spaces intended primarily for one worker, including offices and open-office cubicles
		SP3	Equipment Utilization	Spaces where more than one person may use common equipment, including copier rooms, work rooms, computer rooms, mail rooms, production kitchen, exercise rooms, audio/video recording, print shop.
		SP5	Assembly	Spaces without fixed seating, including assembly halls, dining and drinking, library reading rooms, playrooms, and multipurpose rooms.
	Residential	SR	Occupant Services	Spaces for toilets, showers, changing and dressing, eating, cooking, resting (lounges), and sleeping
	Storage	SS	Storage	Rooms devoted to storage, including closets, storage rooms, cold storage, specially conditioned storage, secure storage, heavy-weight storage, and animal housing.
	Circulation	SC	Circulation	Spaces functioning as corridors, lobbies, waiting areas, vestibules, stairs, and ramps.
	Utility	SU1	Building Services	Spaces for service sinks, maintenance equipment, trash collection, trash removal, trash incineration, maintenance shop, and loading dock.
		SU2	Utility Equipment	Spaces for mechanical equipment, heating equipment, electrical equipment, communications equipment, and elevator equipment.

		SV1	Indoor Automotive	Space for storage and maintenance of vehicles.

Exterior Space	Personnel	SP5	Outdoor Assembly	Spaces without fixed seating, including reception areas, dining and drinking, and amphitheater.
	Utility	SU1	Outdoor Building Services	Spaces for trash collection, trash removal, trash incineration, maintenance equipment storage, and delivery and loading.
	Vehicle	SV2	Automotive	Spaces for parking private vehicles, access roads, driveways, and passenger loading zone.

Adjacency Diagram

The Adjacency Diagram (also known as a bubble diagram) identifies adjacencies between the spaces outlined in the Space Criteria Sheets. The spaces are color coded to correspond with the Space Code Summary and the Space Criteria Summary. Please note: not all spaces are identified on the adjacency diagrams.

The adjacencies are defined as follows:

Direct Adjacency – Spaces should be “next to” each other

Indirect Adjacency – Spaces should be “close” to each other, they can be separated but should be easily accessible to each other

No Adjacency – No adjacency requirement is required

Required Separation – Spaces should be separated for visual, acoustical, odor or other reasons.

Space Criteria Summary

The Space Criteria Summary is a summary table of the defined spaces on the site. This includes the space name, net size, security zone and occupant load. Each space is color-coded to correspond with the Space Code Summary and the Net Diagram. Please note: “Net Square Footage” is defined as the area from the inside face of wall to inside face of wall. The net square footage does not include a “grossing” factor.” (I.e. walls, building circulation, mechanical area, utilities, etc.)

Space Criteria Sheets

The purpose of the Space Criteria Sheet is to establish and summarize minimum design criteria for each required space for the project. Each criteria sheet describes the following characteristics.

Space Name- The name of the space (or program element).

Security Zone- The access requirements of the space.

Goal/Activities- The specific functional goal and activities of the space and/or its desired influence on other spaces or program elements.

Spatial Mood- A listing of significant qualities the space must provide. ‘n/e’ indicates the standards set by the space code are sufficient.

Required Technologies- The required telephone and computer access points.

Equipment- The required equipment for the space. This notes the quantity and supplier and installer of such equipment.

Notes- General commentary on other spatial needs of the space.

The Space Criteria Sheets used in conjunction with the Adjacency Diagram comprises the minimum program criteria for the project.

The following abbreviations are used on the Space Criteria Sheets.

Security Zones:

PAZ - Public Access Zone

RZ - Reception Zone

OZ - Operations Zone

SZ - Secure Zone

Supplied/installed section of the equipment listing for each space criteria sheet:

OS/OI – Owner Supplied, Owner Installed

OS/CI – Owner Supplied, Subcontractor Installed

CS/CI – Subcontractor Supplied, Subcontractor Installed

CS/OI – Subcontractor Supplied, Owner Installed

General Abbreviations:

n/e – No exceptions to the performance specifications defined in Facility Performance (Part 3-Performance Specifications).

END OF SECTION - PROGRAM INFORMATION

FACILITY PROGRAM

RSF Shared Spaces

Mission Critical		**Priority**
Conference Room	Large	1
Conference Room	Medium-large	1
Conference Room	Medium	1
Conference Room	Small	1
Conference Room	Training Room	1
Conference Room	Private Meeting (Huddle)	1
Conference Room	Telepresence	1
Conference Room	Kitchenette	1
Library		1
Office Kitchenettes		1
Lunchroom		2
Loading Dock\Shipping		2
Highly Desirable		
Exercise Room		3
Lobby/Entrance Atrium(s)		3

RSF Planning Units

Mission Critical		**Priority**
NREL	Executive Manager Office	1
NREL	Public Affairs	1
NREL	Legal Office	1
NREL	Systems Integration	1
NREL	Environment, Safety and Health & Quality	1
NREL	Requisition Management	1
NREL	Laboratory Development Office	1
NREL	Information Systems Office	2
NREL	ISO-Information Systems and Networks	2
NREL	ISO-Library, Publications, PIX, and Print	2
NREL	Security and Emergency Preparedness	2
NREL	Human Resources and Education Programs Support	2
NREL	Site Operations	2
NREL	Technology Transfer Office	2
NREL	Finance Office	2
NREL	Contracts and Business Services	2
NREL	Program Support Office	2
DOE-GO	Office of Laboratory Operations	2
DOE-GO	Office of the Manager	2
Highly Desirable		
NREL	Strategic Energy Analysis and Applications Center	3
NREL	Center for Buildings and Thermal Systems	3
If Possible		
DOE-GO	Office of Management and Administration	4
DOE-GO	Office of Commercialization and Project Management	5
DOE-GO	Office of Acquisition and Financial Assistance	5

Adjacency Diagram

The following diagram indicates the required adjacencies for the overall facility.

Common/Shared Spaces

Common spaces are those spaces that are utilized by all Planning Units and are not specific to one group. These spaces, identified below, are those spaces to which multiple users will have access.

	Space Type	Space	Space Code	Desired		
				Qty	Net Square Foot	Occupant Load (Min)
Interior Spaces	Personnel	Private Meeting (Huddle) Rooms	SP5	16	140	4-6
		Conference Room-Small	SP5	6	250	20-25
		Conference Room-Medium	SP5	4	500	30-36
		Conference Room-Medium Large	SP5	3	750	40-50
		Conference Room-Large	SP5	1	2500	250
		Training Room	SP5	1	1000	30
		Conference Room Kitchenette	SP5	1	274	n/a
		Office Kitchenettes	SP3	TBD	200	n/a
		Lunchroom	SP3	1	1650	30-45
		NREL/GO Server Room	SU2	1	2400	n/a
		Telepresence Video Conferencing	SU2	1	200	6
		Exercise Room	SP3	1	1750	n/a
		Library	SP3	1	7450	50-60
	Residential	Locker Rooms	SR	1	As Required	n/a
		Restrooms	SR	TBD	As Required	n/a
	Circulation	Lobby/Entrance Atrium	SC	1	1000	n/a
	Storage	IT Build/Storage	SS	1	600	n/a
		Fireproof Tape Storage	SS	1	100	n/a
	Utility	Utility/Mop Closets	SU1	TBD	As Required	n/a
		Communications/LAN Room	SU1	1	As Required	n/a
		Electrical Room	SU2	TBD	As Required	n/a

		Building Mechanical Room	SU2	TBD	As Required	n/a
		Refuse Containment Area	SU1	TBD	As Required	n/a
		Recyclable Materials Containment Area	SU1	TBD	As Required	n/a
		Freight Elevator	SU2	1	As Required	n/a

Exterior	Personnel	Outdoor Seating arrangements	SP5	TBD	As Required	10-12
	Utility	Loading Dock/Shipping	SU1	1	As Required	n/a

Space Name: Private Meeting (Huddle) Room

Security Zone: OZ

Goal/Activities: Provide approximately 16 small meeting rooms scattered throughout the RSF and easily accessible to all RSF employees.

Spatial Mood: Private and comfortable

Required Technologies: Wired, 4 cables per wall; wireless, 8 cables 4-ports; VOIP technology

Equipment:

Equipment	Quantity	Supplied/Installed
Conference table with integrated electrical and data ports (Seats 6)	1/room	CS/CI
Chairs	8/room	OS/OI
Whiteboard	1/room	CS/CI
Speaker phone	1/room	OS/OI
Credenza to hold phones	1/room	CS/CI

Space Name: Conference Room-Small

Security Zone: OZ

Goal/Activities: Provide approximately 6 small conference rooms scattered throughout the RSF and accessible to all RSF employees. The rooms will be utilized for conferencing, lectures, workshops, gatherings, and presentations.

Spatial Mood: Private and comfortable

Required Technologies: Wired, 4 cables per wall; wireless, 8 cables 4-ports; VOIP technology

Equipment:

Equipment	Quantity	Supplied/Installed
Conference table with integrated electrical and data ports. (Seats 12)	1/room	CS/CI
Chairs	20/room	OS/OI
Credenza	1/room	CS/CI
Projection surface	1/room	CS/CI
Whiteboard	2/room	CS/CI
Speaker phone	1/room	OS/OI
TV	1/room	OS/OI
Overhead projector	1/room	OS/CI

Space Name: Conference Room-Medium

Security Zone: OZ

Goal/Activities: Provide approximately 4 medium conference rooms scattered throughout the RSF and accessible to all RSF employees.

Spatial Mood: Spacious and comfortable

Required Technologies: Wired, 4 cables per wall; wireless, 8 cables 4-ports; VOIP technology

Equipment:

Equipment	Quantity	Supplied/Installed
Conference table with integrated electrical and data connections. (Seats 18)	1/room	CS/CI
Chairs	30/room	OS/OI
Credenza	1/room	CS/CI
Ceiling projector	1/room	OS/CI
Projection surface	1/room	CS/CI
Whiteboard	2/room	CS/CI
Television	1/room	OS/OI
Speaker phone	1/room	OS/OI

Notes:

1. The medium conference rooms should be adjacent to an office kitchenette.

Space Name: Conference Room-Medium Large

Security Zone: OZ

Goal/Activities: Provide approximately 2 medium-large conference rooms in the RSF and available to all RSF employees. The space will accommodate conferencing, lectures, workshops, gatherings, presentations, and meetings.

Spatial Mood: Spacious and comfortable

Required Technologies: Wired, 4 cables per wall; wireless, 8 cables 4-ports; VOIP technology

Equipment:

Equipment	Quantity	Supplied/Installed
Chairs	45/room	OS/OI
Credenza	2/room	CS/CI
Ceiling projector	1/room	OS/CI
Projection surface	1/room	CS/CI
Whiteboard	2/room	CS/CI
Configurable conference table with floor-mount access power and data lines (Seats 20-24)	1/room	CS/CI
Speaker phone	1/room	OS/OI
TV	1/room	OS/OI

Notes:

1. One or more of the medium-large conference rooms should be located near an office kitchenette.

Space Name: Conference Room-Large

Security Zone: OZ

Goal/Activities: Provide a space to facilitate the gathering of up to 250 people. The space will be used for conferencing, lectures, workshops, and presentations..

Spatial Mood: Spacious and comfortable

Required Technologies: Wired, 4 cables per wall; wireless, 8 cables 4-ports; VOIP technology

Equipment:

Equipment	Quantity	Supplied/Installed
seating/tables		CS/CI
Chairs	100	OS/OI
Podium	2	OS/OI
Divisible/reconfigurable into four smaller but equal conference rooms	4	CS/CI
Ceiling projectors, synchronizable	2	OS/CI
Retractable, hidden projection screen	2	CS/CI
Sound system	1	CS/CI
Whiteboard (1/room when divisible)	1	CS/CI
Speaker phone	4	OS/OI
Television	2	OS/OI

Notes:

1. The large conference room should be located adjacent to the conference room kitchenette.

Space Name: Training Room

Security Zone: OZ

Goal/Activities: Provide a training room that will be used by the Information Systems Office, the Human Resources Office, the Environment Health and Safety & Quality Office, and the Department of Energy.

Spatial Mood: Spacious and comfortable

Required Technologies: Wired, 32 cables; wireless, 8 cables 4-ports; VOIP technology

Equipment	Quantity	Supplied/Installed
Chairs	60	OS/OI
Credenza	1	CS/CI
Ceiling projector	1	OS/CI
Projection surface	1	CS/CI
Whiteboards	60% of wall surface	CS/CI
Reconfigurable training tables with integrated data and power access (Seats 60)	1	CS/CI

Notes:

1. It is desirable for the training room to have break-out spaces for smaller group discussions as a part of training.

Space Name: Conference Room Kitchenette

Security Zone: OZ

Goal/Activities: Provide an area to serve coffee, lunches, and beverages to the employees using the large Conference Room.

Spatial Mood: Spacious and comfortable

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Warming oven	1	CS/CI
Sink	1	CS/CI
Refrigerator	1	OS/OI
Dishwasher	1	CS/CI
Microwave	1	CS/CI
Cabinetry	AGS criteria	CS/CI

Notes:

1. Use Architectural Graphics Standards criteria to establish work surface, storage, and cabinetry capacities.

Space Name: Office Kitchenettes

Security Zone: OZ

Goal/Activities: Provide small "kitchenettes" throughout the facility to allow employees to prepare and store food and beverages. Each office kitchenette should be designed to accommodate approximately 100 users.

Spatial Mood: Compact, efficient and clean.

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Refrigerator	3	OS/OI
Cabinetry	AGS criteria	CS/CI
Dishwasher	1	CS/CI
Sink	1	CS/CI
Microwave	2	OS/OI
Recycling station	1	OS/OI
Bottled water storage	150 gal	OS/OI
Vending machines	2	OS/OI

Notes:

1. Kitchenettes adjacent to conference rooms are desirable.
2. Use Architectural Graphics Standards criteria to establish work surface, storage and cabinetry capacities.

Space Name: Lunchroom

Security Zone: RZ

Goal/Activities: Provide a space to prepare, store, and clean up after meals. This space shall accommodate up to 100 users. Typical functions of this space shall include sit-down eating, conversation, and other typical meal activities. This space is not intended to require special fire suppression related to open-flame and commercial cooking operations. This space is not intended to be a restaurant or cafeteria style area.

Spatial Mood: Utilitarian

Required Technologies: Wireless internet

Equipment:

Equipment	Quantity	Supplied/Installed
Warming oven “back of house”	2	CS/CI
Ice-making machine “back of house”	1	CS/CI
Dishwasher “back of house”	1	CS/CI
Microwave “back of house”	2	CS/CI
Refrigerator “back of house”	1	OS/OI
Cabinetry “back of house”	AGS criteria	CS/CI
Table and seating (approximately 6 chairs/table)	100	CS/CI
Work/Prep surface	AGS criteria	CS/CI
Sink	2	CS/CI
Vending machines	12	OS/OI
Microwave	6	OS/OI
Vendor area	300 sf	CS/CI
Solid waste collection	1	OS/OI
Recycling station	1	OS/OI

Notes:

1. Owners would prefer an indoor/outdoor connection to an outdoor patio for additional seating and dining.
2. Adjacent storage for tables and chairs.
3. “Back of House”- The spaces identified as “back of house” will be out of sight and located near the rear of the space. These spaces will be part of the lunchroom but only used with permission and not open to the users.
4. Use Architectural Graphics Standards criteria to establish work surface, storage and cabinetry capacities.

Space Name: NREL/GO Server Room

Security Zone: SZ

Goal/Activities: Provide two rooms (1 for NREL, 1 for GO) with individual secure access, to house the servers and associated equipment for the entire RSF.

Spatial Mood: Utilitarian

Required Technologies: Network conduits, wireless networks

Equipment:

1. Shared (NREL/GO):

Equipment	Quantity	Supplied/Installed
Chilled-water distribution manifolds one in each data center	2	CS/CI
In-row air handlers, 4 in GO and 9 in NREL	13	CS/CI
100KW 480V UPS w/battery cabinets (or a single 200KW 480V UPS) with breakout panel(s) to supply in-row PDU systems	2	CS/CI
In-row rack PDU systems, 6 for NREL and 2 for GO	8	OS/OI
APC Racks (APC# AR3100), 22 for NREL and 6 for GO	30	OS/OI
Two-post open network racks, 8 for NREL and 4 for GO	12	OS/OI

2. NREL:

Equipment	Quantity	Supplied/Installed
AirDefense	1	OS/OI
Apple Model XSERVE G5	1	OS/OI
CISCO Model CESSE-1150-19-K9	1	OS/OI
CISCO Model 2651XM	1	OS/OI
CISCO Model 7204VXR	2	OS/OI
CISCO Model AS5300	1	OS/OI
CISCO Model C2621	1	OS/OI
CISCO Model C2801	1	OS/OI

CISCO Model CAT 297024	1	OS/OI
CISCO Model CAT3584XL	2	OS/OI
CISCO Model 11500	1	OS/OI
CISCO Model 1112	2	OS/OI
CISCO Model LS1010	1	OS/OI
CISCO Model VPN3030	2	OS/OI
CISCO Model WLC4402-50	2	OS/OI
CISCO Model WS-C2924-XL	1	OS/OI
CISCO Model WS-C2948G	3	OS/OI
CISCO Model WS-C2960-24TT	4	OS/OI
CISCO Model WS-C6509	1	OS/OI
CISCO Model WS-C6513	1	OS/OI
CISCO Model WSX2948	1	OS/OI
COMPAQ Model PROLIANT 1600	1	OS/OI
COMPAQ Model PROLIANT 3000	5	OS/OI
COMPAQ Model PROLIANT DL350	1	OS/OI
COMPAQ Model PROLIANT DL360	13	OS/OI
COMPAQ Model PROLIANT DL360 G2	17	OS/OI
COMPAQ Model PROLIANT DL360 G3	1	OS/OI
COMPAQ Model PROLIANT ML370	1	OS/OI
COMPAQ Model PROLIANT ML530	2	OS/OI
COMPAQ Model PROLIANT ML530 G2	1	OS/OI
CYCLADES Model ALTERPATH ACS32	2	OS/OI
DLINK Model DWL-P1012	1	OS/OI
ENDRUN TECHNOLOGIES Model TEMPUS-CNTP	1	OS/OI
GATEWAY Model 7210	1	OS/OI

GATEWAY Model E-4200	1	OS/OI
GATEWAY Model E-4600	1	OS/OI
GATEWAY Model E-4600-SE	1	OS/OI
GATEWAY Model E-6100	1	OS/OI
GATEWAY Model E-6300	1	OS/OI
HP Model DESIGNJET 5500PS	1	OS/OI
HP Model MODULAR SMART ARRAY 1000	2	OS/OI
HP Model MSA1500CS	1	OS/OI
HP Model MSA20	3	OS/OI
HP Model PROLIANT BL P-CLASS	1	OS/OI
HP Model PROLIANT DL350	1	OS/OI
HP Model PROLIANT DL360	10	OS/OI
HP Model PROLIANT DL360 G3	14	OS/OI
HP Model PROLIANT DL380	6	OS/OI
HP Model PROLIANT DL380 G3	2	OS/OI
HP Model PROLIANT DL380 G4	5	OS/OI
HP Model PROLIANT DL585	6	OS/OI
HP Model PROLIANT ML370	1	OS/OI
HP Model PROLIANT ML530 G2	3	OS/OI
HP Model STORAGEWORKS	6	OS/OI
HP Model STORAGEWORKS 4414	1	OS/OI
HP Model STORAGEWORKS MSA1500CS	1	OS/OI
HP Model STORAGEWORKS MSA20	2	OS/OI
INTERNET SECURITY SYSTEMS Model ES1500	1	OS/OI
INTERNET SECURITY SYSTEMS Model G1000 C-1-PB	1	OS/OI

INTERNET SECURITY SYSTEMS Model PROVENTIA G200	2	OS/OI
INTERNET SECURITY SYSTEMS Model PROVENTIA GX4004	3	OS/OI
LANCOPE INC Model STEALTHWATCH M250	1	OS/OI
NETWORK APPLIANCE Model DS14	4	OS/OI
NETWORK APPLIANCE Model DS14	3	OS/OI
NETWORK APPLIANCE Model F820	2	OS/OI
NETWORK APPLIANCE Model F825	1	OS/OI
NEXSAN Model ATABOY2	1	OS/OI
OVERLAND STORAGE Model NEO SDLT 320	1	OS/OI
OVERLAND STORAGE Model NEO2000	4	OS/OI
OVERLAND STORAGE Model REO4000	1	OS/OI
PACKETEER Model PACKETEER 1550	1	OS/OI
PACKETEER Model PACKETEER 2500	1	OS/OI
PACKETEER Model PACKETEER 6500	1	OS/OI
QUANTUM Model ATL M1500	1	OS/OI
QUANTUM Model ATL DLT4500	1	OS/OI
QUANTUM Model DLT8000	1	OS/OI
RARITAN Model UMT832M	1	OS/OI
RARITAN Model UMT832S	3	OS/OI
RSA SECURITY Model SWCURID	2	OS/OI
SPECTRALOGIC Model SPECTRA 50	5	OS/OI
STORAGE TEK Model 9840	2	OS/OI
STORAGE TEK Model TIMBERWOLF 9710	1	OS/OI
SUN Model 411	1	OS/OI

SUN Model ENTERPRISE 3500	1	OS/OI
SUN Model ENTERPRISE 420R	1	OS/OI
SUN Model ENTERPRISE 450	6	OS/OI
SUN Model STOREDGE 3300	1	OS/OI
SUN Model STOREDGE 3300	2	OS/OI
SUN Model STOREDGE 3310	1	OS/OI
SUN Model STOREDGE 3500	1	OS/OI
SUN Model STOREDGE D2	1	OS/OI
SUN Model STOREDGE FLEXIPACK	1	OS/OI
SUN Model SUNFIRE 280R	11	OS/OI
SUN Model SUNFIRE B1600	2	OS/OI
SUN Model SUNFIRE T2000	2	OS/OI
SUN Model SUNFIRE T2000	2	OS/OI
SUN Model SUNFIRE V120	4	OS/OI
SUN Model SUNFIRE V20Z	5	OS/OI
SUN Model SUNFIRE V210	4	OS/OI
SUN Model SUNFIRE V240	1	OS/OI
SUN Model SUNFIRE V440	1	OS/OI
SUN Model SUNFIRE V40Z	2	OS/OI
SUN Model SUNFIRE V440	2	OS/OI
SUN Model SUNFIRE V60X	1	OS/OI
SUN Model SUNFIRE V880	2	OS/OI
SUN Model SUNFIRE X4100	1	OS/OI
SUN Model ULTRA 30	1	OS/OI
SUN Model ULTRA 60	2	OS/OI
SUN Model ULTRA 80	1	OS/OI

SUN Model ULTRA SCSI	10	OS/OI
SUN Model X559W	1	OS/OI
SUN Model SUNFIRE X2100	2	OS/OI
SUN Model X2200	1	OS/OI
APPLE Model XSERVE QUAD XEON	1	OS/OI
SUN Model SUNFIRE X2200	4	OS/OI
INTERNET SECURITY SYSTEMS Model ES1500	2	OS/OI
HP Model DL380GS	1	OS/OI
HP Model HSV200A	2	OS/OI
SUN Model SUNFIRE T2000	2	OS/OI
CONNECTOR NEMA 5-15	273	OS/OI
CONNECTOR NEMA 6-20	3	OS/OI
CONNECTOR NEMA L6-30R	2	OS/OI

3. GO:

Equipment	Quantity	Supplied/Installed
AirDefense	1	OS/OI
Apple Model XSERVE G5	1	OS/OI
CISCO Model CESSE-1150-19-K9	1	CS/CI
CISCO Model 2651XM	1	CS/CI
CISCO Model 7204VXR	2	OS/OI
CISCO Model AS5300	1	OS/OI
CISCO Model C2621	1	OS/OI
CISCO Model C2801	1	OS/OI
CISCO Model CAT 297024	1	OS/OI
CISCO Model CAT3584XL	2	OS/OI

CISCO Model 11500	1	OS/OI
CISCO Model 1112	2	OS/OI
CISCO Model LS1010	1	OS/OI
CISCO Model VPN3030	2	OS/OI
CISCO Model WLC4402-50	2	OS/OI
CISCO Model WS-C2924-XL	1	OS/OI
CISCO Model WS-C2948G	3	OS/OI
CISCO Model WS-C2960-24TT	4	OS/OI
CISCO Model WS-C6509	1	OS/OI
CISCO Model WS-C6513	1	OS/OI
CISCO Model WSX2948	1	OS/OI
COMPAQ Model PROLIANT 1600	1	OS/OI
COMPAQ Model PROLIANT 3000	5	OS/OI
COMPAQ Model PROLIANT DL350	1	OS/OI
COMPAQ Model PROLIANT DL360	13	OS/OI
COMPAQ Model PROLIANT DL360 G2	17	OS/OI
COMPAQ Model PROLIANT DL360 G3	1	OS/OI
COMPAQ Model PROLIANT ML370	1	OS/OI
COMPAQ Model PROLIANT ML530	2	OS/OI
COMPAQ Model PROLIANT ML530 G2	1	OS/OI
CYCLADES Model ALTERPATH ACS32	2	OS/OI
DLINK Model DWL-P1012	1	OS/OI
ENDRUN TECHNOLOGIES Model TEMPUS-CNTP	1	OS/OI
GATEWAY Model 7210	1	OS/OI
GATEWAY Model E-4200	1	OS/OI
GATEWAY Model E-4600	1	OS/OI

GATEWAY Model E-4600-SE	1	OS/OI
GATEWAY Model E-6100	1	OS/OI
GATEWAY Model E-6300	1	OS/OI
HP Model DESIGNJET 5500PS	1	OS/OI
HP Model MODULAR SMART ARRAY 1000	2	OS/OI
HP Model MSA1500CS	1	OS/OI
HP Model MSA20	3	OS/OI
HP Model PROLIANT BL P-CLASS	1	OS/OI
HP Model PROLIANT DL350	1	OS/OI
HP Model PROLIANT DL360	10	OS/OI
HP Model PROLIANT DL360 G3	14	OS/OI
HP Model PROLIANT DL380	6	OS/OI
HP Model PROLIANT DL380 G3	2	OS/OI
HP Model PROLIANT DL380 G4	5	OS/OI
HP Model PROLIANT DL585	6	OS/OI
HP Model PROLIANT ML370	1	OS/OI
HP Model PROLIANT ML530 G2	3	OS/OI
HP Model STORAGEWORKS	6	OS/OI
HP Model STORAGEWORKS 4414	1	OS/OI
HP Model STORAGEWORKS MSA1500CS	1	OS/OI
HP Model STORAGEWORKS MSA20	2	OS/OI
INTERNET SECURITY SYSTEMS Model ES1500	1	OS/OI
INTERNET SECURITY SYSTEMS Model G1000 C-1-PB	1	OS/OI
INTERNET SECURITY SYSTEMS Model PROVENTIA G200	2	OS/OI

INTERNET SECURITY SYSTEMS Model PROVENTIA GX4004	3	OS/OI
LANCOPE INC Model STEALTHWATCH M250	1	OS/OI
NETWORK APPLIANCE Model DS14	4	OS/OI
NETWORK APPLIANCE Model DS14	3	OS/OI
NETWORK APPLIANCE Model F820	2	OS/OI
NETWORK APPLIANCE Model F825	1	OS/OI
NEXSAN Model ATABOY2	1	OS/OI
OVERLAND STORAGE Model NEO SDLT 320	1	OS/OI
OVERLAND STORAGE Model NEO2000	4	OS/OI
OVERLAND STORAGE Model REO4000	1	OS/OI
PACKETEER Model PACKETEER 1550	1	OS/OI
PACKETEER Model PACKETEER 2500	1	OS/OI
PACKETEER Model PACKETEER 6500	1	OS/OI
QUANTUM Model ATL M1500	1	OS/OI
QUANTUM Model ATL DLT4500	1	OS/OI
QUANTUM Model DLT8000	1	OS/OI
RARITAN Model UMT832M	1	OS/OI
RARITAN Model UMT832S	3	OS/OI
RSA SECURITY Model SWCURID	2	OS/OI
SPECTRALOGIC Model SPECTRA 50	5	OS/OI
STORAGE TEK Model 9840	2	OS/OI
STORAGE TEK Model TIMBERWOLF 9710	1	OS/OI
SUN Model 411	1	OS/OI
SUN Model ENTERPRISE 3500	1	OS/OI
SUN Model ENTERPRISE 420R	1	OS/OI

SUN Model ENTERPRISE 450	6	OS/OI
SUN Model STOREDGE 3300	1	OS/OI
SUN Model STOREDGE 3300	2	OS/OI
SUN Model STOREDGE 3310	1	OS/OI
SUN Model STOREDGE 3500	1	OS/OI
SUN Model STOREDGE D2	1	OS/OI
SUN Model STOREDGE FLEXIPACK	1	OS/OI
SUN Model SUNFIRE 280R	11	OS/OI
SUN Model SUNFIRE B1600	2	OS/OI
SUN Model SUNFIRE T2000	2	OS/OI
SUN Model SUNFIRE T2000	2	OS/OI
SUN Model SUNFIRE V120	4	OS/OI
SUN Model SUNFIRE V20Z	5	OS/OI
SUN Model SUNFIRE V210	4	OS/OI
SUN Model SUNFIRE V240	1	OS/OI
SUN Model SUNFIRE V440	1	OS/OI
SUN Model SUNFIRE V40Z	2	OS/OI
SUN Model SUNFIRE V440	2	OS/OI
SUN Model SUNFIRE V60X	1	OS/OI
SUN Model SUNFIRE V880	2	OS/OI
SUN Model SUNFIRE X4100	1	OS/OI
SUN Model ULTRA 30	1	OS/OI
SUN Model ULTRA 60	2	OS/OI
SUN Model ULTRA 80	1	OS/OI
SUN Model ULTRA SCSI	10	OS/OI
SUN Model X559W	1	OS/OI

SUN Model SUNFIRE X2100	2	OS/OI
SUN Model X2200	1	OS/OI
APPLE Model XSERVE QUAD XEON	1	OS/OI
SUN Model SUNFIRE X2200	4	OS/OI
INTERNET SECURITY SYSTEMS Model ES1500	2	OS/OI
HP Model DL380GS	1	OS/OI
HP Model HSV200A	2	OS/OI
SUN Model SUNFIRE T2000	2	OS/OI
CONNECTOR NEMA 5-15	273	OS/OI
CONNECTOR NEMA 6-20	3	OS/OI
CONNECTOR NEMA L6-30R	2	OS/OI

Notes:

1. Reference Part 3-Performance Specifications, Section- Fire Protection D. for specific fire protection specialties for the Data centers.
2. Reference Part 3-Performance Specifications, Section- Services for monitoring and control for requirements.
3. Space should be adjacent to the IT Mechanical Room, the GO IT Storage/Build Room and the NREL IT Storage/Build Room.
4. For security and energy efficiency, no wall of the data center areas will be an exterior wall.
5. Data centers may be a single-room separated by cage walls.
6. Data centers and their storage/build rooms will have direct access to a dock/freight elevator for large deliveries; doors into data centers will have 6' openings.
7. The energy consumption of the data center will be included in the 25 kBTU calculations of the total facility consumption of the RSF.
8. The data center will be responsible for supplying 65 watts per computer workstation.

Space Name: Telepresence Video Conferencing Room

Security Zone: OZ

Goal/Activities: Offer a high-quality, interactive televideo experience across the DOE complex to reduce travel costs and energy impacts.

Spatial Mood: The interior finishes should reflect a professional and executive image to users and visitors.

Required Technologies: Dedicated 20 AMP circuit; 8 network drops minimum; specialty lighting.

Equipment:

Equipment	Quantity	Supplied/Installed
Telepresence monitor system (13' x 3')	1	OS/OI
Telepresence integrated table system (16' x 6')	1	OS/OI

Notes:

1. Integrated network connections, speakers, and controls are provided in the table.
2. No natural lighting.

Space Name: IT Build/Storage

Security Zone: SZ

Goal/Activities: Provide a storage room associated with the Server Room that provides the IS System staff and Network Administrators access and storage capabilities.

Spatial Mood: Utilitarian

Required Technologies: Dedicated 120V power circuits (2 20-amp), network, wired (8 ports, 4 each); wireless connectivity

Equipment:

Equipment	Quantity	Supplied/Installed
Electronic Tech Bench (72”L x 36”D x 34”H)	4	OS/OI
Mobile Storage Cabinets (48”W x 24”D x 78”H)	8	OS/OI
Boltless Heavy Duty Widespan Storage Racks (48”W x 84”H) with laminated shelving, 14ga. Steel 800lb. shelf capacity	16 lf	CS/CI
Boltless Heavy Duty Widespan Storage Racks (24”W x 72”H) with laminated shelving, 14ga. Steel 800lb. shelf capacity	30 lf	CS/CI
Phoenix Data Commander 4623 Media Safe storage cabinets, or approved equal	2	CS/CI

Notes:

1. The space should maximize storage capacity.

Space Name: Lobby/Entrance Atrium

Security Zone: RZ

Goal/Activities: Provide ample space at the main entrance that will serve as a staging point for building visitors, a gathering space for building employees, and a space that encourages interaction between all planning units within the RSF. This area will also provide space for the security desk where visitors will receive their badges.

Spatial Mood: Open and inviting

Required Technologies: LAN, Communications, Security, and Security Network

Equipment:

Equipment	Quantity	Supplied/Installed
Reception area front desk with storage cabinets	1	OS/OI
Computers	2	OS/OI
Riser platform	1	CS/CI
Camera (see security/surveillance, Part 3-Performance Specifications)	1	CS/CI

Notes:

1) The security desk should be located on a raised platform for increased visibility and protection of materials located on the work surface.

Space Name: Exercise Room

Security Zone: OZ

Goal/Activities: Provide an environment where employees can exercise. The room may need to serve two functions simultaneously- lunch-time classes such as yoga and aerobics and individual workout sessions.

Spatial Mood: Open, comfortable, with views to exterior

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Treadmills	6	OS/OI
Free weights	3	OS/OI
Stationary bikes	6	OS/OI
Storage closet for mats and equipment on 2 rolling carts and 20 exercise steps.	200 sf	CS/OI

Notes:

1. The Yoga Class is typically 15-20 people 3 days a week. Aerobics is 2 days per week.
2. If the room is too small to serve both functions, consideration should be taken to place the exercise room adjacent to an area with flexible workspace.
3. Provide one mirrored wall with handrails to support the exercise activities.

Space Name: Library

Security Zone:

1. Information Reference Desk - RZ
2. Library Collections (Open Access) - RZ
3. Library Collections, Library Staff Access - OZ
4. Library Work Area - RZ
5. Library User Area - RZ

Goal/Activities: The Library will house multiple functions within one space. Each of these areas is broken down into their respective functions below.

1. Information Reference Desk - Provide an area to be used as the point of contact between library staff and the library users other NREL staff and/or visitors).
2. Library Collections (Open Access) - Provide an area to shelve the most used collections including journals, books, and reference materials for open access by NREL staff and visitors.
3. Library Collections, Library Staff Access - Provide an area to store collections, files and equipment that are used throughout the day by the Library staff but should not be easily accessible to the rest of the NREL staff.
4. Library Work Area - Provide an area to process document requests such as scanning, printing, and copying.
5. Library User Area - Provide an area for private and group study and collaboration with access to near-by Library Staff services and resources.

Spatial Mood: Open, welcoming, and easy to locate; good lighting

Required Technologies: Wired and wireless connectivity; LAN connections

Equipment:

1. Information Reference Desk:

Equipment	Quantity	Supplied/Installed
Reception style desk with drawers and under-counter filing cabinets.	1	CS/CI
Chairs	2	OS/OI
Computers	2	OS/OI
Printers	2	OS/OI
Copier/Scanner	1	OS/OI
Phone	1	OS/OI
Countertops for equipment 72”W x 30”H x 30”D	2	CS/CI

2. Library Collections (Open Access):

Equipment	Quantity	Supplied/Installed
Journals	3,400 lf	CS/CI
Books storage	3,500 lf	CS/CI
Reference materials	400 lf	CS/CI

3. Library Collections, Library Staff Access:

Equipment	Quantity	Supplied/Installed
Three-drawer microfiche cabinets, 36”W x 58”H x 20”D	7	OS/OI
Nine-drawer microfiche cabinets 21”W x 52”H x 28.5”D	2	OS/OI
Two-door Supply cabinets, 36”W x 78”H x 18”D	2	OS/CI
Two-door Storage cabinets, 36”W x 78”H x 18”D	2	OS/CI
Five-drawer lateral file cabinets (NREL pubs, vertical files, newsletters, standards, library work files) 42’W x 56”H x 18”D	36	OS/CI
Microfilm readers/printers	2	OS/OI
Desktop/workspace for one of the reader/printers	1	CS/CI

4. Library Work Area:

Equipment	Quantity	Supplied/Installed
Workstations, with storage bins and under-counter filing cabinets 72”W x 30”H x 30”D	2	CS/CI
Chairs	2	OS/OI
Computers	2	OS/OI
Scanners	2	OS/OI
Printer	1	OS/OI

FAX	1	OS/OI
Phone	1	OS/OI

5. Library User Area:

Equipment	Quantity	Supplied/Installed
Computers w/ workspace, single and grouped	6	OS/OI
Tables (modular), plus chairs, seating 4-6	3 min.	CS/CI
Seating/chairs, variety of styles and configurations, some with “coffee” tables.	16 min.	CS/CI
Private study areas (chairs, desktops, wireless)	4 min.	CS/CI
Modular display areas (4’ x 6’)	2 min.	CS/CI
Reading materials, newspaper and newsletter storage/shelving 72”W x 42”H x 24”D	1	CS/CI

Notes:

1. A portion of the User area can be combined with interactive/collaborative space in the atrium to maximize space efficiency.
2. This space should have a good diversity of spaces to satisfy staff working, learning and collaborative styles. Some of the seating and study areas may be located in other areas of the Library in order to provide diversity needed by the staff and maximize floor space efficiency.

Space Name: Locker Rooms

Security Zone: OZ

Goal/Activities: Provide Men's and Women's facilities for showering, dressing, and storage of personal items.

Spatial Mood: Private/Protected from rest of facility

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Showers	as required	CS/CI
Sinks	as required	CS/CI
Toilets	as required	CS/CI
Bench Seat	as required	CS/CI

Space Name: Restrooms

Security Zone: PAZ

Goal/Activities: Provide enough restrooms throughout the RSF to meet code and provide for the comfort of all RSF employees.

Spatial Mood: Comfortable

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
per code	as required	CS/CI

Space Name: Utility/Mop Closet

Security Zone: OZ

Goal/Activities: Provide storage for building maintenance/cleaning supplies and equipment. This space will be repeated throughout the RSF to allow for convenience for maintenance staff.

Spatial Mood: Utilitarian

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Mop utility basin w/ hot and cold water supply	1	CS/CI
Mop ringer bucket on wheels	1	CS/CI
Rolling trash receptacle	1	CS/CI
Commercial Vacuum cleaner	1	OS/OI
Mop and broom storage rack	1	OS/OI
Storage shelving	8 lf	CS/CI

Space Name: Communications/LAN Room

Security Zone: SZ

Goal/Activities: Provide space for the placement of the network switches, associated cable plant, and relay racks.

Spatial Mood: Utilitarian

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Cisco Network switches	4	OS/OI
Relay rack	2	CS/CI
Telephone	1	OS/OI

Notes:

1. These rooms need to be air conditioned to maintain 70 degree temperature.
2. Each room needs to have UPS electrical power supported by the building generator.
3. All of the Communication/LAN rooms must be located within 270 feet of the associated user work area or workstation.

Space Name: Electrical Room

Security Zone: SZ

Goal/Activities: Provide a secure space to house the buildings electrical equipment, wherever necessary.

Spatial Mood: Utilitarian

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
electrical equipment as determined by code	as required	CS/CI

Space Name: Freight Elevator

Security Zone: OZ

Goal/Activities: Provide a Freight Elevator that is large enough to transport the buildings mechanical and other equipment vertically throughout the building, including the roof, if equipment exists there.

Spatial Mood: Utilitarian

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
as required	as required	CS/CI

Space Name: Building Mechanical Room

Security Zone: SZ

Goal/Activities: Provide mechanical room(s) as necessary to provide adequate services to the building.

Spatial Mood: Utilitarian

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
mechanical equipment	as required	CS/CI

Space Name: Refuse Containment Area

Security Zone: PAZ

Goal/Activities: Provide an enclosed space adjacent to the building to house refuse produced by the occupants of the building. The enclosure should be built of materials to match the general construction and appearance of the building.

Spatial Mood: Utilitarian

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Refuse containers	as required	CS/CI

Space Name: Recyclable Materials Containment Area

Security Zone: PAZ

Goal/Activities: Provide an easily accessible area for the storage of recyclables. This area shall allow building occupants to easily and quickly sort and dispose of recyclable materials. If the structure is a separate enclosure, it should be built of materials to match the general construction and appearance of the building.

Spatial Mood: Utilitarian

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Containers for recyclable content	as required	CS/CI

Standard Spaces:

Standard Spaces are those spaces that have the same characteristics and requirements in terms of square footage, equipment, and lay-out. To assist the Design-Builder, these spaces will utilize the same template throughout the facility's space needs regardless of planning unit or organization. The following spaces have been identified by their respective space designation and have also been identified in the space criteria sheets of each planning unit. However, the square footages are for reference only. The design-builder shall utilize their expertise in space planning and is allowed to maximize the spaces regardless of the square footages identified below. The design-builder may modify the square footages within reason of the net square footages identified below.

				Desired		
Space Type		**Space**	**Space Code**	**Net Square Footage**	**Occupant Load (Min)**	**Sheet ID**
Interior Spaces	Personnel	Lab Director Office	SP2	400	1	C-1
		Executive Manager Office	SP2	275	1	C-2
		Senior Management Office	SP2	180	1	C-3
		Senior Staff Office	SP2	120	1	C-4
		Staff Work Space	SP2	80	1	C-5
		Student/Temp Work Space	SP2	40	1	C-6

Sheet ID: C-1

Space Name: Lab Director Office

Security Zone: OZ

Goal/Activities: Provide a space to facilitate the daily work of the Lab Director

Spatial Mood: Private and spacious

Required Technologies: Wired and wireless connectivity; VOIP technology

Equipment:

Equipment	Quantity	Supplied/Installed
Lockable rolling 2-drawer file cabinet	2	CS/CI
Lockable 3-drawer file cabinet (6,6,12)	1	CS/CI
Small conference table (seats 6)	1	CS/CI
36” Lockable lateral file	4	CS/CI
Credenza with drawers and shelves	6 lf	CS/CI
Conference table chairs	6	CS/CI
Guest chairs	2	CS/CI
Lockable laptop computer docking station	1	OS/OI
Laptop CPU	1	OS/OI
LCD monitor	1	OS/OI
Printer	1	OS/OI
Workspace/desktop	18 lf	CS/CI
Desk Chair	1	OS/OI
Bookcase (4 shelf adjustable) 12” deep	12	CS/CI
Bookcase (2 shelf adjustable) 12” deep	12	CS/CI

Notes:

1. Cordovan wood finish

Sheet ID: C-2

Space Name: Executive Manager Office

Security Zone: OZ

Goal/Activities: Provide a space to facilitate the daily work of the executive managers

Spatial Mood: Private and spacious

Required Technologies: Wired and wireless connectivity; VOIP technology

Equipment:

Equipment	Quantity	Supplied/Installed
24” Workspace/desktop	16 lf	CS/CI
Credenza with drawers and shelves	6 lf	CS/CI
36” Lockable lateral file	3	CS/CI
Lockable 3-drawer file cabinet (6,6,12)	1	OS/OI
Small conference table (seats 6)	1	CS/CI
Conference table chairs	6	OS/OI
Lockable laptop computer docking station	1	OS/OI
Laptop CPU	1	OS/OI
LCD Monitor	1	OS/OI
36” Deep surface	6 lf	CS/CI
Printer	1	OS/OI
Desk Chair	1	OS/OI
Bookcase (4 shelf adjustable) 12” deep	9 lf	
Bookcase (2 shelf adjustable) 12” deep	3 lf	
White Board (4’ x 6’) (w/doors)	1	CS/CI

Sheet ID: C-3

Space Name: Senior Management Office

Security Zone: OZ

Goal/Activities: Provide a space to facilitate the daily work of the senior management.

Spatial Mood: Private and spacious

Required Technologies: Wired and wireless connectivity; VOIP technology

Equipment:

Equipment	Quantity	Supplied/Installed
24 " Workspace/desktop	22.5 lf	CS/CI
Lockable 3-drawer file cabinet (6,6,12)	1	CS/CI
36" Lockable lateral file	2	CS/CI
Lockable 2-drawer file cabinet	2	CS/CI
Small conference table (Seats 4)	1	CS/CI
Conference table chairs	4	OS/OI
Guest chairs	2	OS/OI
Lockable laptop computer docking station	1	OS/OI
Laptop CPU	1	OS/OI
LCD Monitor	1	OS/OI
12" deep overhead storage w/door	18 lf	CS/CI
Bookcase (4 shelf adjustable) 12" deep	3 lf	CS/CI
White Board (4' x 8')	1	CS/CI
Desk chair	1	OS/OI

Sheet ID: C-4

Space Name: Senior Staff Office

Security Zone: OZ

Goal/Activities: Provide a space to facilitate the daily work of the senior staff

Spatial Mood: Private

Required Technologies: Wired and wireless connectivity; VOIP technology

Equipment:

Equipment	Quantity	Supplied/Installed
24” deep workspace	22.5 lf	CS/CI
Lockable 3-drawer file cabinet (6,6,12)	1	CS/CI
36” Lockable lateral file storage	1	CS/CI
Whiteboard (3’x5’)	1	CS/CI
Guest chairs	2	OS/OI
Laptop CPU	1	OS/OI
Lockable laptop computer docking station	1	OS/OI
LCD Monitor	1	OS/OI
12” deep overhead storage w/door	9 lf	CS/CI
Desk Chair	1	OS/OI

Sheet ID: C-5

Space Name: Staff Work Space

Security Zone: OZ

Goal/Activities: Provide a space to facilitate the daily work of the staff

Spatial Mood: Open/Collaborative, yet benefits from semi-private aspects.

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
24” Workspace/desktop	16.5 lf	CS/CI
12” deep overhead storage w/door	9 lf	CS/CI
Lockable 2-drawer file cabinet (12,12)	1	CS/CI
Lockable 3-drawer file cabinet (6,6,12)	1	CS/CI
Lockable laptop computer docking station	1	OS/OI
Laptop CPU	1	OS/OI
LCD monitor	1	OS/OI
Desk Chair	1	CS/CI

Notes:

1. In-floor wiring throughout the areas for ease of reconfiguration and movement.

Sheet ID: C-6

Space Name: Student/Temp Work Space

Security Zone: OZ

Goal/Activities: Provide a space to facilitate the daily work of the students and temporary workers.

Spatial Mood: Open/Collaborative

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
24” deep workspace/desktop	5 lf	CS/CI
12” deep shelving	5 lf	CS/CI
Lockable, 3-drawer file cabinet (6,6,120	1	CS/CI
Desk chair	1	OS/OI
Lockable laptop computer docking station	1	OS/OI
LCD Monitor	1	OS/OI
Laptop CPU	1	OS/OI

END OF SECTION - FACILITY PROGRAM

PLANNING UNIT PROGRAMS

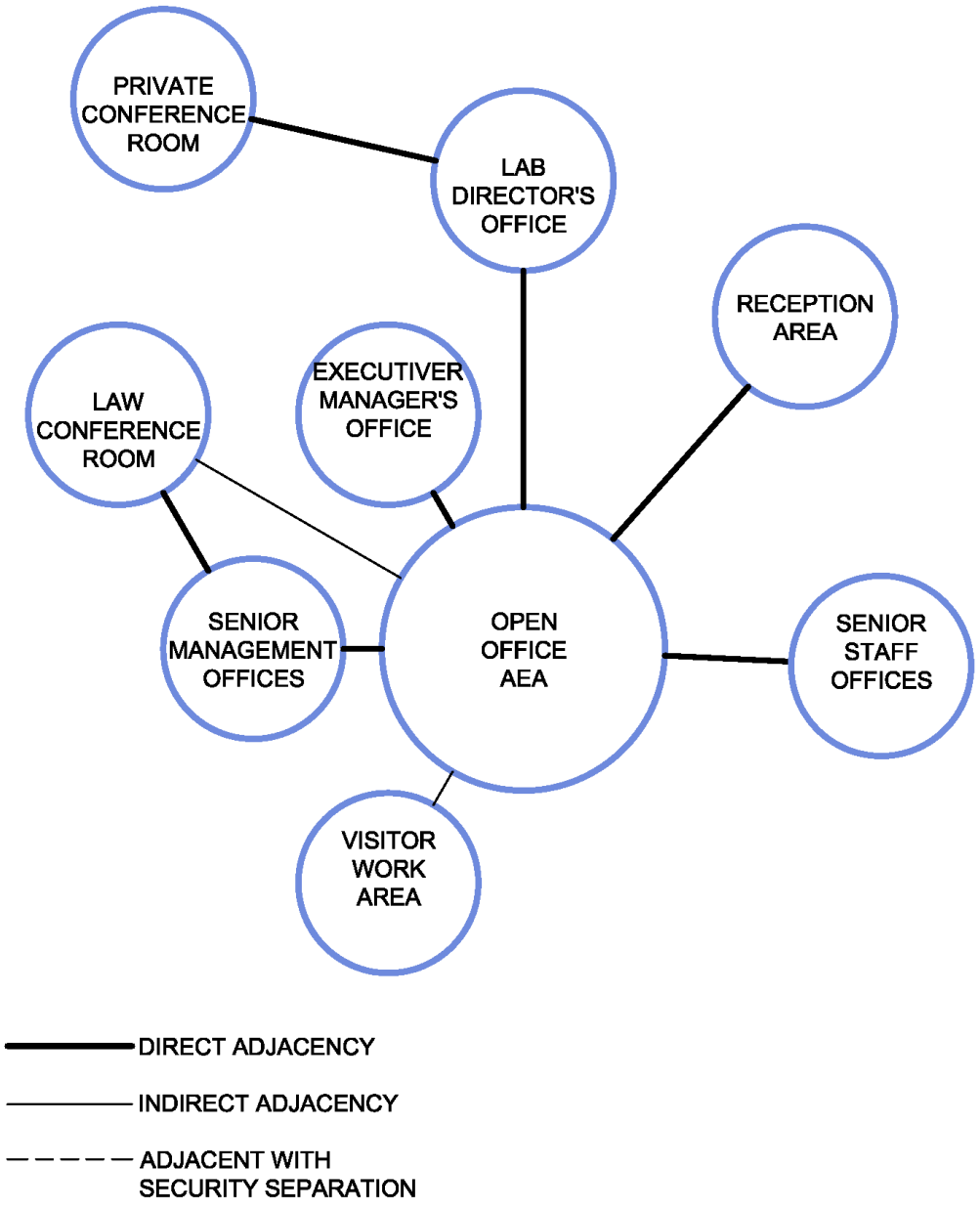
Executive Manager Office

The Executive Manager Office (EM) planning unit houses the NREL Director, the Deputy Director, the Associate Directors and some senior staff reporting to these Directors. Each of the Directors (Director, Deputy Director, 4 Associate Directors, and 1 more planned) has their own administrative assistant who sits within eyesight of their doors. The Executive Manager office has a more formal feel than most of the other offices at NREL. The Directors host many important visitors and dignitaries and thus the large dedicated conference room needs to take on a ceremonial feel. The smaller conference room is used when the Directors meet together and with staff. Senior staff and office managers from throughout NREL routinely come to the Director offices for collaborative meetings with various directors. Each Director has a conference table in their office to host these meetings.

Space Type		Space	Space Code	Desired			
				Qty	Net Square Foot	Occupant Load (Min)	Sheet ID
Interior Spaces	Personnel	Lab Director Office	SP2	1	400	1	C-1
		Executive Manager Office	SP2	6	275	1	C-2
		Senior Management Office	SP2	6	180	1	C-3
		Senior Staff Office	SP2	2	120	1	C-4
		Open Office Area	SP2 SP3	1	As required	As required	
		Small Conference Room	SP5	1	265	10	
		NREL Director Conference Room	SP5	1	600	35	
		Director Waiting Area	SP1	1	120	1	
		Ombudsman Reception Area	SP1	1	120	1	
	Storage	Coat Closet	SS	1	20	n/a	
		Locked A/V Closet	SS	1	60	n/a	

Adjacency Diagram

The following diagram indicates the required adjacencies for the Executive Manager Office planning unit.



Space Name: Open Office Area (Executive Manager)

Security Zone: OZ

Goal/Activities: The open office area includes the areas of the planning unit that house the standard office spaces, as well as the mail, copy, and storage spaces

Spatial Mood: Utilitarian

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Staff Work Space (Sheet ID, C-5)	9	CS/CI
Filing/sorting system for mail	1	OS/OI
Counter space	AGS criteria	CS/CI
Cabinetry	AGS criteria	CS/CI
Printer	1	OS/OI
Copier	1	OS/OI
Lateral files storage	32 lf	CS/CI
Filing cabinets	5	OS/OI

Notes:

1. Typical office space configurations, consistent with a cubicle set-up.
2. Use Architectural Graphics Standards criteria to establish work surface, storage, and cabinetry capacities.

Space Name: Small Conference Room

Security Zone: OZ

Goal/Activities: Informal, small meetings

Spatial Mood: Comfortable and spacious; corporate, orderly, and high quality

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Conference table (Seats 6-8)	1	OS/CI
Chairs	8	OS/OI
Credenza (18" x 6')	1	OS/CI
Bookshelves (2 shelf, 3' wide each)	3	OS/CI
Whiteboard	1	CS/CI
LCD Projector	1	OS/CI
Roll-down projection screen	1	CS/CI
Phone speaker	1	OS/OI
Phone display	1	OS/OI

Space Name: NREL Director Conference Room

Security Zone: OZ

Goal/Activities: Provide a space to have formal meetings, ceremonial meetings, and accommodate guests such as dignitaries.

Spatial Mood: Corporate, dignified, high-quality, and state-of-the-art.

Required Technologies: Wired and wireless connectivity; VOIP technology; dimmable lighting.

Equipment:

Equipment	Quantity	Supplied/Installed
Conference table for 15-20 with integrated data and electrical ports	1	OS/CI
Chairs for the table	15	OS/OI
Extra chairs	20	OS/OI
Serving Buffet for table (serves snacks/coffee) (18”x6’)	1	OS/CI
Built-in projector	1	CS/CI
Roll-down projection screen	1	CS/CI
2-door audio stand	1	OS/OI
Video TV and stand	1	OS/OI
Speaker phone	1	OS/OI
Display phone	1	OS/OI
Whiteboard	48 sf	CS/CI

Space Name: Director Waiting Area

Security Zone: RZ

Goal/Activities: Corporate, dignified, high-quality

Spatial Mood: Open and inviting

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Comfortable, high-quality seating	10	OS/OI
Small tables	5	OS/OI
Trophy exhibit (14”x5’)	1	OS/OI
4-Door credenza (18”x6’)	1	OS/OI
R&D plaques (6’x16’); requires 100 sf of open wall space	1	OS/CI

.

Space Name: Ombudsman Reception Area

Security Zone: RZ

Goal/Activities: The Ombudsman reports to the Director but is located away from the Director's Office. The Ombudsman waiting area is adjacent to the Ombudsman office in a location without foot traffic and that is somewhat isolated for meetings with staff and where people are not seen going or coming.

Spatial Mood: Open and inviting

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
12" deep shelving	10 lf	CS/CI
2-drawer file cabinet	1	OS/OI
Seating	3	OS/OI
Small table	1	OS/OI

Space Name: Coat Closet

Security Zone: OZ

Goal/Activities: Provide a small closet to store hats/coats.

Spatial Mood: Enclosed

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Closet rod	5 lf	CS/CI
Hat hooks	5	CS/CI
Shelves	5 lf	CS/CI
Space to hang 20 coats	1	CS/CI

Space Name: Locked A/V Closet

Security Zone: SZ

Goal/Activities: Provide an area to house and secure audio/visual equipment

Spatial Mood: Utilitarian

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Rolling carts	3	OS/OI
12” deep shelving on one wall	20 sf	CS/CI

Notes:

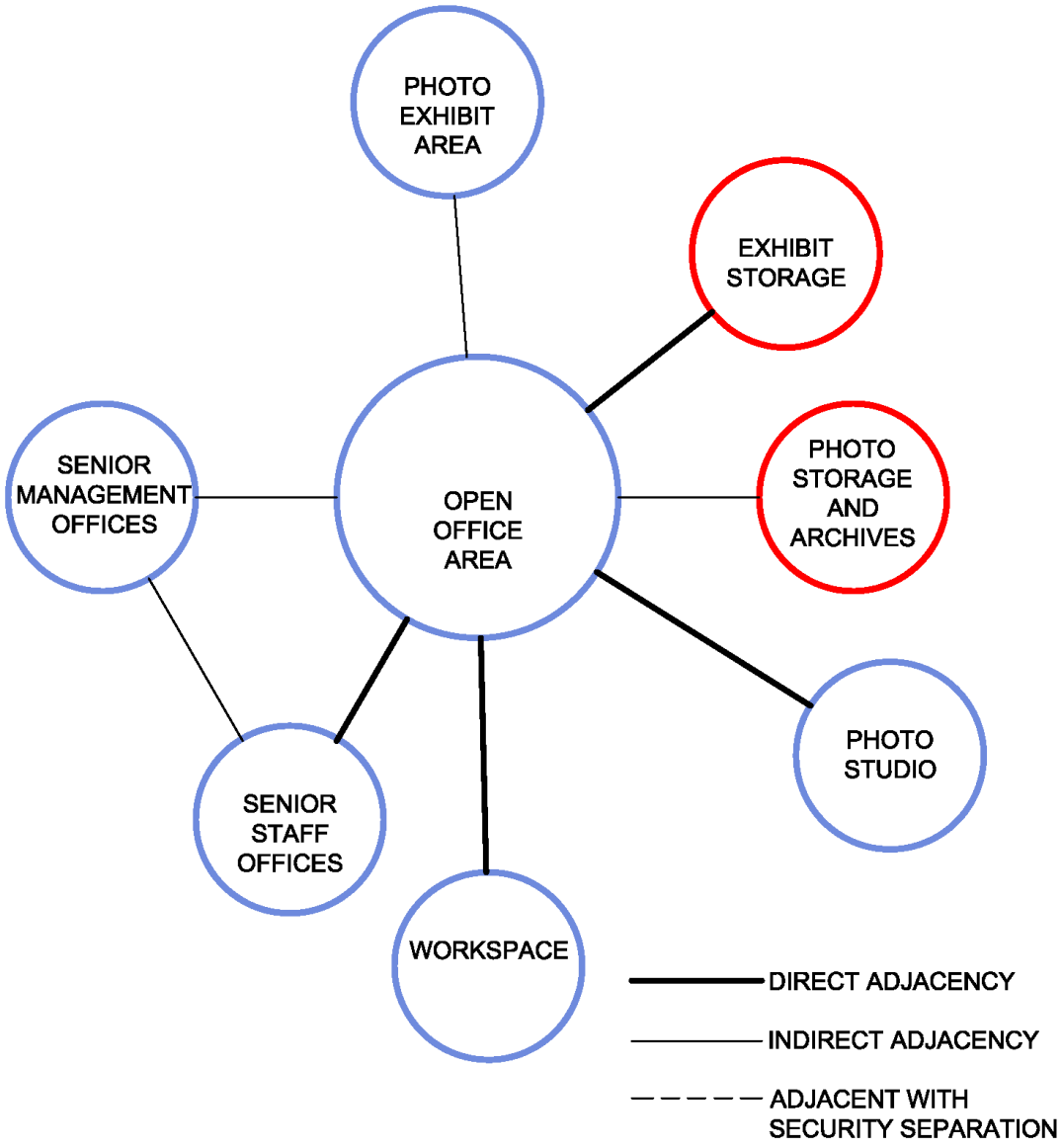
Public Affairs

The public affairs office interacts with the media (newspaper, TV, radio) and develops high-level briefings, handles many visiting dignitaries, and develops press releases for the lab. They interact with the public and feel they can best serve their clients if they are located near the front door.

Space Type		Space	Space Code	Desired			
				Qty	Net Sq Foot	Occupant Load (Min)	Sheet ID
Interior Spaces	Personnel	Senior Management Office	SP2	1	180	1	C-3
		Senior Staff Office	SP2	5	120	1	C-4
		Open Office Area	SP2 SP3	1	As Required	As Required	
		Workspace	SP3	1	80	n/a	
		Photo Studio	SP3	1	600	n/a	
	Storage	Photo Storage and Archives	SS	1	200	n/a	
		Exhibit Storage	SS	1	300	n/a	

Adjacency Diagram

The following diagram indicates the required adjacencies for the Public Affairs planning unit.



Space Name: Open Office Area (Public Affairs)

Security Zone: OZ

Goal/Activities: The open office area includes the areas of the planning unit that house the standard office spaces as well as the mail, copy, and storage spaces.

Spatial Mood: Utilitarian

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Staff Work Space (Sheet ID, C-5)	3	CS/CI
Filing/sorting System for mail	2	OS/OI
Counter space	AGS criteria	CS/CI
Cabinetry	AGS criteria	CS/CI
Printers	3	OS/OI
Copier	1	OS/OI
Shredder	1	OS/OI
Lateral file storage	20 lf	CS/CI
Filing cabinets	2	OS/OI
Fax machine	1	OS/OI

Notes:

1. Typical office space configurations, consistent with a cubicle set-up.
2. Use Architectural Graphics Standards criteria to establish work surface, storage, and cabinetry capacities.

Space Name: Workspace

Security Zone: OZ

Goal/Activities: Provide a workspace for the Public Affairs office to produce photographs and DVD's for the public.

Spatial Mood: Comfortable

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
DVD/CD duplication equipment (VCR/DVD player and monitor)	1	OS/OI
Computer monitor	1	OS/OI
Work table	12 lf	OS/OI
Regular printers	2	OS/OI
Larger format printer	1	OS/OI

Notes:

1. The workspace area may be incorporated into the Photo Studio area if that will maximize the efficiency of the space, costs, or facility performance.

Space Name: Photo Studio

Security Zone: OZ

Goal/Activities: Provide an area to take photos and store photo equipment (cameras, work areas) and video editing equipment.

Spatial Mood: Utilitarian

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Camera on tripod	1	OS/OI
Chair	1	OS/OI
Open shelving	40 lf	CS/CI
Bookcase	10 lf	CS/CI
Sound booth (5ft. x 5ft. x 8ft. high)	1	CS/CI
Video Editing Equipment Counter Space (30" deep)	15 lf	CS/CI

Notes:

1. This space should be largely open since it is a portrait studio and an editing suite.
2. Special needs for the place include lighting and electrical to support the spotlights, and large editing equipment that will require additional electrical outlets.
3. Lighting in the editing area needs to be localized and dimmable.
4. The room will be multifunctional and needs various switching configurations.

Space Name: Photo Storage and Archives

Security Zone: OZ

Goal/Activities: To preserve NREL's historical photo files and keep them accessible for regular use.

Spatial Mood: Utilitarian

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
4-drawer lateral file (4 lf)	2	OS/OI
4-drawer vertical file (2 lf)	4	OS/OI
2-drawer vertical file (2 lf)	1	OS/OI
Large table	6 lf	OS/OI

Notes

1) Area to be co-located with the Photo (PIX) files storage.

Space Name: Exhibit Storage

Security Zone: OZ

Goal/Activities: Provide a storage space for exhibits when not on display.

Spatial Mood: Utilitarian

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Exhibit cases (3 ft. x 3ft.)	15	OS/OI
Shelving	10 lf	CS/CI
Open floor space	20 sf	CS/CI
Bookshelves/cabinets	20 lf	CS/CI

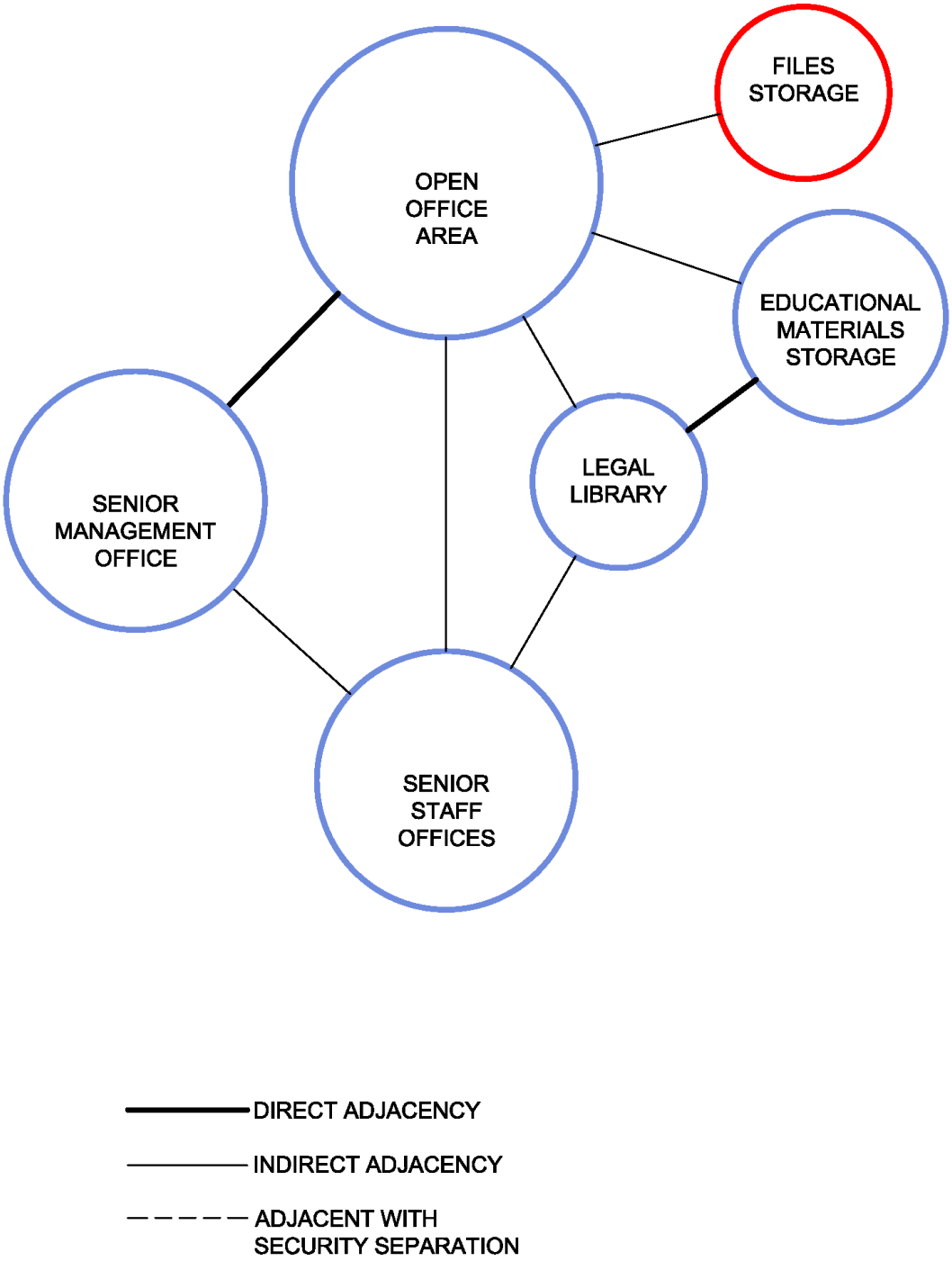
Legal Office

The Legal Office provides legal advice and guidance to executive and senior management and all staff. Their goal is to ensure NREL's compliance with DOE and NREL policies and guidelines and other applicable laws and regulations. The lawyer's offices are private due to the nature of their work.

Space Type		Space	Space Code	Desired			
				Qty	Net Sq Foot	Occupant. Load (Min)	Sheet ID
Interior Spaces	Personnel	Executive managers Office	SP2	1	275	1	C-2
		Senior Management Office	SP2	6	180	1	C-3
		Senior Staff Office	SP2	8	120	1	C-4
		Open Office Area	SP2 SP3	1	As required	As required	
		Legal Library	SP3	1	193	n/a	
		Educational Materials Storage	SP3	1	150	n/a	
	Storage	File Storage	SS	1	275	n/a	

Adjacency Diagram

The following diagram indicates the required adjacencies for the Legal Office planning unit.



Space Name: Open Office Area (Legal Office)

Security Zone: OZ

Goal/Activities: The open office area includes the areas of the planning unit that house the standard office spaces as well as the mail, copy, and storage spaces.

Spatial Mood: Utilitarian

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Staff Work Space (Sheet ID, C-5)	1	CS/CI
Filing/sorting System for mail	1	OS/OI
Counter space	AGS criteria	CS/CI
Cabinetry	AGS criteria	CS/CI
Printer	2	OS/OI
Work table	10lf	CS/CI
Copier	2	OS/OI
Lateral file storage	16lf	CS/CI
Filing cabinets	5	OS/OI

Notes:

1. Typical office space configurations, consistent with a cubicle set-up.
2. Use Architectural Graphics Standards criteria to establish work surface, storage, and cabinetry capacities.

Space Name: Legal Library

Security Zone: OZ

Goal/Activities: Provide a space to house legal documents.

Spatial Mood: Utilitarian

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Space Saver Movable shelves (2 stationary) (12'4"L x 18'W)	7	OS/CI
Table w/chairs (4'6"L x 30"W & 3'L x 30"W)	2	OS/CI
Color printer (24"L x 30" W)	1	OS/CI
Copier (48"L x 30" W)	1	OS/CI

Space Name: Educational Materials Storage

Security Zone: OZ

Goal/Activities: Provide a space to house legal documents.

Spatial Mood: Utilitarian

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Shelving for books (15”D x 42”W x 78”H)	6	OS/CI
Table w/chairs (6’L x 3’W x 30”H)	6	OS/CI
Credenzas 1-(20”D x 30”L x 30”H) 1-(20”D x 59”L x 30”H)	2	OS/CI

Space Name: File Storage

Security Zone: SZ

Goal/Activities: Provide an area to store files.

Spatial Mood: Utilitarian

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Space Saver Movable Shelves	13 lf	OS/CI
Tables 1- (4'6"L x 30"W) 1- (3'L x 30"W)	2	OS/CI
Color printer	1	OS/OI
Copier 48" x 30"	1	OS/CI

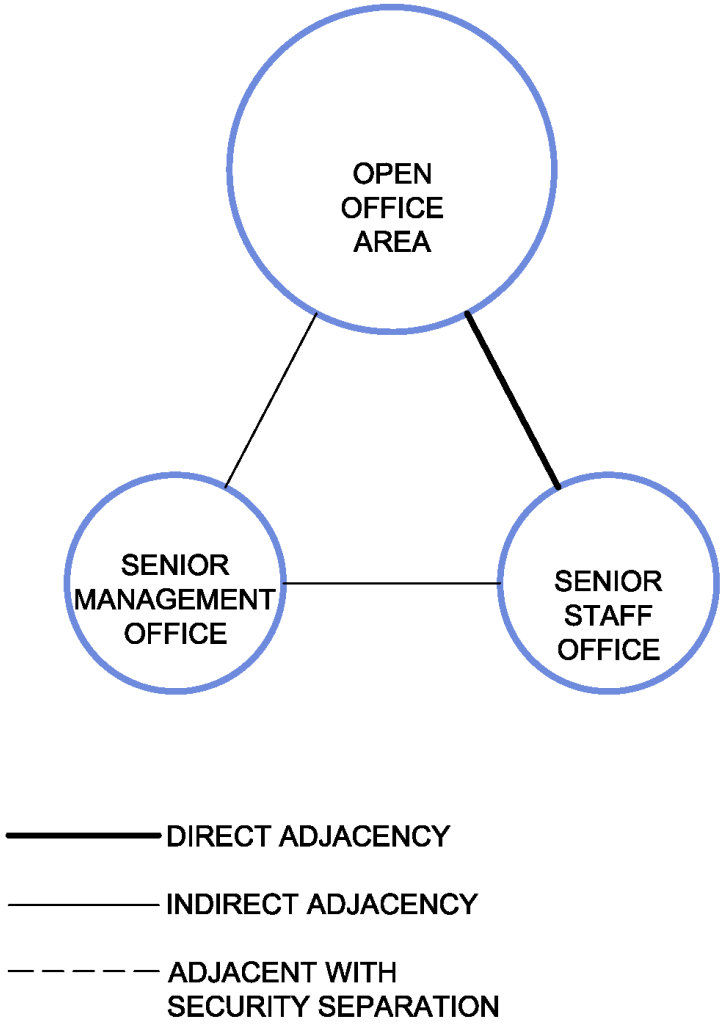
Systems Integration

The mission of the Systems Integration office is to assist EERE Programs by understanding the complex interactions between new technologies, system costs, environmental impacts, societal impacts, system trade-offs, and penetration into existing systems and markets. The major goal of the activities that comprise this integration capability is to develop and employ systems engineering principles and processes to provide the links between the mission, strategies, performance and cost goals, milestones and decision points of EERE Programs, with the projects and activities of the Programs. This office is "firewalled" meaning it has walls around the office.

Space Type		Space	Space Code	Desired			
				Qty	Net Square Foot	Occupant Load (Min)	Sheet ID
Interior Spaces	Personnel	Senior Management Office	SP2	3	180	1	C-3
		Senior Staff Office	SP2	4	120	1	C-4
		Open Office Area	SP2 SP3	1	As required	As required	

Adjacency Diagram

The following diagram indicates the required adjacencies for the Systems Integration planning unit.



Space Name: Open Office Area (Systems Integration)

Security Zone: OZ

Goal/Activities: The open office area includes the areas of the planning unit that house the standard office spaces as well as the mail, copy, and storage spaces.

Spatial Mood: Utilitarian

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Staff Work Space (Sheet ID, C-5)	3	CS/CI
Student/Temp Work Space	1	CS/CI
Filing/sorting System for mail	1	OS/OI
Counter space	AGS criteria	CS/CI
Cabinetry	AGS criteria	CS/CI
Printer	2	OS/OI
Copier	1	OS/OI
Lateral file storage	32 lf	CS/CI
Filing cabinets	3	OS/OI

Notes:

1. Typical office space configurations, consistent with a cubicle set-up.
2. Use Architectural Graphics Standards criteria to establish work surface, storage, and cabinetry capacities.

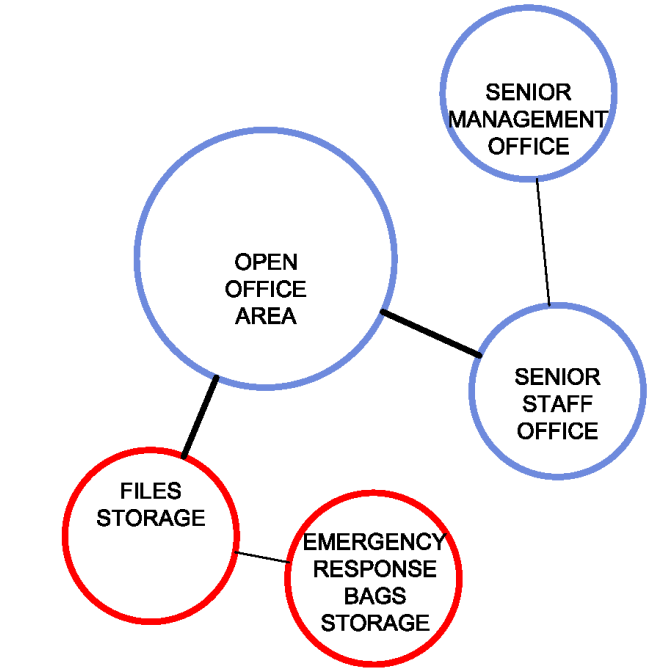
Environment, Safety, and Health & Quality

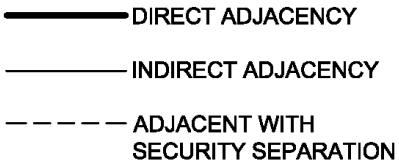
The Environment, Safety, and Health and Quality (ESH&Q) staff offers experience and expertise in ESH&Q disciplines. Their work involves developing safe operating procedures, mitigating ergonomic issues, navigating environmental guidelines, and ensuring a safe and healthy work environment. The office offers training and is a resource to NREL staff. The office has a collaborative feel, yet they do have some requirements for privacy concerning safety violations and issues.

Space Type		Space	Space Code	Desired			
				Qty	Net Square Foot	Occupant Load (Min)	Sheet ID
Interior Spaces	Personnel	Senior Management Office	SP2	1	180	1	C-3
		Senior Staff Office	SP2	7	120	1	C-4
		Open Office Area	SP2 SP3	1	As Required	As Required	
	Storage	Emergency Response Bag Storage	SS	1	35	n/a	
		File Storage	SS	1	85	n/a	

Adjacency Diagram

The following diagram indicates the required adjacencies for the Environment, Safety, and Health & Quality planning unit.





Space Name: Open Office Area (ESH&Q)

Security Zone: OZ

Goal/Activities: The open office area includes the areas of the planning unit that house the standard office spaces as well as the mail, copy, and storage spaces.

Spatial Mood: Utilitarian

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Staff Work Space (Sheet ID, C-5)	8	CS/CI
Student/Temp Work Space (Sheet ID, C-6)	2	CS/CI
Filing/sorting System for mail	1	OS/OI
Counter space	AGS criteria	CS/CI
Cabinetry	AGS criteria	CS/CI
Printer (one printer to be secured)	2	OS/OI
Copier (one copier to be secured)	2	OS/OI
Shredder	1	OS/OI
Lateral file storage	32 lf	CS/CI
Filing cabinets	5	OS/OI
Laminator	1	OS/OI
Fax machine (one fax machine must be located in a secure area)	2	OS/OI

Notes:

1. Typical office space configurations, consistent with a cubicle set-up.
2. Use Architectural Graphics Standards criteria to establish work surface, storage, and cabinetry capacities.

Space Name: Emergency Response Bag Storage

Security Zone: OZ

Goal/Activities: Provide an easily accessible storage area to house 8-10 emergency response bags for the Fire Marshal.

Spatial Mood: Utilitarian

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Shelving	as needed	CS/CI

Notes:

1. Each bag is approximately 3' x 3' x 2'
2. Access should not be restricted.

Space Name: File Storage

Security Zone: OZ

Goal/Activities: Provide an area to store files

Spatial Mood: Utilitarian

Required Technologies:

Equipment:

Equipment	Quantity	Supplied/Installed
Flat (MSDS) Filing System	1	OS/OI
Lateral files	2	OS/CI
Shelving	12 lf	CS/CI

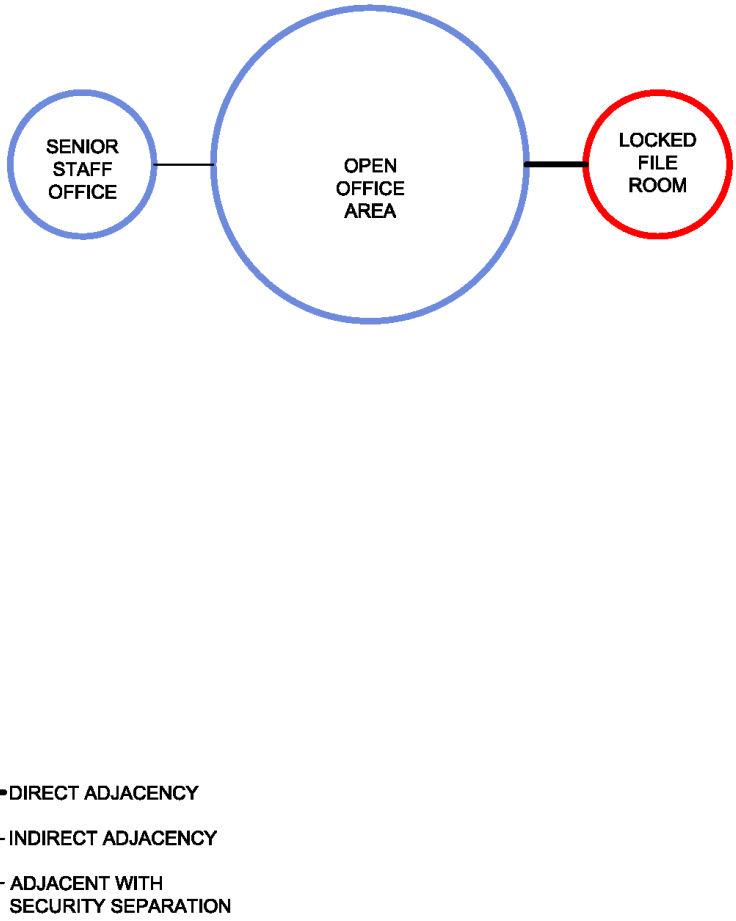
Requisition Management

The Requisition Management Office manages all of the NREL policies and procedures, the prime contract and the DOE Directives. The office needs to be accessible to DOE and the NREL offices of the Directors. It logs all the correspondence into and out of DOE. It prints and files all of the NREL documents of record.

Space Type		Space	Space Code	Desired			
				Qty	Net Square Foot	Occupant Load (Min)	Sheet ID
Interior Spaces	Personnel	Senior Staff Office	SP2	1	120	1	C-4
		Open Office Area	SP2 SP3	1	As Required	As Required	
	Storage	Locked File Room	SS	1	228	n/a	

Adjacency Diagram

The following diagram indicates the required adjacencies for the Requisition Management planning unit.



Space Name: Open Office Area (Requisition Management)

Security Zone: OZ

Goal/Activities: The open office area includes the areas of the planning unit that house the standard office spaces as well as the mail, copy, and storage spaces.

Spatial Mood: Utilitarian

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Staff Work Space (Sheet ID, C-5)	7	CS/CI
Filing/sorting system for mail	2	OS/OI
Counter space	AGS criteria	CS/CI
Cabinetry	AGS criteria	CS/CI
Printers	1	OS/OI
Copier	1	OS/OI
Shredder	1	OS/OI
Lateral file storage	16 lf	CS/CI
Filing cabinets	2	OS/OI
Fax machine	1	OS/OI

Notes:

1. Typical office space configurations, consistent with a cubicle set-up.
2. Use Architectural Graphics Standards criteria to establish work surface, storage, and cabinetry capacities.

Space Name: Locked File Room

Security Zone: SZ

Goal/Activities: Provide an area that will house all MRI corporate files, Director's files, and secure other documents containing sensitive information.

Spatial Mood: Utilitarian

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
5-drawer file cabinet	10	OS/OI

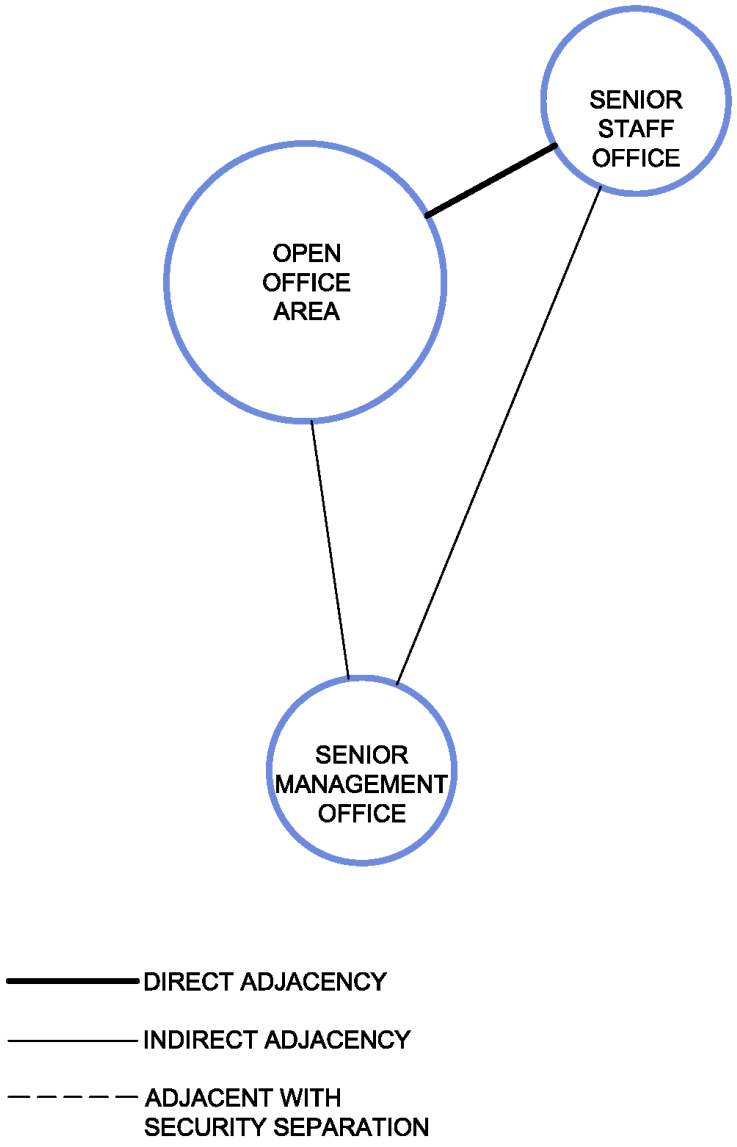
Laboratory Development Office

The Laboratory Development Office (LDO) articulates long- and near-term strategies for NREL's future and identifies, leads, and/or manages activities that help realize that future. LDO provides processes, tools, and systems that enable the translation of strategy into action. LDO is responsible for monitoring, assessing, and evaluating performance against Laboratory goals and objectives, and then for reporting progress and achievement to NREL itself, its customers, and stakeholders. LDO facilitates decision-making around organizational strategy and performance-based management principles and practices. The LDO also coordinates and supports business development activities and helps facilitate the operation of the Executive Leadership Council, which guides the strategic direction of the Lab.

Space Type		Space	Space Code	Desired			
				Qty	Net Square Foot	Occupant Load (Min)	Sheet ID
Interior Spaces	Personnel	Senior Management Office	SP2	2	180	1	C-3
		Senior Staff Office	SP2	2	120	1	C-4
		Open Office Area	SP2 SP3	1	As Required	As Required	

Adjacency Diagram

The following diagram indicates the required adjacencies for the Laboratory Development office planning unit.



Space Name: Open Office Area (Laboratory Development Office)

Security Zone: OZ

Goal/Activities: The open office area includes the areas of the planning unit that house the standard office spaces as well as the mail, copy, and storage spaces.

Spatial Mood: Utilitarian

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Staff Work Space (Sheet ID, C-5)	4	CS/CI
Filing/sorting System for mail	2	OS/OI
Counter space	AGS criteria	CS/CI
Cabinetry	AGS criteria	CS/CI
Printers	1	OS/OI
Copier	1	OS/OI
Shredder	1	OS/OI
Filing cabinets	4	OS/OI
Fax machine	1	OS/OI

Notes:

1. Typical office space configurations, consistent with a cubicle set-up.
2. Use Architectural Graphics Standards criteria to establish work surface, storage, and cabinetry capacities.

Information Systems Office

The Information Systems Office (ISO) is a complex and large organization involving several key functions; The Systems and Networks Group maintain the operations of the server/data center and the data and voice networks for all NREL internal operations. The Client Services Group is a NREL client focused organization that supports the NREL staff with assistance on computer and phone related issues. Client Services covers hardware and software issues, computer training, computer security, etc. The Information Resources Group manages the library and the publications, printing and PIX (NREL's Electronic Photo Library). The Library houses a collection of scientific and technical materials. Library Reference staff provides comprehensive literature searches using in-house and external bibliographic and full text databases. NREL's Publication Services team places printing requests with the appropriate vendor and assist staff with the various production stages. PIX is an online, indexed, digital photographic library and database of more than 13,000 photos depicting a wide variety of renewable energy, energy efficiency, and related technologies. Anyone with access to the World Wide Web can use PIX to download low-resolution photos 24 hours a day, 7 days a week.

Developing applications for scientific and business information is another service that the IS Office's Integrated Business Systems group provides to NREL. NREL's Records Management group helps determine what files need to be archived, establishes retention periods for NREL records, stores inactive records, advises and consults on setting up active filing systems (including electronic recordkeeping systems), retrieves records from storage, and develops and conducts records management training. ISO also has an office that oversees information security.

The ISO is a collaborative office where the work flows cross all the various groups. The staff that works on data, networks and client support and cyber security all interact very closely, the library is a bit more autonomous and the publications work has a strong affinity with the Program Support Office (center 8400).

The NREL library staff offers the following vision for the role that the library could play in the RSF. The Library will be at the core of a common space where staff collaboration, interaction, and a free flow of ideas and information occurs. Their perspective is that the Library's role is to be the place where anyone from the community can come to think, work, discuss, collaborate, and have immediate access to information, from both internal and external sources.

They suggest that the NREL Library serves as the center of the Information Commons, the spot where science, information and coffee all come together. In addition to easy access to all Library resources, there would be common areas for staff collaboration, meetings, individual and group study, with up-to-date technology such as wireless access, remote conferencing, state of the art meeting rooms, and training/demo areas that are all easily reconfigurable. The Client services help desk and the Human Resources functions (benefits, new employee orientation) should also be a key part of an information commons.

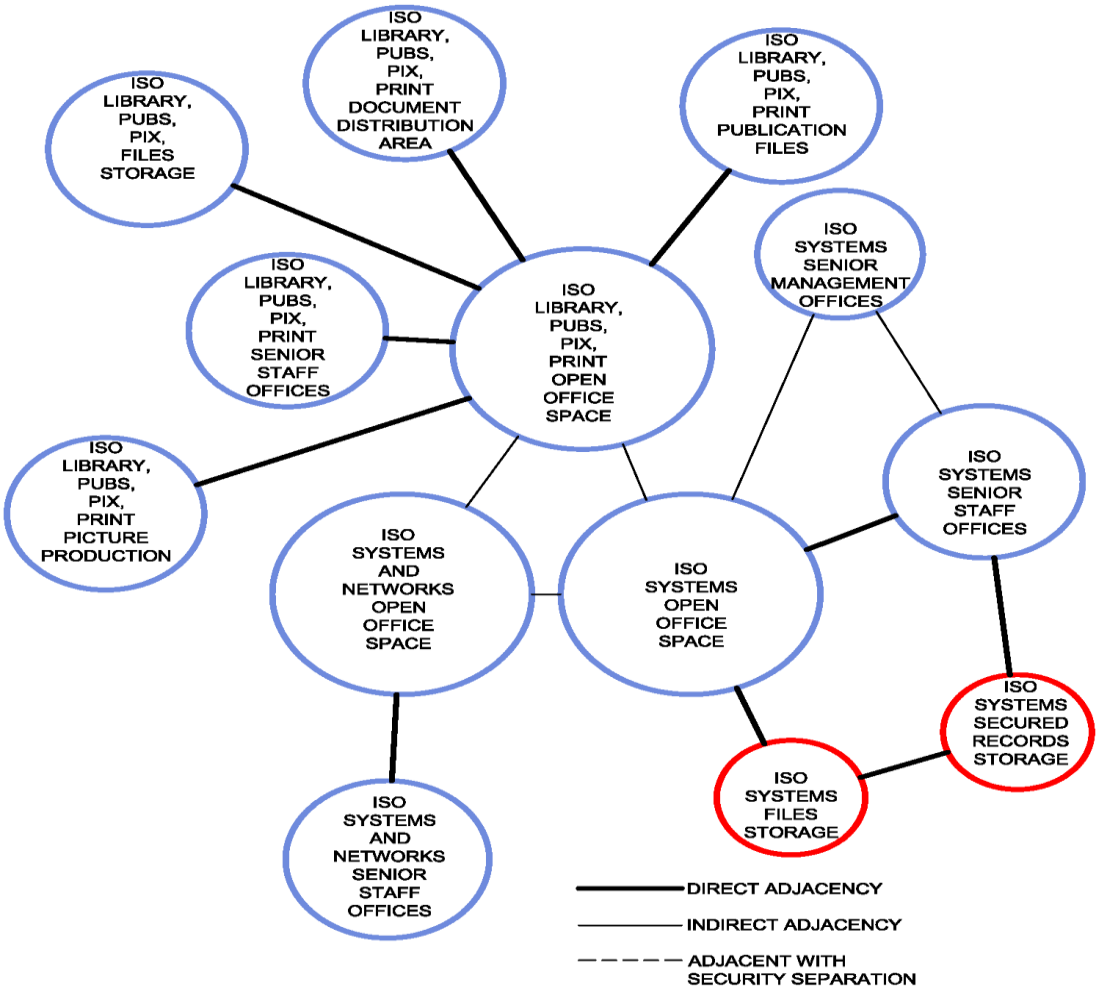
Neighbors to the Library, in the Commons area, would be staff from other services that support the NREL research community, e.g. IT support, Scientific Computing, Graphics, Publications and others.

Information Systems Office

Space Type		Space	Space Code	Desired			
				Qty	Net Square Foot	Occupant Load (Min)	Sheet ID
Interior Spaces	Personnel	Senior Management Office	SP2	2	180	1	C-3
		Senior Staff Office	SP2	8	120	1	C-4
		Open Office Space	SP2 SP3	1	As Required	As Required	
	Storage	Secured Records Storage	SS	1	100	n/a	
		Files and Storage	SS	1	200	n/a	

Adjacency Diagram

The following diagram indicates the required adjacencies for the entire Information Systems Office planning unit, which includes ISO-Systems and Networks and ISO-Library, Publications, PIX, and Print.



Space Name: Open Office Area (Information Systems Office)

Security Zone: OZ

Goal/Activities: The open office area includes the areas of the planning unit that house the standard office spaces as well as the mail, copy, and storage spaces.

Spatial Mood: Utilitarian

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Staff Work Space (Sheet ID, C-5)	41	CS/CI
Student/Temp Work Space (Sheet ID, C-6)	13	CS/CI
Filing/sorting System for mail	2	OS/OI
Counter space	AGS criteria	CS/CI
Cabinetry	AGS criteria	CS/CI
Printer (one printer, to be secured)	8	OS/OI
Copier (one copier, to be secured)	1	OS/OI
Shredder	1	OS/OI
Lateral file storage	32 lf	CS/CI
Filing cabinets	5	OS/OI
Laminator	1	OS/OI
Fax machine	1	OS/OI

Notes:

1. Typical office space configurations, consistent with a cubicle set-up.
2. Use Architectural Graphics Standards criteria to establish work surface, storage, and cabinetry capacities.

Space Name: Secured Records Storage

Security Zone: SZ

Goal/Activities: Provide a storage space for records.

Spatial Mood: Utilitarian

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Desk area	4 lf	CS/CI
Counter	10 lf	CS/CI

Notes:

1. This area is to store file boxes.

Space Name: Files and Storage

Security Zone: OZ

Goal/Activities: Provide a storage space for software for client services and files and cabinets for Business Tech solutions.

Spatial Mood: Utilitarian

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Cabinets	4 lf	CS/CI
Shelving	12 lf	CS/CI
Filing Cabinets	5	OS/OI

ISO-Information Systems and Networks

Space Type		Space	Space Code	Desired			
				Qty	Net Square Foot	Occupant Load (Min)	Sheet ID
Interior	Personnel	Senior Staff Office	SP2	6	120	1	C-4
		Open Office Space	SP2	1	As Required	As Required	

Space Name: Open Office Area (ISO-Information Systems and Networks)

Security Zone: OZ

Goal/Activities: The open office area includes the areas of the planning unit that house the standard office spaces as well as the mail, copy, and storage spaces.

Spatial Mood: Utilitarian

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Staff Work Space (Sheet ID, C-5)	11	CS/CI
Student/Temp Work Space (Sheet ID, C-6)	1	CS/CI
Filing/sorting System for mail	2	OS/OI
Counter space	AGS criteria	CS/CI
Cabinetry	AGS criteria	CS/CI
Printer (one printer, to be secured)	8	OS/OI
Copier (one copier, to be secured)	1	OS/OI
Shredder	1	OS/OI
Lateral file storage	32 lf	CS/CI
Filing cabinets	5	OS/OI
Fax machine	1	OS/OI

Notes:

1. Typical office space configurations, consistent with a cubicle set-up.
2. Use Architectural Graphics Standards criteria to establish work surface, storage, and cabinetry capacities.

ISO-Library, Publications, PIX, and Print

Space Type		Space	Space Code	Desired			
				Qty	Net Square Foot	Occupant Load (Min)	Sheet ID
Interior Spaces	Personnel	Senior Staff Office	SP2	5	120	1	C-4
		Open Office Area	SP2 SP3	1	As Required	As Required	
		Picture (PIX) Production	SP3	1	100	1	
		Publications Work Area	SP3	1	250	n/a	
		Document Distribution Area	SP3	1	600	n/a	
		Publication Files	SP3	1	700	n/a	
		Picture (PIX) File Storage	SP3	1	300	n/a	

Space Name: Open Office Area (ISO-Library, Publications, PIX, and Print)

Security Zone: OZ

Goal/Activities: The open office area includes the areas of the planning unit that house the standard office spaces as well as the mail, copy, and storage spaces.

Spatial Mood: Utilitarian

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Staff Work Space (Sheet ID, C-5)	12	CS/CI
Student/Temp Work Space	1	CS/CI
Filing/sorting System for mail	2	OS/OI
Counter space	AGS criteria	CS/CI
Cabinetry	AGS criteria	CS/CI
Printers	5	OS/OI
Copier	1	OS/OI
Shredder	1	OS/OI
Lateral file storage	16 lf	CS/CI
Filing cabinets	5	OS/OI
Fax machine	2	OS/OI

Notes:

1. Typical office space configurations, consistent with a cubicle set-up.
2. Use Architectural Graphics Standards criteria to establish work surface, storage, and cabinetry capacities.

Space Name: Picture (PIX) Production

Security Zone: OZ

Goal/Activities: Scanning, printing, CD/DVD duplication and label printing.

Spatial Mood: Utilitarian

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Photograph Scanner	1	OS/OI
Photograph duplicator	3	OS/OI
Labeler	1	OS/OI
Printers	2	OS/OI
Workspace/Countertops for equipment	1	CS/CI
Desk		OS/OI
Computer	1	OS/OI
CD/DVD duplicating towers	2	OS/OI
Supply cabinet (42”W x 65”H x 19”D)	1	CS/CI

Notes:

1. Task lighting for scanning and duplicating work,
2. Needs to be co-located with the PIX staff offices, space is used throughout the workday by PIX staff.

Space Name: Publications Work Area

Security Zone: OZ

Goal/Activities: Proofing, prepress, deliveries, distribution and mailing preparation and working files.

Spatial Mood: Comfortable

Required Technologies: Wired network access

Equipment:

Equipment	Quantity	Supplied/Installed
Work table (6 ft x 3 ft)	2	OS/CI
Computer station (Mac)	1	OS/OI
5-drawer lateral file cabinets 42”W x 65”H x 18”D	10	CS/CI

Space Name: Document Distribution Area

Security Zone: OZ

Goal/Activities: Provide a space to store and distribute hard copy files for all NREL Documents.

Spatial Mood: Utilitarian

Required Technologies: Wired network access

Equipment:

Equipment	Quantity	Supplied/Installed
Storage cabinets 36”W x 78”H x 24”D	10	CS/CI
Open shelving	684 lf	CS/CI
5-drawer lateral file cabinets 42”W x 65”H x 18” D	1	CS/CI
Table (6’ x 3’)	1	OS/OI
Computer	1	OS/OI
Printer	1	OS/OI
Phone	1	OS/CI
Workstation for equipment 72”W x 30”H x 30”D	1	CS/CI

Notes:

1. Consideration should be given to combining this space with the Publications Files and the PIX File storage.

Space Name: Publication Files

Security Zone: OZ

Goal/Activities: Store "native" print files and related documentation; used for reprinting NREL publications or reusing graphics/art work. Access daily by Publication services staff.

Spatial Mood: Closed storage space preferred; good lighting for filing and reading.

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
5-drawer lateral file cabinets 42"W x 65"H x 19"D	6	CS/CI
2-door steel storage cabinets. 36"W x 78"H x 24"D	8	CS/CI
Flat files 46"W x 16"H x 36"D	6	OS/OI
Flat files 54"W x 17"H x 42"D	6	OS/OI

Notes:

1. Consideration should be given to combining the Document Distribution and the PIX Files for a larger file space.

Space Name: Picture (PIX) File Storage

Security Zone: OZ

Goal/Activities: Provide an area to store print files.

Spatial Mood: Utilitarian

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
5-drawer lateral file cabinets 42”W x 65”H x 19”D	15	CS/CI
4-drawer fireproof vertical file cabinets 16”W x 54” H x 31”D	5	CS/CI

Notes:

1. Consideration should be given to combining the Document Distribution and the Publication Files for a total of less than their aggregate. These files are accessed throughout the day by Publications and PIX staff.

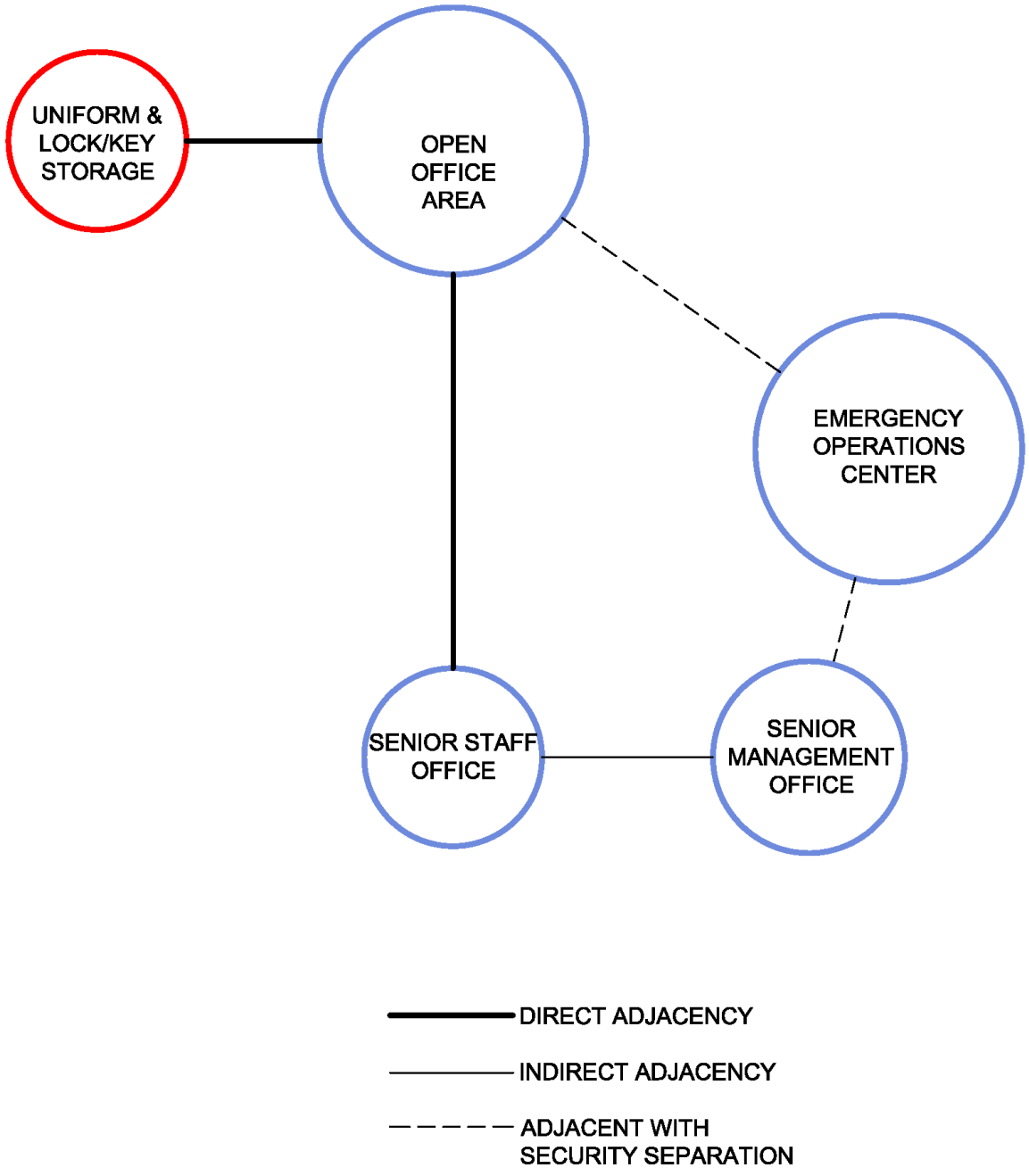
Security and Emergency Preparedness

This group focuses on all security issues, including staffing the Emergency Operations Center (EOC), and handling all threats, badging, locks and keys, foreign nationals, staffing the site entrance building and the reception desk. They also oversee the protective force. They feel their offices (including the EOC) are best located adjacent to the reception desk.

Space Type		Space	Space Code	Desired			
				Qty	Net Square Foot	Occupant Load (Min)	Sheet ID
Interior Spaces	Personnel	Senior Management Office	SP2	1	180	1	C-3
		Senior Staff Office	SP2	3	120	1	C-4
		Open Office Area	SP2 SP3	1	As Required	As Required	
		Emergency Operations Center	SP3	1	1740		
		Badging Area Office	SP2	1	185	2	
		Badging Area Reception	SP1	1	100	1	
	Storage	Uniform and Lock/Key Storage	SS	1	100	n/a	

Adjacency Diagram

The following diagram indicates the required adjacencies for the Security and Emergency Preparedness planning unit.



Space Name: Open Office Area (Security and Emergency Preparedness)

Security Zone: OZ

Goal/Activities: The open office area includes the areas of the planning unit that house the standard office spaces as well as the mail, copy, and storage spaces.

Spatial Mood: Utilitarian

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Staff Work Space (Sheet ID, C-5)	7	CS/CI
Student/Temp Work Space (Sheet ID, C-6)	1	CS/CI
Filing/sorting System for mail	2	OS/OI
Counter space	AGS criteria	CS/CI
Cabinetry	AGS criteria	CS/CI
Printers	2	OS/OI
Copier	1	OS/OI
Shredder	1	OS/OI
Lateral file storage	32 lf	CS/CI
Filing cabinets	5	OS/OI
Fax machine	1	OS/OI

Notes:

1. Typical office space configurations, consistent with a cubicle set-up.
2. Use Architectural Graphics Standards criteria to establish work surface, storage, and cabinetry capacities.

Space Name: Emergency Operations Center

Security Zone: SZ

Goal/Activities: Space where readiness is maintained to bring together high-level decision makers from NREL and GO to provide resources and staff communications during significant emergency situations.

Spatial Mood: Open and efficient

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Tables	12	OS/OI
Projector	1	OS/OI
workstations (Sheet ID, C-6)	6	CS/CI
Computers	8	OS/OI
Satellite TV conduit	1	OS/CI
Electronic whiteboard	1	OS/OI
Voice Amplification System (see Part 3-Performance Specifications)	1	CS/CI
Teleconferencing capability	1	CS/CI
Network printer	1	OS/OI

Notes:

1. Requires the ability to be locked from rest of the RSF.
2. The satellite television will require a 2" conduit to the roof for the Owner to install satellite dish and television. Provide pull string and end caps.

Space Name: Badging Area Office

Security Zone: SZ

Goal/Activities: Provide an office adjacent to the Badging Reception Area that provides an area that is comfortable and inviting.

Spatial Mood: Private

Required Technologies:

Equipment:

Equipment	Quantity	Supplied/Installed
Workstations	2	CS/CI
Badge station (DOE)	1	OS/OI
Computers	2-4	OS/OI
Camera (see security/surveillance, Part 3-Performance Specifications)	2	CS/CI

Notes:

1. The badge office should be located near the main reception area to provide new workers a convenient area to adjust and become familiar with the facility.
2. The badge office could share space with the “waiting area” near the main reception desk that is to be located in the lobby.

Space Name: Uniform and Lock/Key Storage

Security Zone: SZ

Goal/Activities: Provide an area to store uniforms, locks, and keys, archival documents and training equipment in a highly securable area.

Spatial Mood: Utilitarian

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Hanging racks	100 lf	CS/CI
Shelving and racks (As space permits)	TBD	CS/CI
Key cabinets	2	OS/OI
Key cutting station and desk	1	CS/CI

Space Name: Badging Area Reception

Security Zone: RZ

Goal/Activities: Provide a reception area adjacent to the Badging Area Office.

Spatial Mood: Open and inviting

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Reception desk (same as the reception desk at the atrium/lobby)	1	OS/OI
12" deep shelving	10 lf	CS/CI
2-drawer file cabinet	1	CS/CI

Notes:

1. Requires the ability to be locked from rest of the RSF.

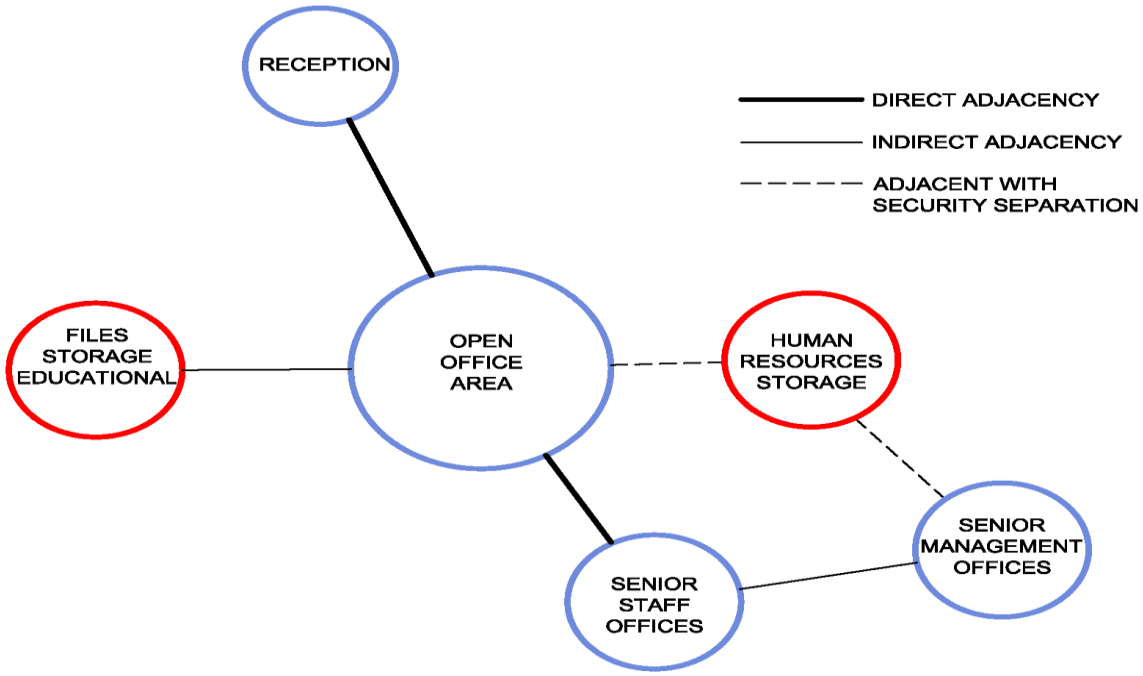
Human Resources and Education Programs Support

The Human Resources (HR) component of the office handles personnel functions including compensation, employee relations, hiring, benefits, and staff training. The education program support function runs a series of programs that support education at various levels; K-12 science programs engage young minds in renewable energy and also provide support for teachers; college and post-graduate programs help to develop a capable and diverse workforce for the future through mentored research internships and fellowships; more senior-level programs, from post-doctoral researchers up to sabbatical and faculty appointments, provide the opportunity to participate in the Laboratory's research and development programs, initiate new areas of research, and establish a base for ongoing collaborations between NREL and our stakeholders. The Educational Programs Support office uses hands-on tools and materials for teaching and thus requires both storage and staging space. The educational office and human resource functions are somewhat autonomous but linked because they both focus on developing human capabilities and bringing staff to NREL. Both functions require space to conduct training. The HR function might be best served near the front door since they interact with staff seeking information, new hires and job applicants.

Space Type		Space	Space Code	Desired			
				Qty	Net Square Foot	Occupant Load (Min)	Sheet ID
Interior Spaces	Personnel	Senior Management Office	SP2	2	180	1	C-3
		Senior Staff Office	SP2	11	120	1	C-4
		Open Office Area	SP2 SP3	1	As Required	As Required	
		Reception Area	SP1	1	150	1	
	Storage	File Storage-Human Resources	SS	1	500	n/a	
		File Storage-Education	SS	1	600	n/a	

Adjacency Diagram

The following diagram indicates the required adjacencies for the Human Resources and Education Programs Support planning unit.



Space Name: Open Office Area (Human Resources and Programs Support)

Security Zone: OZ

Goal/Activities: The open office area includes the areas of the planning unit that house the standard office spaces as well as the mail, copy, and storage spaces.

Spatial Mood: Utilitarian

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Staff Work Space (Sheet ID, C-5)	19	CS/CI
Student/Temp Work Space (Sheet ID, C-6)	6	CS/CI
Filing/sorting System for mail	2	OS/OI
Counter space	AGS criteria	CS/CI
Cabinetry	AGS criteria	CS/CI
Printers	4	OS/OI
Large media printers	4	OS/OI
Copier	1	OS/OI
Shredder	1	OS/OI
Lateral file storage	32 lf	CS/CI
Filing cabinets	5	OS/OI
Fax machine	1	OS/OI

Notes:

1. Typical office space configurations, consistent with a cubicle set-up.
2. Use Architectural Graphics Standards criteria to establish work surface, storage, and cabinetry capacities.

Space Name: Reception Area

Security Zone: RZ

Goal/Activities: Provide a reception area adjacent to the Human Resources Area to accept job applicants and visitors.

Spatial Mood: Open and inviting

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Reception desk with counter (8 ft long)	1	CS/CI
12” deep shelving	10 lf	CS/CI
2-drawer file cabinet	1	CS/CI
Receptionist chair	1	OS/OI
Table (desk height)	1	OS/OI
Chairs	4	OS/OI
Coffee table	1	OS/OI

Space Name: File Storage-Human Resources

Security Zone: SZ

Goal/Activities: Provide an area to store files of a sensitive nature.

Spatial Mood: Utilitarian

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
5-drawer locking file cabinets	9	OS/CI
3-drawer locking file cabinet	3	OS/CI
Small rolling file cabinets	2	OS/CI
Rolling files	3	OS/CI
Book case	2	OS/CI
Rolling file cabinets	6	OS/CI

Space Name: File Storage-Education

Security Zone: OZ

Goal/Activities: Provide an area to store files related to NREL's Education Program. This space should be located near a loading dock.

Spatial Mood: Utilitarian

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Filing cabinets	50	OS/CI
Locking supply cabinets	7	OS/CI

Notes:

1) The Education Office has 50 filing cabinets for student supplies.

2) The Education Office sets up 20 work tables for student events. These events will most likely occur in the RSF flexible space rather than a dedicated workspace.

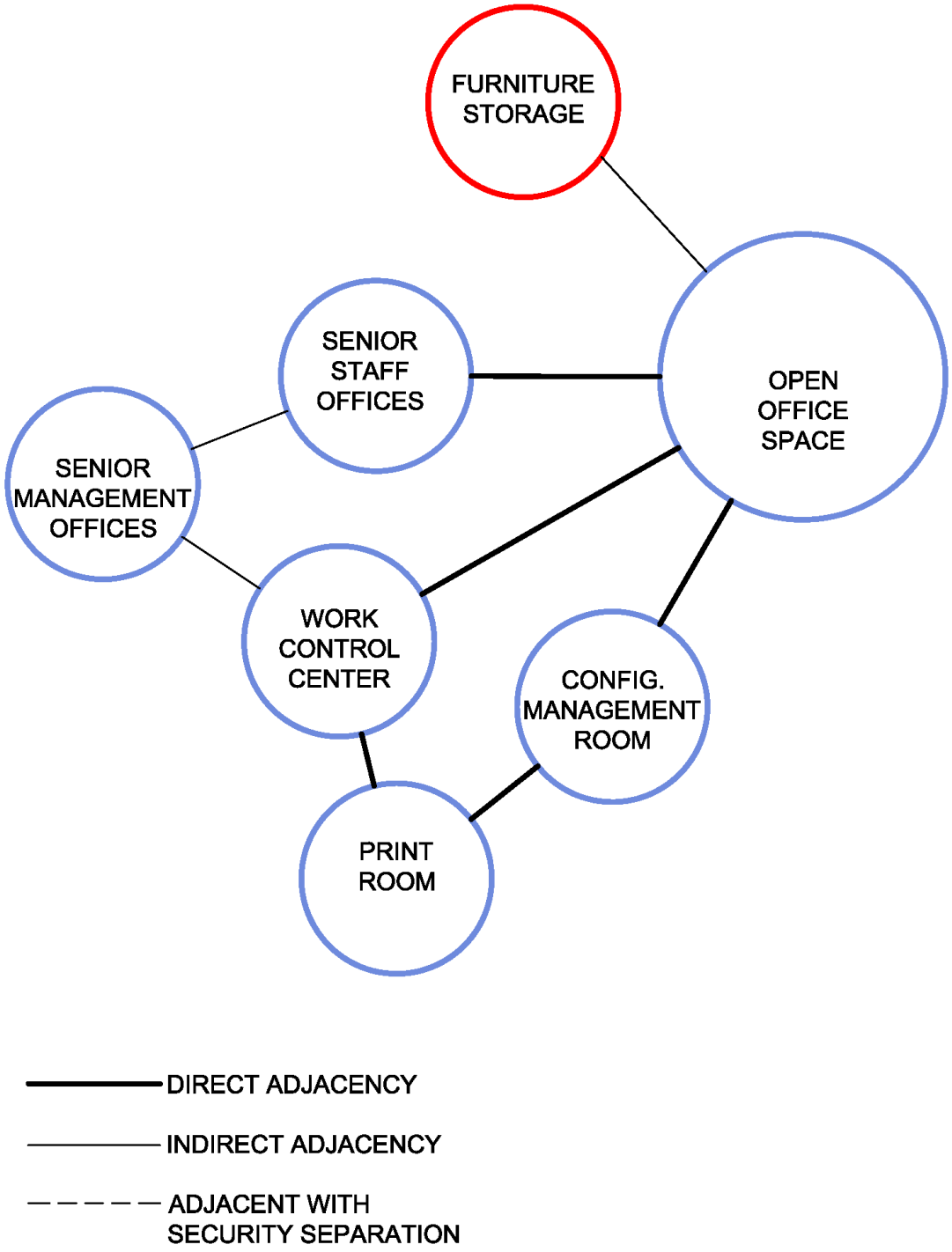
Site Operations

Site Operations handles engineering and construction for the NREL site including architecture, mechanical and electrical systems, CAD drafting and ordering furniture. They also have a work control center to handle maintenance issues. There are some site ops functions handled in other buildings, including the machine shop. The copy center and mail room fall under site operations and the decision has been made to not move these functions to the RSF.

Space Type		Space	Space Code	Desired			
				Qty	Net Square Foot	Occupant Load (Min)	Sheet ID
Interior Spaces	Personnel	Senior Management Office	SP2	2	180	1	C-3
		Senior Staff Office	SP2	11	120	1	C-4
		Open Office Space	SP2 SP3	1	As Required	As Required	
		Work Control Center	SP2	1	300	3	
		Print Room	SP3	1	265	n/a	
	Storage	Configuration Management Rm	SS	1	260	n/a	
		Furniture Storage	SS	1	100	n/a	

Adjacency Diagram

The following diagram indicates the required adjacencies for the Site Operations planning unit.



Space Name: Open Office Area (Site Operations)

Security Zone: OZ

Goal/Activities: The open office area includes the areas of the planning unit that house the standard office spaces as well as the mail, copy, and storage spaces.

Spatial Mood: Utilitarian

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Staff Work Space (Sheet ID, C-5)	8	CS/CI
Filing/sorting System for mail	2	OS/OI
Counter space	AGS criteria	CS/CI
Cabinetry	AGS criteria	CS/CI
Printers	4	OS/OI
Large media printers	4	OS/OI
Copier	1	OS/OI
Shredder	1	OS/OI
Lateral file storage	32 lf	CS/CI
Filing cabinets	4	OS/OI
Fax machine	1	OS/OI

Notes:

1. Typical office space configurations, consistent with a cubicle set-up.
2. Use Architectural Graphics Standards criteria to establish work surface, storage, and cabinetry capacities.

Space Name: Work Control Center

Security Zone: OZ

Goal/Activities: Office area

Spatial Mood: Utilitarian

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Student/Work Temp space (Sheet ID, C-6)	3	CS/CI
30" work surface with under counter drawer storage	55 lf	CS/CI
Personal computers	3	OS/OI
HP 5000 printers	2	OS/OI
Fax machine	1	OS/OI
Overhead storage for 30" work surface	30lf	CS/CI
Lateral files	15 cu. ft	CS/CI
Storage lockers (36" x 18" x 65")	3	OS/OI
Storage cabinet (36" x 18" x 72")	1	OS/OI

Space Name: Print Room

Security Zone: OZ

Goal/Activities: Provide a space for printing and copying, scanning, drawing layout & assembly, local servers for engineering design, utility data and energy use monitoring, supply storage, PMEC file server.

Spatial Mood: Utilitarian

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Shelving	18 lf	CS/CI
Work surface with drawer storage	20 lf	CS/CI
Personal computer	3	OS/OI
Local area server tower	1	OS/OI
Monitors	4	OS/OI
Battery back-up system	2	OS/OI
HP5000 printer	1	OS/OI
Scanner	1	OS/OI
5 ft. rotary print trimmer	1	OS/OI
HP Color Printer (50” x 27” x 48”)	1	OS/OI
OCE large format copier (54” x 36” x 52”)	1	OS/OI
HP large format printer (61” x 20”x 52”)	1	OS/OI
Software cabinet (42” x 18” x 65”)	1	OS/OI
Supply cabinet (36” x 18” x 78”)	1	OS/OI
Layout table in center of room (84” x 36” x 36”)	1	OS/OI

Space Name: Configuration Management Room

Security Zone: SZ

Goal/Activities: Provide an area to store all site/building critical information.

Spatial Mood: Utilitarian

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Filing Cabinets		OS/CI
Shelving	230 lf	CS/CI
Metal Drawing Files (55” x 38” x 52”)	2	OS/OI
Hanging Drawing Racks (32” x 20” x 52”)	8	OS/OI
Work Surface	6 lf	CS/CI

Space Name: Furniture Storage

Security Zone: SZ

Goal/Activities: Provide an area to store all incoming furniture.

Spatial Mood: Utilitarian

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed

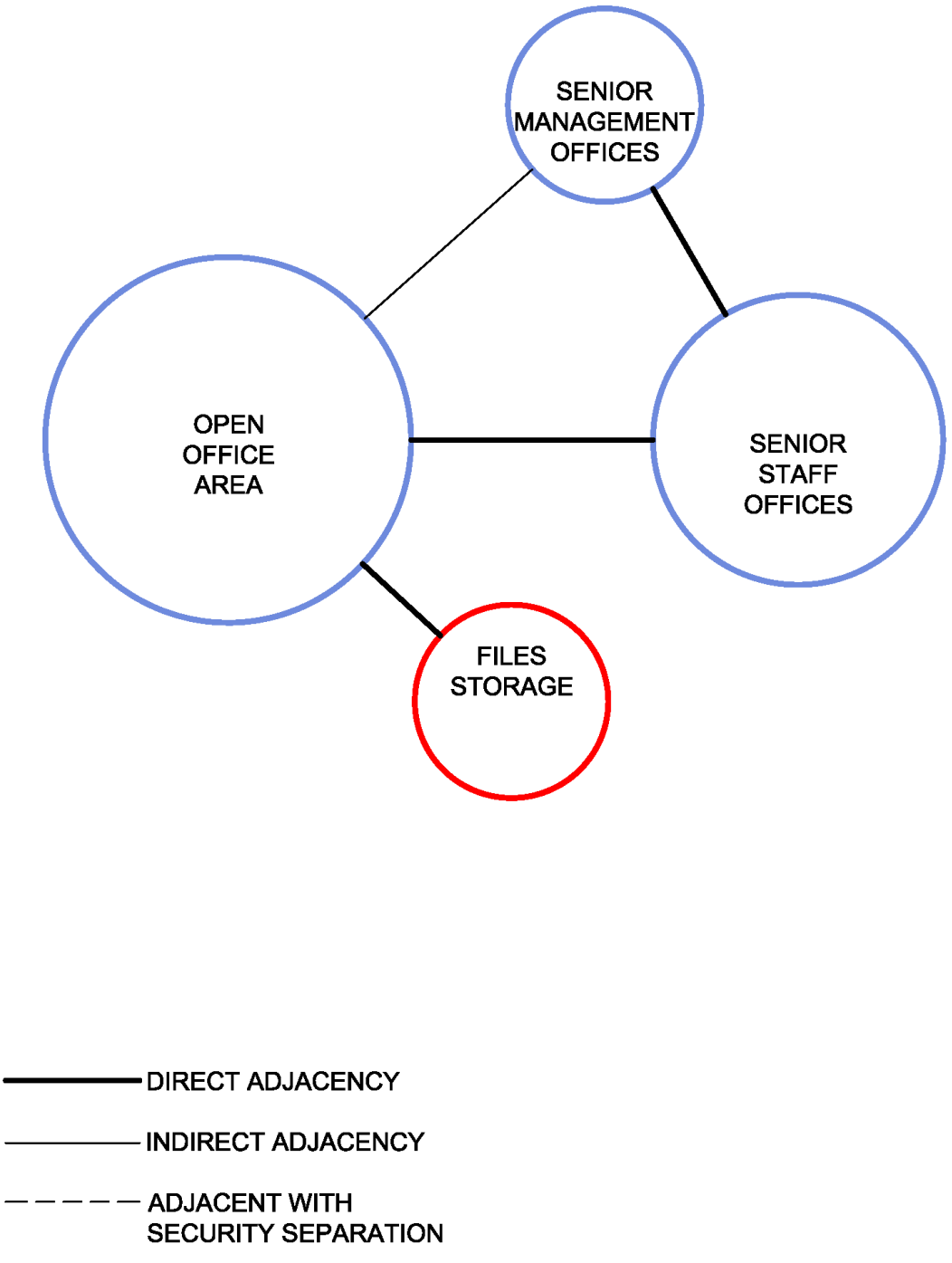
Technology Transfer Office

A small office with a mission to work with private and public sector agencies to move NREL-developed technologies and expertise into commercially viable products and businesses. NREL offers several technology transfer services, providing outside organizations the opportunity to create a research and development partnership, license NREL technologies, utilize our research facilities, and develop business connections.

Space Type		Space	Space Code	Desired			
				Qty	Net Square Foot	Occupant. Load (Min)	Sheet ID
Interior Spaces	Personnel	Senior Management Office	SP2	2	180	1	C-3
		Senior Staff Office	SP2	7	120	1	C-4
		Open Office Area	SP2 SP3	1	As required	As required	
	Storage	File Storage	SS	1	120	n/a	

Adjacency Diagram

The following diagram indicates the required adjacencies for the Technology Transfer Office planning unit.



Space Name: Open Office Area (Technology Transfer)

Security Zone: OZ

Goal/Activities: The open office area includes the areas of the planning unit that house the standard office spaces, as well as the mail, copy, and storage spaces.

Spatial Mood: Utilitarian

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Staff Work Space (Sheet ID, C-5)	8	CS/CI
Filing/sorting System for mail	1	OS/OI
Counter space	AGS criteria	CS/CI
Cabinetry	AGS criteria	CS/CI
Printer	2	OS/OI
Copier	1	OS/OI
Lateral files storage	10	CS/CI
Filing cabinets	5	OS/OI

Notes:

1. Typical office space configurations, consistent with a cubicle set-up.
2. Use Architectural Graphics Standards criteria to establish work surface, storage, and cabinetry capacities.

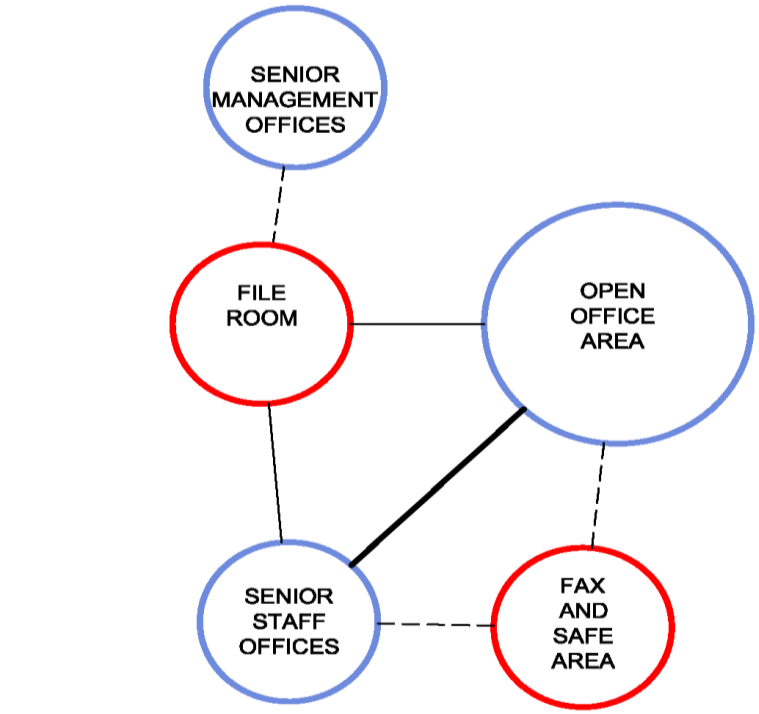
Finance Office

The Finance Office handles payroll, financial and budget planning and all the accounting for NREL. They maintain financial records for NREL. There are some financial analysts that sit with various offices throughout NREL.

Space Type		Space	Space Code	Desired			
				Qty	Net Square Foot	Occupant Load (Min)	Sheet ID
Interior Spaces	Personnel	Senior Management Office	SP2	2	180	1	C-3
		Senior Staff Office	SP2	13	120	1	C-4
		Open Office Area	SP2 SP3	1	As Required	As Required	
	Storage	File Storage	SS	1	375	n/a	

Adjacency Diagram

The following diagram indicates the required adjacencies for the Finance Office planning unit.



DIRECT ADJACENCY

INDIRECT ADJACENCY

ADJACENT WITH SECURITY SEPARATION

Space Name: Open Office Area (Finance Office)

Security Zone: OZ

Goal/Activities: The open office area includes the areas of the planning unit that house the standard office spaces as well as the mail, copy, and storage spaces.

Spatial Mood: Utilitarian

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Staff Work Space (Sheet ID, C-5)	21	CS/CI
Student/Temp Work Space (Sheet ID, C-6)	2	CS/CI
Filing/sorting System for mail	2	OS/OI
Counter space	AGS criteria	CS/CI
Cabinetry	AGS criteria	CS/CI
Printers	3	OS/OI
Large media printers	4	OS/OI
Copier	1	OS/OI
Shredder	1	OS/OI
Lateral file storage	16 lf	CS/CI
Filing cabinets	5	OS/OI
Fax machine	1	OS/OI

Notes:

1. Typical office space configurations, consistent with a cubicle set-up.
2. Use Architectural Graphics Standards criteria to establish work surface, storage, and cabinetry capacities.

Space Name: Fax and Safe Area

Security Zone: SZ

Goal/Activities: Provide a space for faxing and a safe. Fireproof storage of vital records.

Spatial Mood: Utilitarian

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Fax Machine	1	OS/OI
Safe (model # Century A5889)	1	OS/OI

Space Name: File Room

Security Zone: SZ

Goal/Activities: Secured Files Storage, high security.

Spatial Mood: Utilitarian

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
File cabinets	10	OS/OI
Shelving	80 lf	CS/CI

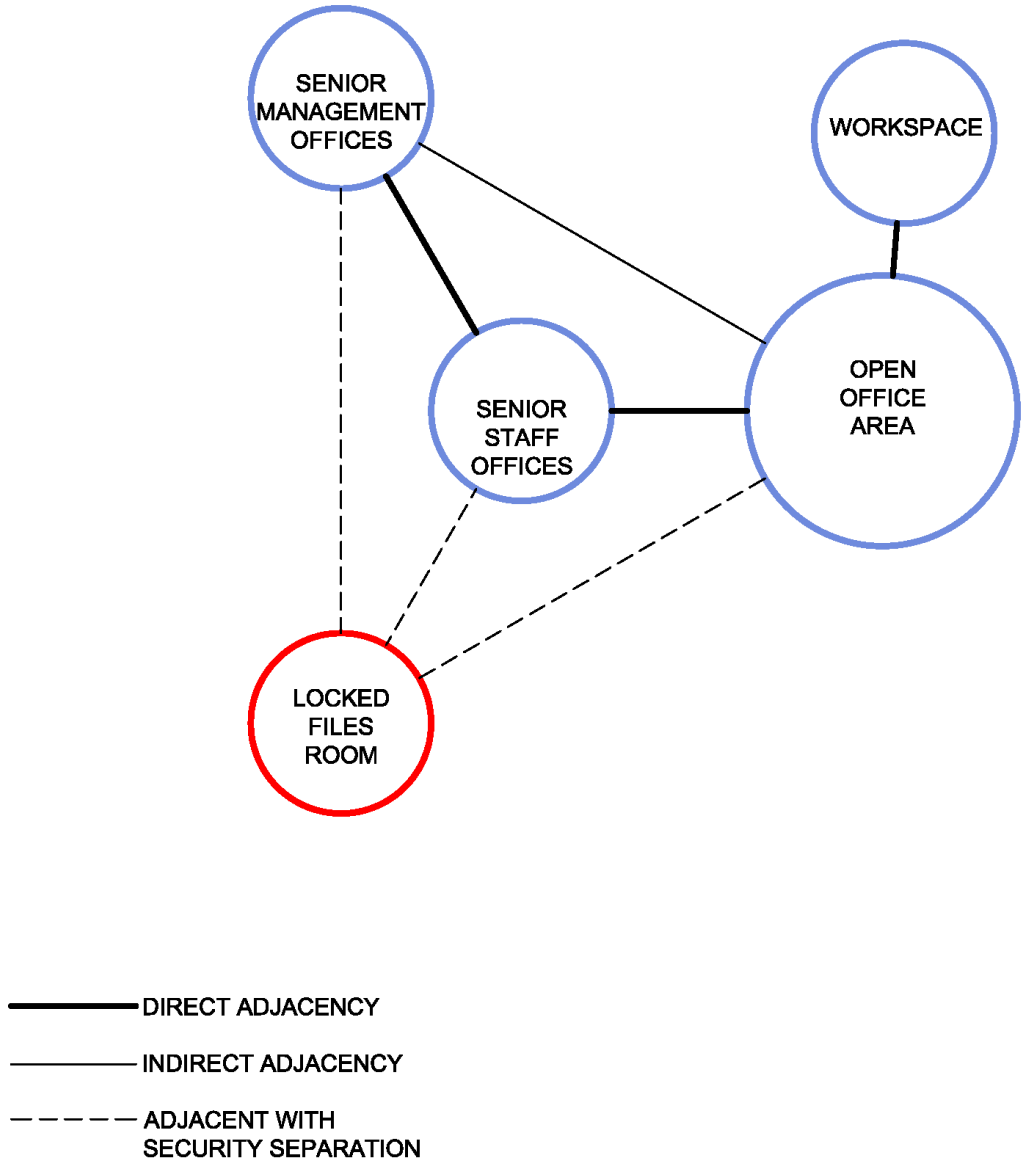
Contracts and Business Services

Contracts & Business Services provides acquisition services that are strategic tools in supporting the mission of NREL. This office provides procurement services for NREL in four areas: direct subcontracting for R&D, professional/technical, consulting and other types of services, subcontracting and purchasing services to support the day-to-day laboratory operations, Work for Others, Purchase Card Program.

Space Type		Space	Space Code	Desired			
				Qty	Net Square Foot	Occupant Load (Min)	Sheet ID
Interior Spaces	Personnel	Senior Management Office	SP2	1	180	1	C-3
		Senior Staff Office	SP2	6	120	1	C-4
		Open Office Area	SP2 SP3	1	As Required	As Required	
		Workspace	SP3	1	150	n/a	
	Storage	Locked File Room	SS	1	600	n/a	

Adjacency Diagram

The following diagram indicates the required adjacencies for the Contracts and Business Services planning unit.



Space Name: Open Office Area (Contracts and Business Services)

Security Zone: OZ

Goal/Activities: The open office area includes the areas of the planning unit that house the standard office spaces as well as the mail, copy, and storage spaces.

Spatial Mood: Utilitarian

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Staff Work Space (Sheet ID, C-5)	34	CS/CI
Student/Temp Work Space (Sheet ID, C-6)	2	CS/CI
Filing/sorting System for mail	2	OS/OI
Counter space	AGS criteria	CS/CI
Cabinetry	AGS criteria	CS/CI
Printers	7	OS/OI
Large media printers	4	OS/OI
Copier	1	OS/OI
Shredder	2	OS/OI
Lateral file storage	16 lf	CS/CI
Filing cabinets	5	OS/OI
Fax machine	3	OS/OI
Typewriter	1	OS/OI
Scanner	2	OS/OI

Notes:

1. Typical office space configurations, consistent with a cubicle set-up.
2. Use Architectural Graphics Standards criteria to establish work surface, storage, and cabinetry capacities.

Space Name: Workspace

Security Zone: OZ

Goal/Activities: Provide a flat workspace.

Spatial Mood: Comfortable

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Worktable (30” x 60”)	3	OS/OI
Shelving/cabinetry above workstation	10 lf	CS/CI

Space Name: Locked File Room

Security Zone: SZ

Goal/Activities: Provide an area to store contract files.

Spatial Mood: Utilitarian

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Compact shelving system	400 lf	CS/CI
5-drawer lateral file cabinet	29	OS/CI
3-drawer lateral file cabinet	1	OS/OI
2-drawer lateral file cabinet	2	OS/OI

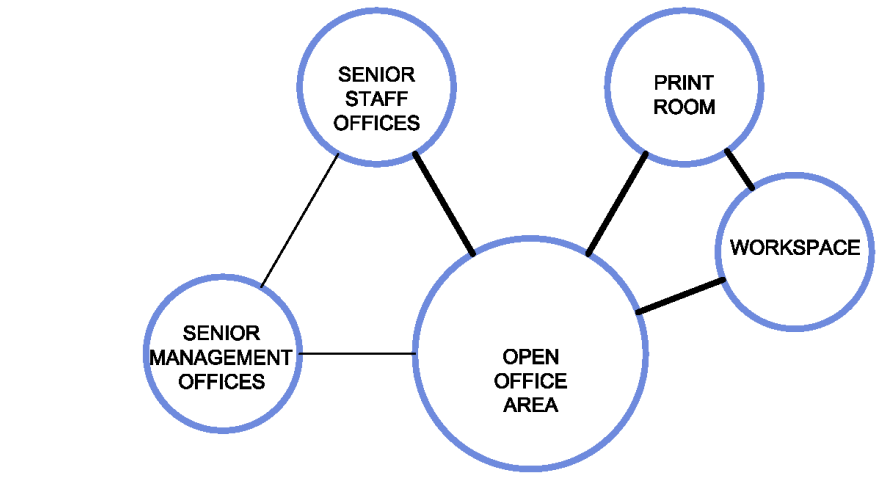
Program Support Office

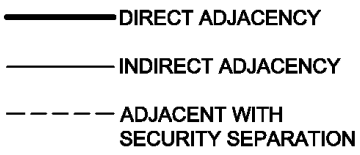
The Program Support office provides communication services to NREL. Their function is to develop quality communication products that will advance renewable energy and energy efficiency technologies and facilitate technology transfer. They have some shared workspaces for graphics and testing electronic media.

Space Type		Space	Space Code	Desired			
				Qty	Net Square Foot	Occupant Load (Min)	Sheet ID
Interior Spaces	Personnel	Senior Management Office	SP2	1	180	1	C-3
		Senior Staff Office	SP2	30	120	1	C-4
		Open Office Area	SP2 SP3	1	As Required	As Required	
		Workspace	SP3	1	250	n/a	
		Print Room	SP3	1	255	n/a	

Adjacency Diagram

The following diagram indicates the required adjacencies for the Program Support Office planning unit.





Space Name: Open Office Area (Program Support Office)

Security Zone: OZ

Goal/Activities: The open office area includes the areas of the planning unit that house the standard office spaces as well as the mail, copy, and storage spaces.

Spatial Mood: Utilitarian

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Staff Work Space (Sheet ID, C-5)	24	CS/CI
Filing/sorting System for mail	2	OS/OI
Counter space	AGS criteria	CS/CI
Cabinetry	AGS criteria	CS/CI
Printers	3	OS/OI
Copier	1	OS/OI
Shredder	1	OS/OI
Lateral file storage	21 lf	CS/CI
Filing cabinets	5	OS/OI
Fax machine	1	OS/OI
Open workspace tables	24 lf	CS/CI

Notes:

1. Typical office space configurations, consistent with a cubicle set-up.
2. Use Architectural Graphics Standards criteria to establish work surface, storage, and cabinetry capacities.

Space Name: Workspace

Security Zone: OZ

Goal/Activities: Provide a workspace for the Program Support Office to produce quality communication products.

Spatial Mood: Comfortable

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
DVD/CD duplication equipment (VCR/DVD player and monitor)	1	OS/OI
Computer monitor	1	OS/OI
Work table	12 lf	OS/OI
Regular printers	2	OS/OI
Larger format printer	1	OS/OI
Drafting Table	1	OS/OI

Space Name: Print Room

Security Zone: OZ

Goal/Activities: Provide a workspace for the Program Support Office to allow for large format printing (both PC and Mac.) and assembling of documents.

Spatial Mood: Utilitarian

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Plotters	2	OS/OI
Fax	1	OS/OI
Computer	2	OS/OI

DOE-Office of Laboratory Operations

The DOE-Office of Laboratory Operations (OLO) is responsible for ensuring that the goals of the Office of Energy Efficiency and Renewable Energy (EERE) and the National Renewable Energy Laboratory's (NREL) other clients are achieved and consistent with the Department of Energy's (DOE) management principles for its national laboratories.

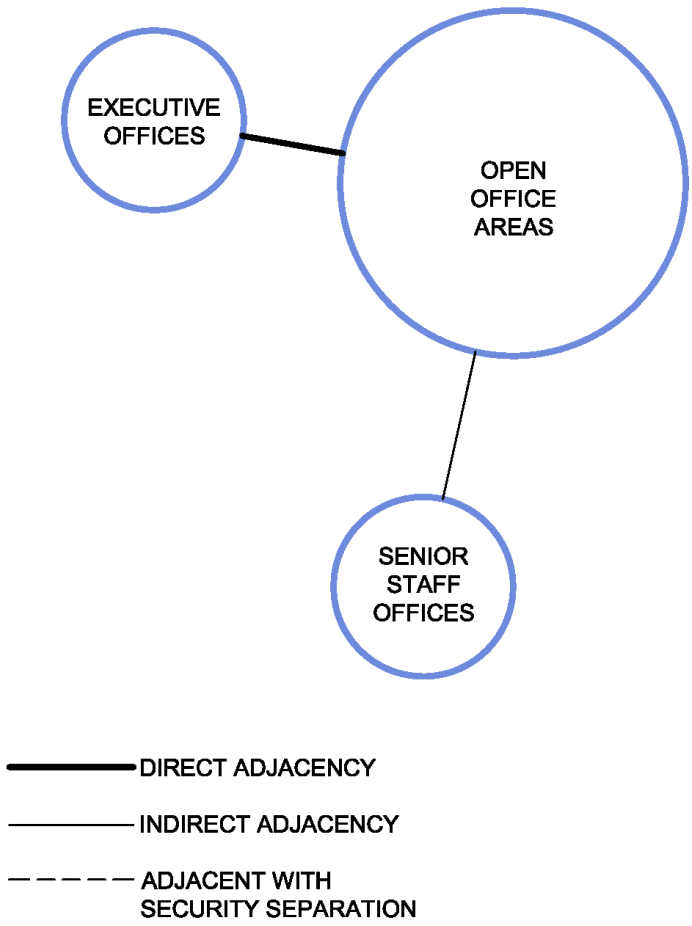
These principles include developing and maintaining world-class scientific capability and tools to address the nation's strategic needs; providing an inclusive, cost-effective, and safe working environment; and ensuring that knowledge and technologies are transferred to the benefit of the nation. OLO provides the following services for EERE at NREL:

- Overall subcontract direction and work authorization through the Senior Subcontract Administrator;
- Institutional planning direction to NREL and coordination of institutional planning with DOE sponsors.
- Establishment of the overall performance management framework for NREL and administration of the performance management cycle including development of annual plans, performance metrics, and the evaluation of these metrics.
- Liaison to DOE and EERE on all corporate policy matters impacting NREL and, moreover, on DOE's foundational policies for management and operating contracts and national laboratories;
- Leadership in technology transfer activities;
- Oversight of all capital management projects including building construction and site stewardship;
- Oversight of NREL's environment, safety, and health, security, and site operation, including federal staffing of the Emergency Operations Center;
- Representative to external stakeholders including federal and local elected officials and the public on NREL and DOE matters impacting NREL.

Space Type		Space	Space Code	Desired			
				Qty	Net Square Foot	Occupant Load (Min)	Sheet ID
Interior Spaces	Personnel	Executive Office	SP2	1	275	1	C-2
		Senior Staff Office	SP2	4	120	1	C-4
		Open Office Area	SP2 SP3	1	As Required	As Required	

Adjacency Diagram

The following diagram indicates the required adjacencies for the DOE-Office of Laboratory Operations planning unit.



Space Name: Open Office Area (DOE-OLO)

Security Zone: OZ

Goal/Activities: The open office area includes the areas of the planning unit that house the standard office spaces as well as the mail, copy, and storage spaces.

Spatial Mood: Utilitarian

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Staff Work Space (Sheet ID, C-5)	3	CS/CI
Filing/sorting System for mail	2	OS/OI
Counterspace	AGS criteria	CS/CI
Cabinetry	AGS criteria	CS/CI
Printers	3	OS/OI
Copier	1	OS/OI
Shredder	1	OS/OI
Filing cabinets	2	OS/OI
Fax machine	1	OS/OI

Notes:

1. Typical office space configurations, consistent with a cubicle set-up.
2. Use Architectural Graphics Standards criteria to establish work surface, storage, and cabinetry capacities.

DOE-Office of the Manager

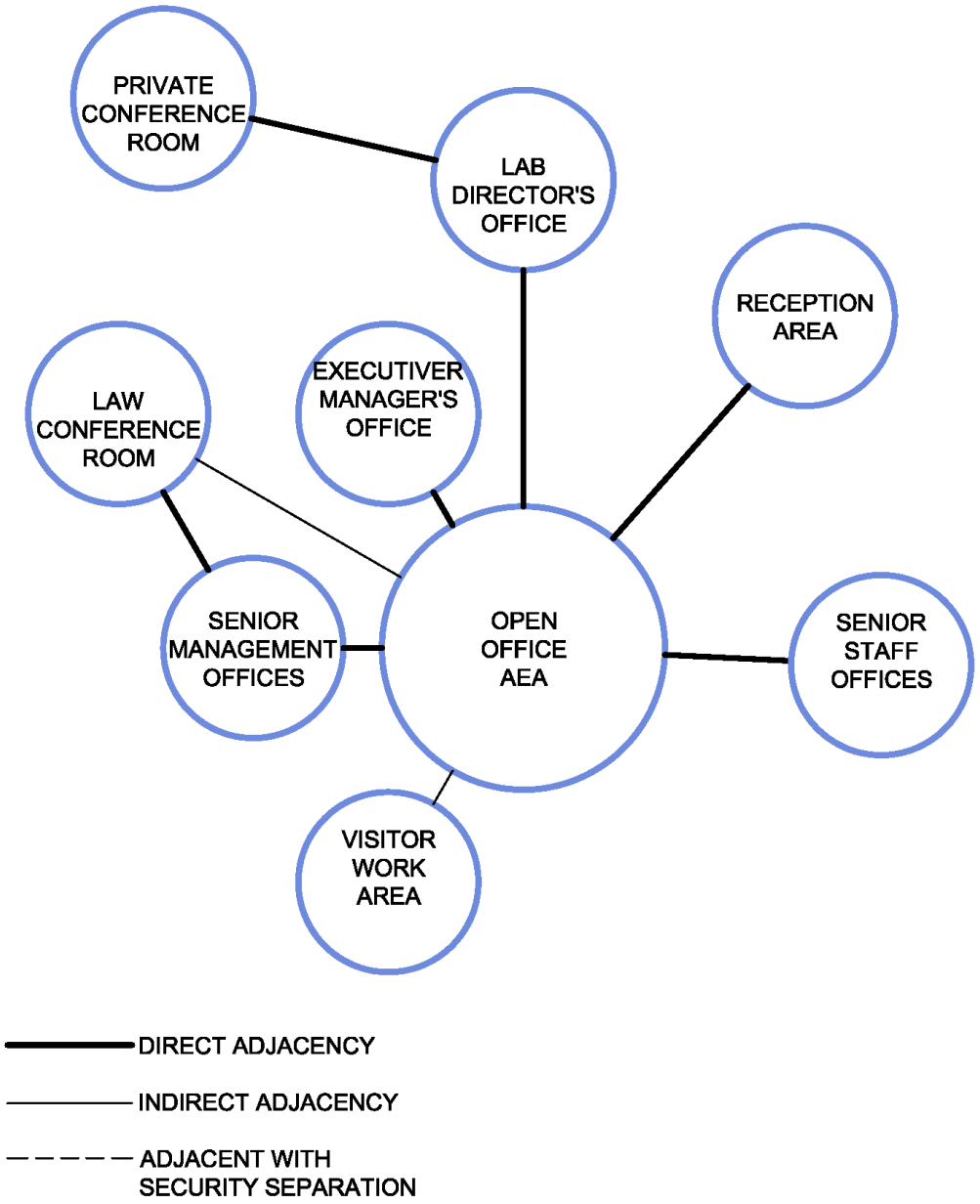
Provides direction and exercises management responsibility for the Golden Field Office. Management, coordination, and administration of Golden Field Office program oversight:

- Accountable for environmental, safety and health issues;
- Implementation and execution of Headquarters' program direction;
- Supports Headquarters' program strategic planning;
- Supports policy development efforts;
- Responsible for customer interface, including local and state level interface;
- Accountable for effective management and oversight of the National Renewable Energy Laboratory; and
- Establishes contractor performance metrics and conducts evaluations of the contractor.

Space Type		Space	Space Code	Desired			
				Qty	Net Square Foot	Occupant Load (Min)	Sheet ID
Interior Spaces	Personnel	Lab Director Office	SP2	1	400	1	C-1
		Executive Manager Office	SP2	1	275	1	C-2
		Senior Management Office	SP2	1	180	1	C-3
		Senior Staff Office	SP2	10	120	1	C-4
		Open Office Area	SP2 SP3	1	As Required	As Required	
		Visitor Work Area	SP2	1	240	3	
		Private Conference Room	SP5	1	600	35	
		Law Conference Room	SP5	1	150	15	
		Reception Area	SP2	1	120	2	

Adjacency Diagram

The following diagram indicates the required adjacencies for the DOE-Office of the Manager planning unit.



Space Name: Open Office Area (DOE-Office of the Manager)

Security Zone: OZ

Goal/Activities: The open office area includes the areas of the planning unit that house the standard office spaces as well as the mail, copy, and storage spaces.

Spatial Mood: Utilitarian

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Staff Work Space (Sheet ID, C-5)	9	CS/CI
Filing/sorting System for mail	2	OS/OI
Counterspace	AGS criteria	CS/CI
Cabinetry	AGS criteria	CS/CI
Printers	1	OS/OI
Copier	1	OS/OI
Shredder	2	OS/OI
Filing cabinets	2	OS/OI
Fax machine	2	OS/OI

Notes:

1. Typical office space configurations, consistent with a cubicle set-up.
2. Use Architectural Graphics Standards criteria to establish work surface, storage, and cabinetry capacities.

Space Name: Visitor Work Area

Security Zone: OZ

Goal/Activities: Provide workstation area for at least three visiting staff from Washington D.C. or outside stakeholders to gain access to the internet/network and work from the Golden Field Office. The square foot requirement for these three spaces is 80.

Spatial Mood: Professional, with as much privacy as possible within a shared environment.

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Workstation (80 sf)	3	CS/CI

Space Name: Private Conference Room

Security Zone: OZ

Goal/Activities: Provide a space to have formal meetings, ceremonial meetings, and accommodate guests such as dignitaries.

Spatial Mood: Corporate, dignified, high-quality and state-of-the-art.

Required Technologies: Wired and wireless connectivity; VOIP technology; dimmable lighting

Equipment:

Equipment	Quantity	Supplied/Installed
Conference table for 15-20 with integrated data and electrical ports	1	OS/CI
Chairs (for table)	15	OS/OI
Extra chairs	20	OS/OI
Serving Buffet for table (serves snacks/coffee) (18" x 6')	1	OS/CI
Built-in projector	1	CS/CI
Roll-down projection screen	1	CS/CI
2-door audio stand	1	OS/OI
Video TV and stand	1	OS/OI
Speaker phone	1	OS/OI
Display phone	1	OS/OI
Whiteboard	48 sf	CS/CI

Space Name: Law Conference Room

Security Zone: OZ

Goal/Activities: Provide a conference area for legal research and the Law Library.

Spatial Mood: Private and comfortable

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Conference table with integrated electrical and data ports (Seats 6)	1	CS/CI
Chairs	8	OS/OI
Whiteboard	1	CS/CI
Speaker phone	1	OS/OI
Workstation (research intern)	1	CS/CI

Space Name: Reception area

Security Zone: RZ

Goal/Activities: Meet and greet visiting staff from Washington DC or outside political stakeholders.

Spatial Mood: Open and inviting

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Coffee table	1	OS/OI
Chairs	4	OS/OI
Reception desk with counter	1	CS/CI
Reception desk chair	1	OS/OI

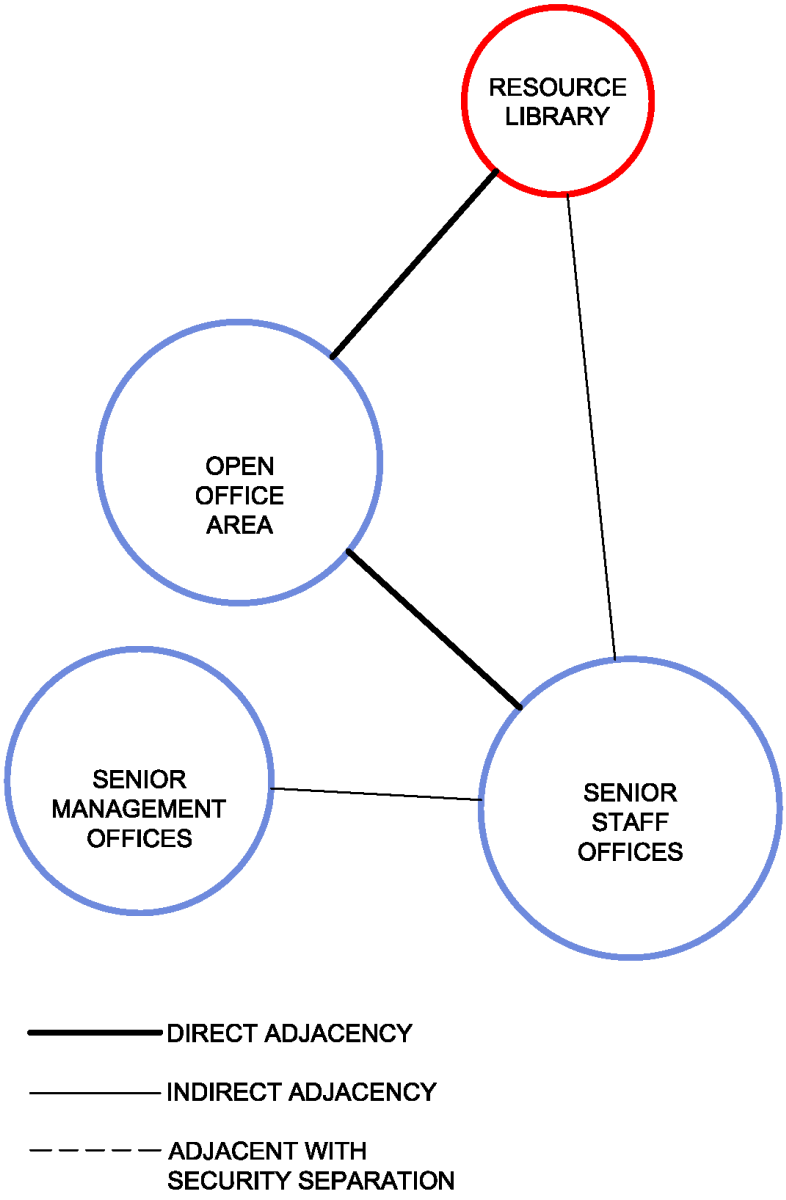
Strategic Energy Analysis and Applications Center

The mission of the Strategic Energy Analysis and Applications Center (SEAAC) center is to do both analysis and market applications oriented work to inform and impact policy, and market decisions to advance the use of renewable energy both nationally and internationally. The center is organized into teams including a team focused on energy modeling, policy, federal markets, state and local markets and international and environmental activities. Staff works collaboratively in teams and increasingly across teams. Many of the team members travel extensively so on any given day, many are on the road and many work remotely using laptop computers, Blackberries, etc.

Space Type		Space	Space Code	Desired			
				Qty	Net Square Foot	Occupant Load (Min)	Sheet ID
Interior Spaces	Personnel	Senior Management Office	SP2	9	180	1	C-3
		Senior Staff Office	SP2	19	120	1	C-4
		Open Office Area	SP2 SP3	1	As Required	As Required	
	Storage	Resource Library	SS	1	180	n/a	

Adjacency Diagram

The following diagram indicates the required adjacencies for Strategic Energy Analysis and Applications (SEAAC) planning unit.



Space Name: Open Office Area (SEAAC)

Security Zone: OZ

Goal/Activities: The open office area includes the areas of the planning unit that house the standard office spaces as well as the mail, copy, and storage spaces.

Spatial Mood: Utilitarian

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Staff Work Space (Sheet ID, C-5)	47	CS/CI
Student/Temp Work Space (Sheet ID, C-6)	10	CS/CI
Filing/sorting System for mail	2	OS/OI
Counter space	AGS criteria	CS/CI
Cabinetry	AGS criteria	CS/CI
Printers	9	OS/OI
Copier	1	OS/OI
Shredder	1	OS/OI
Lateral file storage	16 lf	CS/CI
Filing cabinets	23	OS/OI
Fax machine	1	OS/OI

Notes:

1. Typical office space configurations, consistent with a cubicle set-up.
2. Use Architectural Graphics Standards criteria to establish work surface, storage, and cabinetry capacities.

Space Name: Resource Library

Security Zone: OZ

Goal/Activities: Provide a space for storage and use of resources.

Spatial Mood: Comfortable

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Shelving	150 lf	CS/CI
5-drawer file cabinets (4 ft wide)	13	OS/OI

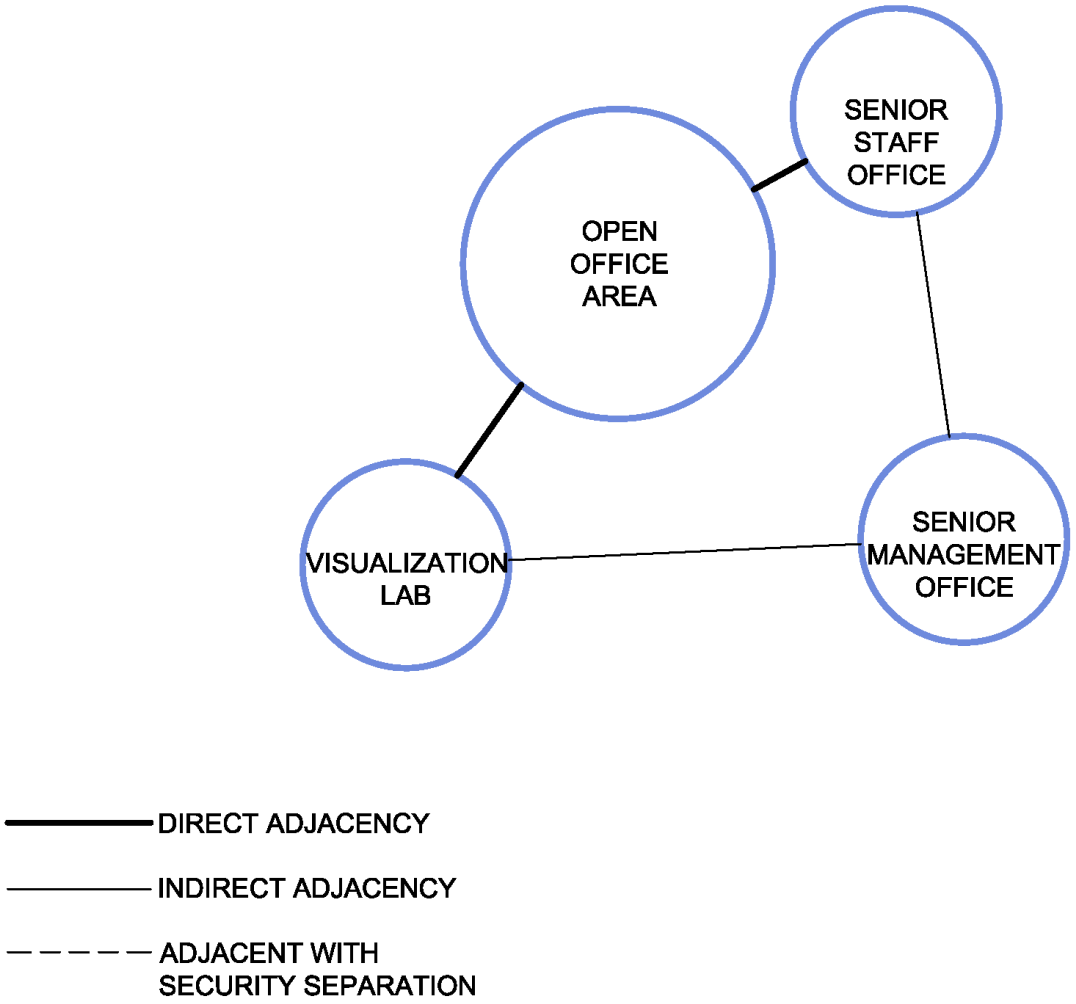
Center for Buildings and Thermal Systems

This is a research center which conducts research in heat transfer, thermal dynamics, and systems engineering to reduce the energy consumption of buildings. NREL is a nationally recognized leader in buildings research combining renewable energy with innovative technologies to significantly reduce energy consumption in buildings. Our research accelerates industry adoption of advanced energy efficiency and renewable energy technologies in both the residential (www.nrel.gov/buildings/residential.html) and commercial (www.nrel.gov/buildings/commercial.html) buildings marketplace. The research center has a laboratory building with several of its staff already located at the South Table Mountain Site. The center operates in a team structure, where each team has a certain focus such as residential buildings and commercial buildings. Several of the teams have an interest in locating in "team rooms" for a more collaborative space. Staff travels fairly extensively.

Space Type		Space	Space Code	Desired			
				Qty	Net Square Foot	Occupant Load (Min)	Sheet ID
Interior Spaces	Personnel	Senior Management Office	SP2	6	180	1	C-3
		Senior Staff Office	SP2	11	120	1	C-4
		Open Office Area	SP2 SP3	1	As Required	As Required	
		Visualization Lab	SP3	1	315	n/a	

Adjacency Diagram

The following diagram indicates the required adjacencies for the Centers for Buildings and Thermal Systems planning unit.



Space Name: Open Office Area (Center for Buildings and Thermal Systems)

Security Zone: OZ

Goal/Activities: The open office area includes the areas of the planning unit that house the standard office spaces as well as the mail, copy, and storage spaces.

Spatial Mood: Utilitarian

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Staff Work Space (Sheet ID, C-5)	25	CS/CI
Student/Temp Work Space (Sheet ID, C-6)	15	CS/CI
Filing/sorting System for mail	2	OS/OI
Counter space	AGS criteria	CS/CI
Cabinetry	AGS criteria	CS/CI
Printers	4	OS/OI
Copier	1	OS/OI
Shredder	2	OS/OI
Lateral file storage	16 lf	CS/CI
Filing cabinets	32 lf	OS/OI
Fax machine	2	OS/OI
Work table	6 lf	CS/CI
Scanner	1	OS/OI

Notes:

1. Typical office space configurations, consistent with a cubicle set-up.
2. Use Architectural Graphics Standards criteria to establish work surface, storage, and cabinetry capacities.

Space Name: Visualization Lab

Security Zone: OZ

Goal/Activities: Provide a space to utilize a smart board and projector in a computational capacity.

Spatial Mood: Utilitarian

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Table (seats 8) integrated electrical and data ports	1	CS/CI
Chairs	8	OS/OI
Projector	1	OS/OI
Projection surface	64 sf	CS/CI
Design-jet printer and plotter	1	OS/OI
Shredder	1	OS/OI
Filing cabinets	4	OS/OI

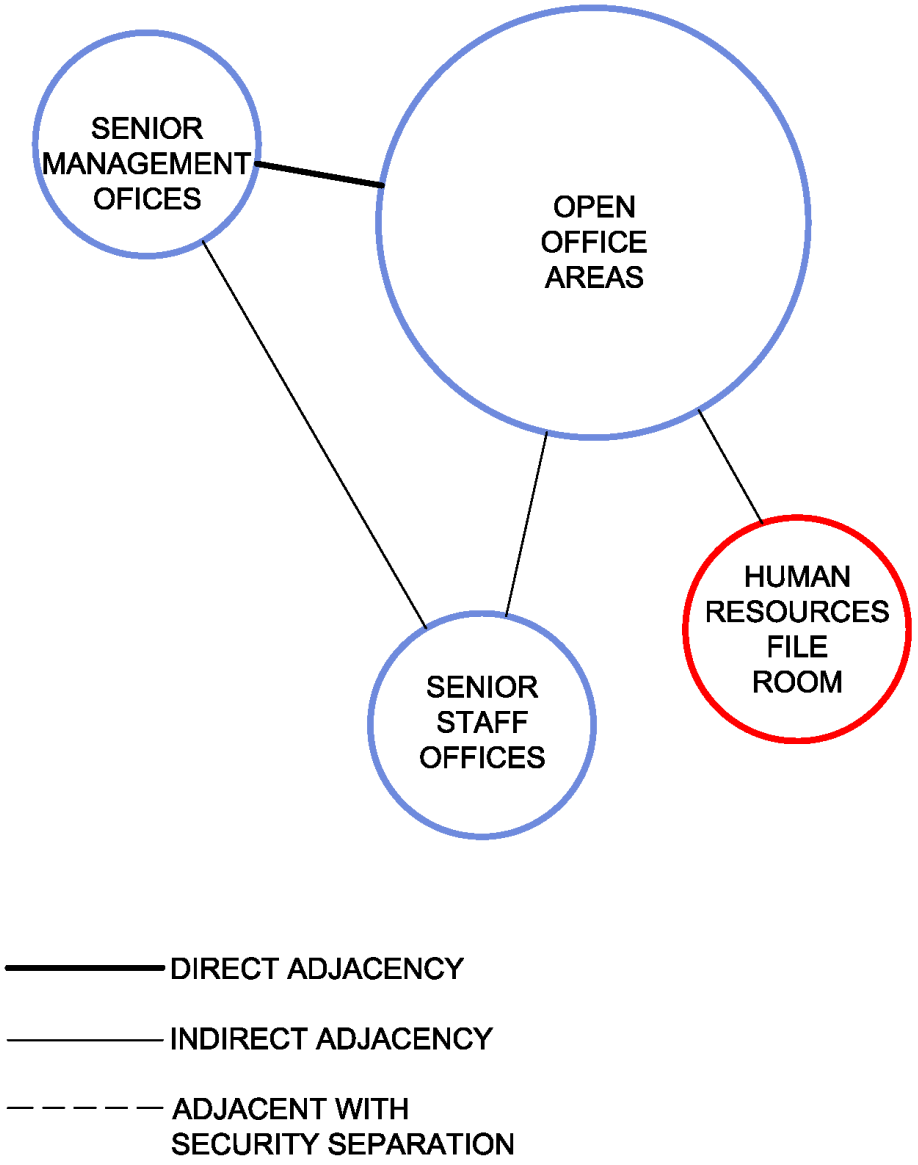
DOE-Office of Management and Administration

The DOE-Office of Management and Administration (OMA) provides business and advisory services to the Golden Field Office staff in all assigned functional areas: Human Resource, Finance, Information Technology, Federal Occupational Safety and Health, Property Management, and NEPA (National Environmental Protection Act).

Space Type		Space	Space Code	Desired			
				Qty	Net Square Foot	Occupant Load (Min)	Sheet ID
Interior Spaces	Personnel	Senior Management Office	SP2	1	275	1	C-1
		Senior Staff Office	SP2	13	120	1	C-4
		Open Office Area	SP2 SP3	1	As Required	As Required	
	Storage	Human Resources File Room	SS	1	1152	n/a	

Adjacency Diagram

The following diagram indicates the required adjacencies for the DOE-Office of Management and Administration planning unit.



Space Name: Open Office Area (DOE-OMA)

Security Zone: OZ

Goal/Activities: The open office area includes the areas of the planning unit that house the standard office spaces as well as the mail, copy, and storage spaces.

Spatial Mood: Utilitarian

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Staff Work Space (Sheet ID, C-5)	39	CS/CI
Filing/sorting System for mail	2	OS/OI
Counterspace	AGS criteria	CS/CI
Cabinetry	AGS criteria	CS/CI
Printers	1	OS/OI
Copier	1	OS/OI
Shredder	1	OS/OI
Filing cabinets	2	OS/OI
Fax machine	1	OS/OI

Notes:

1. Typical office space configurations, consistent with a cubicle set-up.
2. Use Architectural Graphics Standards criteria to establish work surface, storage, and cabinetry capacities.

Space Name: Human Resources File Room

Security Zone: SZ

Goal/Activities: Provide a 3-hour fireproof enclosure to store files, hardcopies of assistance awards, solicitations, and acquisition contracts.

Spatial Mood: Utilitarian

Required Technologies: Fire suppression

Equipment:

Equipment	Quantity	Supplied/Installed
Bookcase shelving	10 lf	CS/CI
Waterproof cabinets		CS/CI
Compact shelving	450lf	OS/OI
Circular File Cabinet	36sf	OS/OI
File Manager's Workstation	80sf	CS/CI
Shared workstation	40sf	CS/CI

Notes:

1. Regulatory standards for file storage do not apply, however, GO prefers the design to consider best practices referenced in the NARA Code of Federal Regulations, Part 1228, Subpart K.

DOE-Office of Commercialization and Project Management

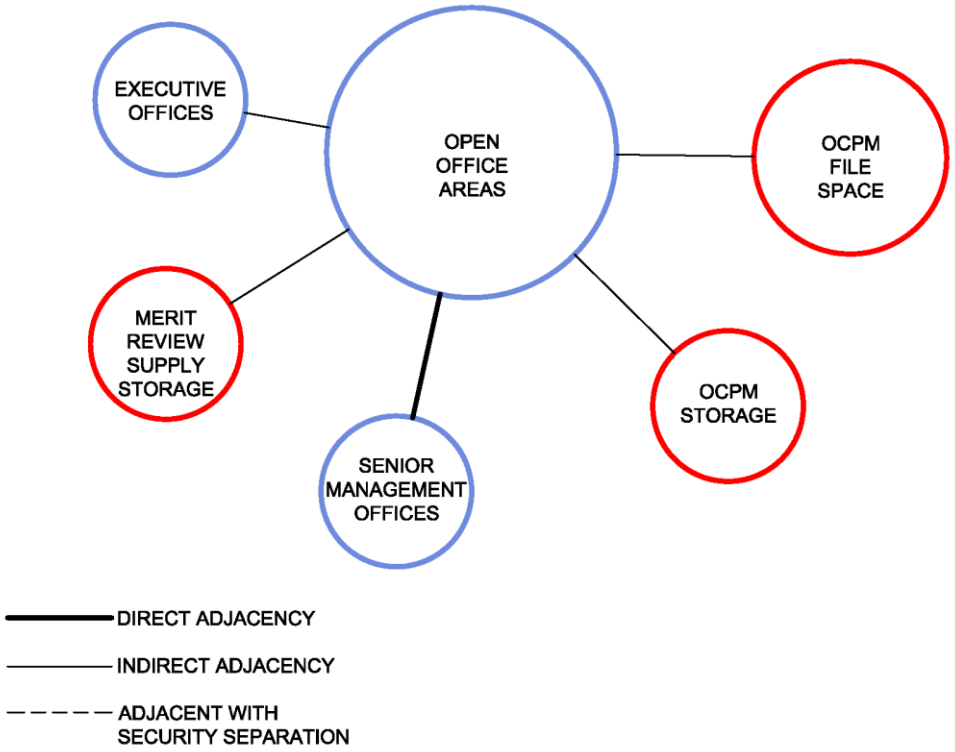
The mission of the DOE-Office of Commercialization and Project Management (OCPM) is to support the Department of Energy's Office of Energy Efficiency and Renewable Energy (EERE) through partnerships at the state and local level to remove barriers to the deployment of technologies and conduct education and outreach to increase market awareness of technologies. OCPM also provides project management functions in relation to EERE's financial assistance award portfolio for all renewable technologies.

In carrying out its mission, OCPM provides: project management and outreach to EERE programs; and technical assistance, training, and program development assistance in partnership with customers and stakeholders in the field. The OCPM also provides states and other customers with tools to analyze energy, environmental and economic impacts and serves as a resource, catalyst and customer broker for technology deployment and partnerships.

Space Type		Space	Space Code	Desired			
				Qty	Net Square Foot	Occupant Load (Min)	Sheet ID
Interior Spaces	Personnel	Executive Manager Office	SP2	1	275	1	C-2
		Senior Management Office	SP2	2	180	1	C-3
		Senior Staff Offices	SP2	39	120	1	C-4
		Open Office Area	SP2 SP3	1	As Required	As Required	
		Resource Room	SP2	1	120	2	
	Storage	Merit Review Supply Storage	SS	1	160	2	
		OCPM Storage	SS	1	185		
		OCPM File Space	SS	1	240		

Adjacency Diagram

The following diagram indicates the required adjacencies for the DOE-Office of Commercialization and Project Management planning unit.



Space Name: Open Office Area (DOE-OCPM)

Security Zone: OZ

Goal/Activities: The open office area includes the areas of the planning unit that house the standard office spaces as well as the mail, copy, and storage spaces.

Spatial Mood: Utilitarian

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Staff Work Space (Sheet ID, C-5)	65	CS/CI
Filing/sorting System for mail	2	OS/OI
Counterspace	AGS criteria	CS/CI
Cabinetry	AGS criteria	CS/CI
Printers	4	OS/OI
Copier	2	OS/OI
Shredder	1	OS/OI
Filing cabinets	2	OS/OI
Fax machine	1	OS/OI
Plotter (6'X3')	1	OS/OI
Storage Cabinets	10lf	CS/CI

Notes:

1. Typical office space configurations, consistent with a cubicle set-up.
2. Use Architectural Graphics Standards criteria to establish work surface, storage, and cabinetry capacities.

Space Name: Merit Review Supply Room

Security Zone: OZ

Goal/Activities: Provide a supply room to be used in conjunction with regularly occurring meetings with outside stakeholder/merit reviewers.

Spatial Mood: Private

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Book case shelving	10 lf	CS/CI

.

Space Name: OCPM Storage

Security Zone: OZ

Goal/Activities: Provide a supply room to be used for outreach displays and marketing materials.

Spatial Mood: Storage

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Book case shelving	15 lf	CS/CI

Space Name: OCPM Resource Room

Security Zone: OZ

Goal/Activities: Provide space for plotters and digital printing equipment

Spatial Mood: Printing Environment

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Plotter (6' X 3')	1	OS/OI
Workstations (4' X 3")	2	CS/CI
Tabletop/countertop	1	CS/CI
Bookshelves	10 lf	CS/CI
Storage Cabinets	10 lf	CS/CI

Notes:

1) Provide adequate countertop space for television, dvd/vhs player, scanner, high-quality printing and fax.

2) Storage cabinets house miscellaneous electronics and office materials in support of equipment.

Space Name: OCPM File Space

Security Zone: OZ

Goal/Activities: Provide space for hardcopies of project management documents

Spatial Mood: Files Storage

Required Technologies: n/a

Equipment:

Equipment	Quantity	Supplied/Installed
Compact Shelving	64 lf	OS/OI
Tabletop/countertop (6' X 4')	1	CS/CI

DOE-Office of Acquisition and Financial Assistance

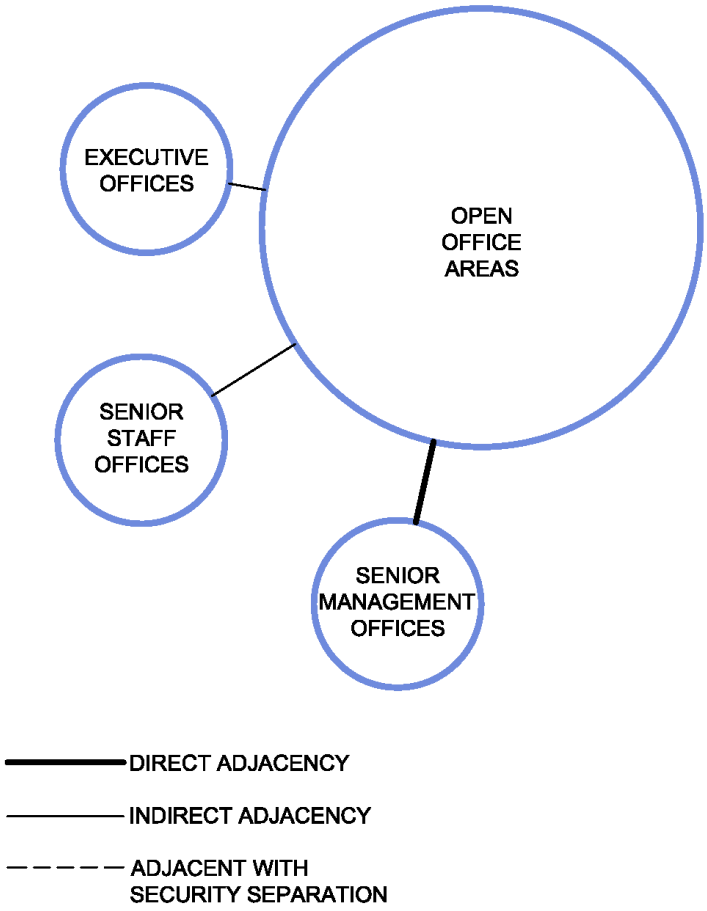
The DOE-Office of Acquisition and Financial Assistance (OAFA) handles procurements made through either Financial Assistance or Acquisition. OAFA works with the project staff to develop and determine the Government's needs, develop a procurement strategy, issue announcements/solicitations, assist in the evaluation of the responses, develop selection statements, negotiate and sign the resultant awards. Golden is responsible for the following EERE technologies:

- Biomass Program
- Federal Energy Management Program
- Geothermal Technologies Program
- Hydrogen, Fuel Cells, and Infrastructure Technologies Program
- Industrial Technologies Program
- Solar Energy Technology Program
- Wind and Hydropower Technologies Program
- Native American Program

Space Type		Space	Space Code	Required			
				Qty	Net Square Foot	Occupant Load (Min)	Sheet ID
Interior Spaces	Personnel	Executive Manager Office	SP2	1	275	1	C-2
		Senior Management Office	SP2	2	180	1	C-3
		Senior Staff Office	SP2	15	120	1	C-4
		Open Office Area	SP2 SP3	1	As Required	As Required	

Adjacency Diagram

The following diagram indicates the required adjacencies for the DOE-Office of Acquisition and Financial Assistance planning unit.



Space Name: Open Office Area (DOE-OAFA)

Security Zone: OZ

Goal/Activities: The open office area includes the areas of the planning unit that house the standard office spaces as well as the mail, copy, and storage spaces.

Spatial Mood: Utilitarian

Required Technologies: Wired and wireless connectivity; VOIP technology.

Equipment:

Equipment	Quantity	Supplied/Installed
Staff Work Space (Sheet ID, C-5)	39	CS/CI
Filing/sorting System for mail	2	OS/OI
Counterspace	AGS criteria	CS/CI
Cabinetry	AGS criteria	CS/CI
Printers	1	OS/OI
Copier	1	OS/OI
Shredder	2	OS/OI
Filing cabinets	2	OS/OI
Fax machine	2	OS/OI

Notes:

1. Typical office space configurations, consistent with a cubicle set-up.
2. Use Architectural Graphics Standards criteria to establish work surface, storage, and cabinetry capacities.

END OF SECTION - PLANNING UNIT PROGRAMS

PART 3-PERFORMANCE SPECIFICATIONS

FACILITY PERFORMANCE

PERFORMANCE

A. Basic Function:

1. Provide built elements and limited site modifications as required to fulfill needs described in the project program.
2. The complete project comprises the following elements:
    a. Substructure: Elements below grade and in contact with the ground.
    b. Shell: The superstructure, exterior enclosure, and the roofing.
    c. Interiors: Interior construction, stairs, finishes, and fixtures, except fixtures associated with services and specialized equipment.
    d. Services: Mechanized, artificial, automatic, and unattended means of supply, distribution, transport, removal, disposal, protection, control, and communication.
    e. Equipment and Furnishings: Fixed and movable elements operated or used by occupants in the functioning of the project.
    f. Limited Sitework: Modifications to the site, site improvements, and utilities.
3. Code: Make all portions of the project comply with the code. The code referred to herein consists of all applicable local, State, and federal regulations, including those listed below:
    a. Federal Regulatory Requirements:
        1) Americans with Disabilities Act of 1990, as a public accommodation, as implemented in:
            a) 28 CFR 36, Department of Justice regulations, including ADAAG-1994.
        2) 29 CFR 1910, Occupational Safety and Health Standards, as a work place.
        3) Executive Order 13423 (http://ofee.gov/eo/eo13423_main.asp)
    b. State of Colorado regulatory requirements, which incorporate and/or amend the following:
        1) ICC International Building Code, latest adopted version.
        2) ICC International Fire Code, latest adopted version.
        3) ICC International Mechanical Code, latest adopted version.
        4) ICC International Plumbing Code, latest adopted version.
        5) NFPA 101, Safety to Life From Fire in Buildings and Structures, most current version.
        6) NFPA 70, National Electrical Code, 2005.
4. Environmentally Responsible Design: In addition to other requirements, provide design and construction that minimizes adverse effects on the exterior environment, enhances the quality of the indoor environment, and minimizes consumption of energy, water, construction materials, and other resources.
    a. Achieve at least a Platinum rating in accordance with U.S. Green Buildings Council LEED-NC Green Building Rating System, version 2.2; selection of specific credits to achieve is the responsibility of Design-Builder unless otherwise indicated; comply with criteria specified in current Rating System documentation as well as related criteria specified in other Sections.
    b. The goals listed below are some of those that are applicable to the project.

1) The goals indicated as "required" must be achieved.
2) The goals indicated as "desirable" will be given high priority in evaluating proposals, as specified in Instructions to Offerors (Part 1-Procedures).
3) The goals indicated as "if possible" must be achieved if the design and site considerations allow.
4) The goals indicated "as specified" have different requirements specified in other Sections.

c. Sitework:
1) Bicycle and cyclist facilities: Required.
2) Minimum surface disturbance: Required.
3) Sediment and erosion control: Required.

d. Energy Conservation:
1) Energy efficiency exceeding minimum specified: Desirable.
2) On-site renewable energy sources: Desirable.
3) Improvement of efficiency through comprehensive building commissioning: Required.
4) Energy and water consumption measurement and verification systems: Required.
5) No use of CFC-based refrigerants: Required.
6) Use of HCFC's (or other EPA approved alternative) with as low an Ozone Depleting Potential (ODP) as possible: Required.
7) No use of Halon: Required.

e. Conservation of Materials and Resources:
1) Central location for collection and storage of recyclables: Required.
2) Recycling and/or salvaging of construction waste: Required.
3) Use of salvaged or refurbished materials: Required.
4) Use of materials containing recycled content: Required.
5) Use of local/regional materials: Desirable.
6) Use of rapidly renewable materials: Desirable.
7) Use of certified wood: Desirable.

f. Indoor Environmental Quality:
1) Smoking will be prohibited in the building.
2) Air isolation of janitor closets: Required
3) Minimum ventilation performance: Required.
4) Construction procedures that reduce impact on interior air quality during and after construction: Desirable.
5) Use of materials that are low-emitting, non-toxic, and chemically inert: Required.
6) Control of sources of indoor pollutants: Required.
7) Thermal comfort conditions: As specified.
8) Provision of daylighting: Required.

9) Provision of views to outdoors: Desirable.

g. Substantiation:

1) Proposal Stage: LEED™ Checklist annotated to show specific credits to be achieved with brief description of how they will be achieved.

2) Design Development and Construction Documents Stages:

a) LEED™ Checklist annotated to show specific credits status of design related to specific credits to be achieved.

b) Comprehensive checklist of certification documentation specified in LEED™ Reference Guide, annotated to show which forms of documentation have been submitted.

c) The documentation specified in LEED™ Reference Guide that is relevant to the degree of completion of the design; at subsequent design stages it will not be necessary to repeat submissions of the same documentation unless the design has changed.

3) At Completion: LEED™ Certification, by U.S. Green Buildings Council.

a) Design-Builder shall submit application and pay applicable fees and respond to all inquiries.

b) Design-Builder shall provide all certification documentation and install certification plaque.

c) Design-Builder shall provide Owner a complete duplicate of certification documentation.

h. Executive Order: Strengthening Federal Environmental, Energy, and Transportation Management.

1) Improve energy efficiency and reduce greenhouse gas emissions of the agency, through reduction of energy intensity by 3% annually through the end of fiscal year 2015, or 30% by the end of fiscal year 2015, relative to the baseline of the agency's energy use in 2003;

2) ensure that at least of the statutorily required renewable energy consumed by the agency in a fiscal year comes from renewable sources, and to the extent feasible, the agency implements renewable energy generation projects on agency property for agency use;

3) beginning in FY 2008, reduce water consumption intensity, relative to the baseline of the agency's water consumption in fiscal year 2007, through life-cycle cost-effective measures by 2 percent annually through the end of fiscal year 2015 or 16 percent by the end of fiscal year 2015;

4) require in agency acquisitions of goods and services (i) use of sustainable environmental practices, including acquisition of biobased, environmentally preferable, energy-efficient, water-efficient, and recycled-content products, and (ii) use of paper of at least 30 percent post-consumer fiber content;

5) ensure that the agency (i) reduces the quantity of toxic and hazardous chemicals and materials acquired, used, or disposed of by the agency, (ii) increases diversion of solid waste as appropriate, and (iii) maintains cost-effective waste prevention and recycling programs in its facilities;

6) ensure that (i) new construction and major renovation of agency buildings comply with the Guiding Principles for Federal Leadership in High Performance and Sustainable

Buildings set forth in the Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding (2006), and (ii) 15 percent of the existing Federal capital asset building inventory of the agency as of the end of fiscal year 2015 incorporates the sustainable practices in the Guiding Principles;

7) ensure that, if the agency operates a fleet of at least 20 motor vehicles, the agency, relative to agency baselines for fiscal year 2005, (i) reduces the fleet's total consumption of petroleum products by 2 percent annually through the end of fiscal year 2015, (ii) increases the total fuel consumption that is non-petroleum-based by 10 percent annually, and (iii) uses plug-in hybrid (PIH) vehicles when PIH vehicles are commercially available at a cost reasonably comparable, on the basis of life-cycle cost, to non-PIH vehicles; and

8) ensure that the agency (i) when acquiring an electronic product to meet its requirements, meets at least 95 percent of those requirements with an Electronic Product Environmental Assessment Tool (EPEAT)-registered electronic product, unless there is no EPEAT standard for such product, (ii) enables the ENERGY STAR feature on agency computers and monitors, (iii) establishes and implements policies to extend the useful life of agency electronic equipment, and (iv) uses environmentally sound practices with respect to disposition of agency electronic equipment that has reached the end of its useful life.

i. Substantiation:

1) Proposal Stage:

a) Checklist annotated to show specific techniques and systems to be utilized with brief description of how the objectives will be met.

b) Provide report indicating means of communication and reporting agency that establishes the methods to achieve the initiatives.

2) Design Development and Construction Documents Stages:

a) Identification of and implementation of tools to be utilized to monitor compliance with the Executive Order as well as the person responsible for proper documentation and certification.

3) At Completion:

a) Provide all required documentation and commissioning activities that ensured compliance with the initiatives stated in the Executive Order to the Owner.

5. In addition to the requirements of this section, comply with requirements of Project Information (Part 1-Procedures) and Design and Construction Procedures (Part 1-Procedures).

B. Amenity and Comfort:

1. Thermal Performance: Design and construct to provide comfortable interior environment in accordance with the code and the following:

a. Summer Interior Design Conditions:

1) Daytime Setpoint: 72 deg F (21 deg C), plus or minus 2 deg F (1 deg C) except as specified in the project program.

2) Night Setback: 78 deg F (25 deg C).

3) Interior Relative Humidity: 50 percent, maximum.

b. Winter Interior Design Conditions:

1) Daytime Setpoint: 70 deg F (20 deg C), plus or minus 2 deg F (1 deg C) except as

specified in the project program.

2) Night Setback: 55 deg F (13 deg C)

3) Interior Relative Humidity: 10 percent, minimum.

c. Energy Design Wind Speed: 25 mph (40 km/h).

d. Typical operating conditions shall be in compliance with ASHRAE 55.

C. Health and Safety:

1. Fire Resistance: Provide appropriate Type construction in accordance with IBC International Building Code and Section Fire Protection.

2. Prevention of Accidental Injury: As required by code and as follows:

a. Safety Glazing: As defined by 16 CFR 1201; provide in locations required by code, glazed areas subject to human impact, glazed areas at grade, and doors.

b. Other requirements specified in other Sections and integration of elements of Safe Design.

3. Health Hazards:

a. Design to prevent growth of fungus, mold, and bacteria on surfaces and in concealed spaces.

b. Hazardous Construction Materials: Design and construct to comply with the requirements of the code.

1) Designs shall not make use of Polychlorinated biphenyls (PCB's).

c. Indoor Air Quality: Design and construct to comply with the code and the following:

1) Acceptable air quality as defined by ANSI/ASHRAE 62.1-2004.

2) Substantiation:

a) Design Development: Identification of methods to be used to comply with requirements; ventilation design calculations. Identification of unusual indoor contaminants or sources, and methods to mitigate their effects on occupants.

b) Commissioning: Field measured outside and supply air quantities for each space and its associated air handler.

4. Physical Security: In addition to any provisions that may be required by law or code, design and construct both exterior and interior spaces to incorporate accepted principles of crime prevention through environmental design (CPTED), using natural (as opposed to technological) methods of providing surveillance, access control, and territorial reinforcement wherever possible.

a. Definition of Elements at Ground Level: For purposes of physical security, any element within 20 feet (6 m) of the ground, grade, or adjacent paving.

b. Security Zones:

1) Public Access Zone: That area to which the public has free access, including public corridors, grounds, and parking lots.

2) Reception Zone: The area to which the general public has access but beyond which access is restricted at all times.

3) Operations Zone: The area to which only employees and visitors with a legitimate reason to be there have access.

4) Secure Zone: The area to which access is always controlled and which is monitored

continuously.

5. Electrically-Operated Equipment and Appliances: UL listed for application or purpose to which they are put; suitable for wet locations listing for exterior use.

D. Structure:

1. Earthquake Loads: Accommodate loads as prescribed by code.

2. Wind Loads: South Table Mountain Site Per IBC (100 mph Fastest Mile; 120 mph-3 second gust).

E. Durability:

1. Expected Service Life Span: Expected functional service life of the built portions of this project is 50 years.

a. Service life spans of individual elements that differ from the overall project life span are defined in other Sections.

b. Additional requirements for elements not required to have life span equal to that of the project as a whole are specified below under "Operation and Maintenance."

c. Substantiation: Since actual service life cannot be proven, substantiation of actual service life is not required; however, the following are reasonable indicators of anticipatable service life:

1) Preliminary Design or Design Development: Service life expectancy analysis, for each element for which life span is specified; including:

a) Length of effective service life and aesthetic service life if specified, with action required at end; e.g. complete replacement, partial replacement, and refurbishment.

b) Basis of time estimates; e.g. proven-in-use application.

c) Basis of confidence in time estimates; e.g. similarity of present application to proven-in-use application.

d) Conditions under which estimate will be valid; e.g. expected uses, inspection frequency, maintenance frequency, etc.

2) Design Development: Replacement cost, in today's dollars, for each major element that has a service life expectancy less than that of the project; include both material and labor cost, but not overhead or profit; base costs on installing in existing building, not as a new installation.

3) Design Development: Life cycle cost of project, over the specified project service life, excluding operating staff costs; include costs of:

a) Replacement of each element not expected to last the life of the project; identify the frequency of replacement.

b) Routine maintenance of operating equipment, including replacement of worn parts before failure; identify frequency of maintenance.

c) Calculate costs in today's dollars, disregarding the time value of money, inflation, taxes, and insurance.

2. Biological Factors:

a. Animals: Do not use materials that are attractive to or edible by animals or birds.

b. Insects: Do not use materials that are edible by insects, unless access by insects is

prevented.

1) Wood: When wood is used, provide at least the protection recommended by AWPA as contained in AWPA U1-2007.

F. Operation and Maintenance:

1. Space Efficiency: Minimize floor area required while providing specified spaces and space relationships, plus circulation and services areas required for functions.

a. Substantiation: Areas and ratios measured and calculated in accordance with ANSI/BOMA Z65.1-1996.

1) Proposal: Calculation of Gross Building Area, Building Common Area and Floor Common Areas, and net area of each space.

2. Energy Efficiency: Minimize energy consumption while providing function, amenity, and comfort specified.

a. Provide energy efficient design using procedures and values specified in ASHRAE 90.1-2004.

1) Provide at least 50 percent less energy consumption than that of an equivalent minimally-complying baseline building, demonstrated by comparing the actual Design Energy Cost to the Energy Cost Budget of a prototype building, both calculated in accordance with ASHRAE 90.1.

2) Reference Project Goals (listed in Project Program) for required energy efficiency goals including the goal of using as little as "25 kBTU/sf/year" total energy consumption. Calculations shall be based on RSF Energy Target Definitions, dated 10/15/2007 (available from NREL).

b. Substantiation:

1) Proposal: Calculation demonstrating the "kBTU/sf/year" of the proposed design concept.

2) Proposal: Identification of method of calculation of energy efficiency to be employed.

3) Design Development: Detailed listing of design criteria and design analysis showing compliance, prepared by a licensed mechanical and electrical engineers.

4) Design Development: Projected energy consumption of all energy-consuming equipment and systems over the first year of operation; include analysis of probable change in annual energy consumption over time due to aging.

5) Construction Documents: Updated detailed listing of design criteria and design analysis showing compliance, prepared by a licensed mechanical and electrical engineers.

6) Construction Documents: Updated projected of energy consumption of all energy-consuming equipment and systems over the first year of operation; include analysis of probable change in annual consumption over time due to aging.

7) Commissioning: Actual measurements of energy consumption for all energy-consuming equipment and systems that demonstrate compliance with the design criteria and analysis.

8) Closeout: Recalculation using actual measurements of energy-consuming equipment and systems that demonstrate compliance with the design criteria and analysis.

3. Water Consumption: Minimize water consumption.

a. Substantiation:

1) Proposal: Estimated quantity of water that will be used in the first year of operation, divided into domestic water, HVAC water, and other water categories, with quantity of water recycled, if any; include basis of estimates.

2) Design Development: Quantity of water that will be used in the first year of operation, divided into domestic water, HVAC water, and other water categories, with required storage capacity and quantity of water recycled, if any; include basis of calculations.

3) Construction Documents: Updated water consumption, based on actual equipment selections and sizes.

4. Ease of Operation: Provide facility, equipment, and systems that are easily operated by personnel with a reasonable level of training for similar activities.

a. Minimize the need for specialized training in operation of specific equipment or systems; identify all equipment and systems for which the manufacturer recommends or provides training programs.

b. Train Owner's personnel in operation of equipment and systems; see Part 1-Procedures (Design and Construction Procedures (Part 1-Procedures) for additional requirements.

c. Substantiation:

1) Proposal: Type of operating personnel and amount of training required; identification of each equipment item or system for which more than one day of training is required; identify source of data.

2) Design Development: Operating impact analysis, including identification of type and quantity of staff, tools, and supplies required; estimate of impact that aging materials will have on operating requirements; no cost calculations required; identify source of data.

5. Ease of Maintenance: Minimize the amount of maintenance required.

a. Substantiation:

1) Design Development: Maintenance cost for first year of operation, based on use of maintenance subcontracts; estimate of the impact that aging materials will have on maintenance costs; description of maintenance activities included in estimated cost.

2) Construction Documents: Updated maintenance cost for first year of operation, based on actual product selections.

6. Ease of Repair: Elements that do not meet the specified requirements for ease of repair may be used, provided they meet the specified requirements for ease of replacement of elements not required to have service life span equal to that specified for the project as a whole; the service life expectancy analysis and life cycle cost substantiation specified for service life are provided; and Owner' acceptance is granted.

7. Allowance for Changes in Occupancy and Arrangement:

a. Office Spaces: Design for churn of 15 to 30 percent, requiring periodic minor changes in location or layout of workplaces.

1) Size and Layout: So that relocation of individuals and small groups can be accomplished overnight with no disruption of work and no disruption of work of neighbors and no degradation of functionality or amenity.

2) Owner requires that operations staff be able to make such adjustments without technical help, with only a few days ordering/delivery time for new components.

3) Where fixed partitions are used to separate spaces, most components of relocated partitions need to be salvageable.

b. Substantiation:

1) Design Development: Incorporation of costs of anticipated changes into life cycle cost analysis.

ELEMENTS AND PRODUCTS

A. In addition to requirements specified in other Sections, provide products and elements that comply with the following.

1. Energy Conservation, Energy Efficient and ENERGY STAR Products shall apply to all NREL facilities. Refer to (http://www.eren.doe.gov/femp/procurement/begin.html).

B. Elements Made Up of More Than One Product:

1. Where an element is specified by performance criteria, use construction either proven-in-use or proven-by-mock-up, unless otherwise indicated.

a. Proven-In-Use: Proven to comply by having actually been built to the same or very similar design with the same materials as proposed and functioning as specified.

b. Proven-by-Mock-Up: Compliance reasonably predictable by having been tested in full-scale mock-up using the same materials and design as proposed and functioning as specified. Testing need not have been accomplished specifically for this project; when published listings of independent agencies include details of testing and results, citation of test by listing number is sufficient (submittal of all test details is not required).

c. The Design-Builder may choose whether to use elements proven-in-use or proven-by-mock-up, unless either option is indicated as specifically required.

d. Where test methods accompany performance requirements, use those test methods to test the mock-up.

e. Exception: Where a design analysis is specified, or allowed by the Owner, substantiation of proven-in-use or proven-by-mock up construction is not required.

2. Where a type of product is specified, without performance criteria specifically applicable to the element, use the type of product specified.

3. Where more than one type of product is specified, without performance criteria specifically applicable to the element, use one of the types of products specified.

4. Where a type of product is specified, with applicable performance criteria, use either the type of product specified or another type of product that meets the performance criteria as proven-in-use or proven-by-mock-up.

5. Where more than one type of product is specified, with applicable performance criteria, use either one of the types of products specified or another type of product that meets the performance criteria as proven-in-use or proven-by-mock-up.

6. Where neither types of products nor performance criteria are specified, use products that will perform well within the specified life span of the building.

C. Products:

1. Where a product is specified only by a manufacturer name and model number/brand name, use only that model/brand product.

2. Where the properties of a product are specified by description and/or with performance criteria, use products that comply with the description and/or performance criteria.

3. Where manufacturers are listed for a particular product, use a product made by one of those manufacturers that also complies with other requirements.

SUBSTANTIATION

A. Definition: Substantiation is any form of evidence that is used to predict whether the design will comply with the requirements or to verify that the construction based on the design actually does comply. During Preliminary Design, Design Development, and Construction Documents, requirements to submit substantiation are primarily intended to forestall use of designs or constructions that will not comply. At any time before completion of construction, substantiation is presumed to be only a prediction and may subsequently be invalidated by actual results.

1. Regardless of whether substantiation is specified or not, the actual construction must comply with the specified requirements and may, at the Owner's discretion, be examined, inspected, or tested to determine compliance.

2. Substantiation submittals will not be approved, only accepted to the extent that they are part of documents required to be accepted in order to proceed to the next stage of design or construction. However, acceptance of substantiation will not constitute approval of deviations from the specified requirements unless those deviations are specifically identified as such on the submittal and accepted by the owner in writing.

3. The Owner accepts the responsibility to review substantiation submittals in a timely manner and to respond if they are unacceptable.

B. In addition to the requirements stated in other Sections, provide the following substantiation of compliance at each stage of the project:

1. If a substantiation requirement is specified without an indication of when it is to be submitted, submit or execute it before the end of Construction Documents.

2. See also the Subcontract and Appendices for submittal requirements.

C. Previous Construction: Where elements proven-in-use are used to comply with performance requirements:

1. In the Proposal, identify which elements will be accomplished using proven-in-use elements.

2. During Design Development, identify proven-in-use elements proposed for use, including building name, location, and date of construction, owner contact, and description of design and materials in sufficient detail to enable reproduction in this project.

D. Mock-Up Testing: Where elements proven-by-mock-up are used to comply with performance requirements:

1. In the Proposal, identify which elements will be accomplished using proven-by-mock-up elements.

2. During Design Development, identify proven-by-mock-up elements proposed for use, with test report including date and location of test, name of testing agency, and description of test and mock-up.

3. Mock-up testing need not have been performed specifically for this project, provided the mock-up is substantially similar in design and construction to the element proposed.

E. Design Analyses (including Engineering Calculations):

1. Where a design analysis or calculation is specified without identifying a particular method, perform analysis in accordance with accepted engineering or scientific principles to show compliance with specified requirements, and submit report that includes analysis methods used and the name and qualifications of the designer.

2. Where engineering design is allowed to be completed after commencement of construction, substantiation may be in the form of shop drawings or other data.
3. Submit design analyses at the end of Design Development unless otherwise indicated.
4. Where design analysis is specified to be performed by licensed design professional, use a design professional licensed in Colorado.

F. Products:

1. Where actual brand name products are not identified by either the Owner or the Design-Builder, identify the products to be used.
2. In the Proposal:
   a. Identify one or more product types for each system, assembly, or element.
   b. For each product type, provide brief descriptive or performance specifications.
   c. For major manufactured products that are commonly purchased by brand name, and any other products so indicated, identify at least one manufacturer that will be used.
3. During Preliminary Design or Design Development:
   a. Where more than one product type is identified for a particular system, assembly, or element, identify exactly which type will be used.
   b. For each product type, provide descriptive or performance specifications; early submittals may be brief specifications, but complete specifications are required prior to completion of construction documents.
   c. For each product type, identify at least one manufacturer that will be used.
   d. For major manufactured products that are commonly purchased by brand name, and any other products so indicated, provide manufacturer's product literature on at least one actual brand name product that meets the specifications, including performance data and sample warranty.
4. During Construction:
   a. Identify actual brand name products used for every product, except commodity products specified by performance or description.
   b. Where a product is specified by performance requirements with test methods, and if so specified, provide test reports showing compliance.
   c. Provide manufacturer's product literature for each brand name product.
   d. Provide the manufacturer's certification that the product used on the project complies with the subcontract documents.
5. Before End of Closeout:
   a. Provide copies of all manufacturer warranties that extend for more than one year after completion.

END OF SECTION - FACILITY PERFORMANCE

SUBSTRUCTURE

PERFORMANCE

A. Basic Function:

1. Provide substructure as required to support the completed and occupied building safely and without uncontrolled subsidence, maintenance or other movement.

2. Substructure comprises the following elements:

   a. Foundations: Structures responsible for transferring dead loads, live loads, and environmental loads of completed building to the earth in such a way that the building is supported evenly and without movement.

   b. Basements: Space-enclosing elements below grade, including necessary excavation, structural walls and floor, and other elements of enclosure such as waterproofing and thermal insulation.

3. Where substructure is integral with elements defined within another element group, meet requirements of both element groups.

4. In addition to the requirements of this section, comply with all applicable requirements of Facility Performance (Part 3-Performance Specifications).

B. Amenity and Comfort:

1. Thermal Performance: Provide thermal resistance as necessary to maintain interior comfort levels specified and in accordance with code and the following:

   a. Energy Efficiency: As specified in Facility Performance (Part 3-Performance Specifications).

   b. Average Thermal Transmittance: U-value of 0.15 IP (0.85 SI), maximum, for portions of substructure in contact with earth and enclosing conditioned space.

   c. Condensation: None on interior surfaces under normal interior temperature and relative humidity conditions, during 98 percent of the days in the coldest 3 months of the year.

   d. Substantiation:

      1) Preliminary Design: Identification of major thermal resistant materials and systems.

      2) Design Development: Detailed listing of design criteria and design analysis, prepared by licensed mechanical engineer.

      3) Construction Documents: Product data on thermal materials and details of continuous thermal barrier.

2. Water Penetration: Prevent ground water penetration into the interior of the building, under any circumstances.

3. Water Accumulation: Prevent accumulation of water in open areas adjacent to substructure.

4. Acoustical Performance: Limit sound transmission through substructure as follows:

   a. Ambient Sound Level: Maintain ambient sound levels in enclosed, occupied substructure spaces within noise criteria (NC) ranges specified in Interiors (Part 3-Performance Specifications) during normal hours of occupancy.

   b. Vibration Control: Use substructure elements that will not resonate at frequencies that are characteristic of ambient underground sound and vibration sources at the project site.

C. Health and Safety:

1. Substance Exclusion: Prevent accumulation of harmful chemicals and gases such as radon and methane in spaces below substructure and subsequent penetration into occupied spaces.
2. Vermin Protection: Provide permanent protection against infestation of construction by ground dwelling termites and other vermin.

D. Structure:

1. Capacity: Provide loadbearing substructure members as required by code and designed to distribute dead loads, live loads, and environmental loads so that bearing capacity of soil is not exceeded.
    a. Extend bearing portions of substructure to levels below frostline at project location; not less than 3 ft (0.9 m) below grade.
2. Dead Loads: Accommodate loads from weights of building materials, construction itself, and all fixed service equipment.
3. Live Loads: Accommodate loads from use and occupancy of the building, either uniformly distributed loads as prescribed by code or concentrated loads, whichever are more demanding structurally.
4. Environmental Loads: Accommodate loads from all environmental forces in accordance with code.
5. Substantiation:
    a. Proposal: Identification of major structural materials and systems.
    b. Preliminary Design: Soil investigation report, detailed listing of design criteria, and preliminary analysis, prepared by a licensed structural engineer.
    c. Construction Documents: Detailed design analysis by licensed structural engineer.

E. Durability:

1. Corrosion Prevention: Provide supplementary protection for underground metal elements, sufficient to prevent corrosion completely for the service life of the element without maintenance.
    a. 3 inches (150 mm) of concrete cover is considered to be permanent protection.

F. Operation and Maintenance:

1. Provide substructure elements that will endure for the lifetime of the building with no maintenance.

PRODUCTS

A. Do not use any of the following:

1. Reinforced masonry.
2. Treated wood.
3. Foam plastic insulation below grade.

END OF SECTION - SUBSTRUCTURE

SHELL

PERFORMANCE

A. Basic Function:

1. Provide permanently enclosed spaces for all functional areas shown in the project program, unless otherwise indicated. Provide a physical enclosure that keeps out weather, unwelcome people, animals, and insects without requiring specific action by occupants, while providing convenient movement of occupants between inside and outside, desirable natural light, and views from inside to outside. Provide level floor areas, comfortable ceiling heights, and essentially vertical walls.

2. The elements forming usable enclosed space and separating that space from the external environment comprise the shell and consist of:

   a. Superstructure: All elements forming floors and roofs above grade and within basements, and the elements required for their support, insulation, fireproofing, and firestopping.

   b. Exterior Enclosure: All essentially vertical elements forming the separation between exterior and interior conditioned space, including exterior skin, components supporting weather barriers, and jointing and interfacing components; not including the interior skin unless an integral part of the enclosure. INSERT POSITIVE DRAINAGE FOR ALL EXPOSED ELEMENTS.

   c. Roofing: All elements forming weather and thermal barriers at horizontal and sloped roofs and decks, and roof fixtures.

3. Exterior Surfaces Exposed to View: Surfaces visible from street or ground level, plus surfaces visible from windows of same building and adjacent existing buildings.

4. Where shell elements also function as elements defined within another element group, meet requirements of both groups.

5. In addition to the requirements of this section, comply with all applicable requirements of Facility Performance (Part 3-Performance Specifications).

B. Amenity and Comfort:

1. Thermal Performance: Provide construction that will have thermal resistance as necessary to maintain interior comfort levels specified and in accordance with code and the following:

   a. Energy Efficiency: As specified in Facility Performance (Part 3-Performance Specifications).

   b. Condensation: None on interior surfaces under normal interior temperature and relative humidity conditions, during 98 percent of the days in the coldest 3 months of the year.

   c. Components That Have Surfaces Facing Both Interior and Exterior Environment: Condensation Resistance Factor (CRF) as required to meet requirement above, when tested in accordance with AAMA 1503-1998.

   d. Substantiation:

      1) Preliminary Design: Identification of major thermal resistant materials and systems.

      2) Design Development: Detailed listing of design criteria and design analysis, prepared by licensed mechanical engineer.

      3) Construction Documents: Product data on thermal materials and details of continuous thermal barrier.

2. Air Infiltration: Maximum of 0.06 cfm (0.0003 cu m/s) per square foot (square meter) of exterior

surface area, measured in accordance with ASTM E 283-2004 at differential pressure of 6.24 psf (298 Pa).

a. Use supplementary air barrier if necessary to maintain performance over entire shell.

b. Use method of sealing joints between elements that will be effective given available construction practices.

3. Water Penetration: Design and select materials to prevent water penetration into the interior of the building, under conditions of rain driven by 50 mph (80 km/h) wind.

   a. Substantiation:

      1) Preliminary Design: Identification of major water resistant assemblies.

      2) Design Development: Details of proven-in-use or proven-by-mock-up design.

4. Natural Light: Provide fenestration in shell as required to meet requirements for natural light as specified in Section C and in accordance with code.

5. Natural Ventilation: Design and construct shell to provide natural ventilation in accordance with code and the following:

   a. Minimum Ventilation Opening Area: 8 percent of total floor area for each habitable room; not required for bathrooms, toilet compartments, closets, halls, or storage and utility spaces.

   b. Ventilation Area: Minimum 10 percent of wall area for each floor equally distributed on all elevations.

   c. Design ventilation to provide cross ventilation where possible.

   d. Substantiation:

      1) Proposal: Identification of spaces relying on natural ventilation with description of ventilation concept and required building elements.

      2) Design Development: Drawings showing natural ventilation location, ventilation opening areas, and floor areas being served.

      3) Construction Documents: Engineering design calculations and drawings prepared by licensed engineer.

6. Acoustical Performance: Design and construct the shell to limit sound transmission as follows:

   a. Ambient Sound Level: Maintain ambient sound levels in perimeter spaces within Noise Criteria (NC) ranges specified in Section- Interiors during normal hours of occupancy.

   b. Vibration Control: Use shell elements that will not resonate at frequencies that are characteristic of ambient exterior sound sources at the project site.

   c. Substantiation:

      1) Preliminary Design: Measurements of ambient site noise levels over full range of audible frequencies, identification of acoustic properties of major interior and exterior sound and vibration generators, and preliminary analysis prepared by an acoustical engineer.

      2) Design Development: Acoustical analysis prepared by an acoustical engineer.

      3) Construction Documents: Acoustical analysis prepared by an acoustical engineer.

7. Cleanliness of Exterior Surfaces: Design and select materials to:

   a. Prevent attraction and adherence of dust and air-borne dirt and soot, and minimize

appearance of settled dust and dirt.

b. Be washed reasonably clean by normal precipitation.

c. Prevent precipitation from washing settled dust and dirt over surfaces exposed to view.

8. Appearance: Design and select materials to provide exterior appearance with characteristics as follows:

a. Compatible with adjacent buildings on same campus.

b. Concealing equipment from view from campus buildings, and streets and parking areas.

c. Substantiation:

1) Proposal: Concept drawings of proposed solution indicating overall building configuration, massing, scale, materials, and relationship to surrounding buildings.

2) Preliminary Design: Drawings showing facade treatment for principal elevations identifying visible materials.

3) Design Development: Drawings and artist's rendering showing all building elements that are part of the shell with sizes and locations to scale.

4) Construction Documents: Details of building shell, annotated to show compliance with performance requirements.

C. Health and Safety:

1. Fire Resistance: Design and select materials to provide fire resistance in accordance with code.

a. For all elements required to have a fire resistive rating and which are not made of materials and systems specified as acceptable by the jurisdiction having the authority of code, use proven-by-mock-up construction.

b. For proven-by-mock-up construction, acceptable testing agencies are Underwriters Laboratories Inc. and Factory Mutual

c. Substantiation:

1) Design Development: Identification of assemblies required to have fire resistance rating and method to be used to achieve rating.

2) Construction Documents: Identifying numbers on the construction drawings.

2. Accidental Injury: Design and select materials to protect pedestrians and building occupants in accordance with code and the following:

a. Prevent ice and snow from falling off building elements onto pedestrians, building occupants, and vehicles.

b. Protect pedestrians, building occupants, and vehicles from objects accidentally dropped from elevated balconies, or plazas.

D. Structure:

1. Structural Performance: Design and select materials to support all loads without damage due to loads, in accordance with code.

a. Elements engineered by their manufacturer or fabricator, rather than by the engineer-of-record, are not acceptable for whole shell comprised of superstructure, exterior enclosure, and roofing.

b. Substantiation:

1) Proposal: Identification of major structural materials and systems.

2) Preliminary Design: Detailed listing of design criteria and preliminary analysis, prepared by a licensed structural engineer.

3) Construction Documents: Detailed design analysis by licensed structural engineer.

4) Construction: For structures engineered by their manufacturer or fabricator, detailed design analysis prepared by and shop drawings stamped by a licensed structural engineer, with approval of engineer-of-record recorded.

2. Construction Loads and Erection Stresses: Accommodate temporary construction loads and erection stresses during construction.

E. Durability:

1. Service Life Span: Same as building service life, except as follows:

a. Load-Bearing Structural Members: Minimum of 100 years.

1) No anticipated deterioration when protected as specified.

2) Protective Elements: Minimum 25 years.

b. Wall Primary Weather-Barrier Elements: Minimum 50 years functional and aesthetic service life, excluding joint sealers.

c. Transparent Elements (Glazing): Same as other wall primary weather-barrier elements, except accidental breakage is considered normal wear-and-tear.

d. Joint Sealers: Minimum 20 years before replacement.

e. Surfaces Exposed to View: Minimum 20 years aesthetic service life; in addition, deterioration includes color fading, crazing, and delamination of applied coatings.

f. Roof Covering Weather-Barriers: Minimum 20 years, fully functional.

g. Substantiation: As specified in Facility Performance (Part 3-Performance Specifications), including service life analysis and life cycle cost analysis.

2. Water Penetration: Design and select materials to prevent water penetration into the interior of shell assemblies, under conditions of rain driven by 50 mph (56 km/h) wind.

a. Exception: Controlled water penetration is allowed if materials will not be damaged by presence of water or freezing and thawing, if continuous drainage paths to the exterior are provided, and water passage to the building interior is prevented.

b. Substantiation: In addition to requirements specified for proven-in-use and proven-by-mock-up construction, drawings showing paths of water movement, with particular attention to changes in direction or orientation and joints between different assemblies.

3. Weather Resistance: Design and select materials to minimize deterioration due to precipitation, sunlight, ozone, normal temperature changes and atmospheric pollutants.

a. Deterioration includes corrosion, shrinking, cracking, spalling, delamination, abnormal oxidation, decay and rot.

b. Surfaces Exposed to View: Deterioration adversely affecting aesthetic life span includes color fading, crazing, and delamination of applied coatings.

1) Coated Finishes: Minimize use of materials with separate coated finishes.

2) Coating Performance: AAMA 2604-2005, minimum.

c. Joint Components and Penetration Seals: Capable of resisting expected thermal

expansion and contraction; use overlapping joints that shed water wherever possible.

d. Transparent Elements (Glazing): No haze, loss of light transmission, or color change, during entire expected service life.

1) Test Criteria: Less than 1 percent change in haze, transmission, and color over 2 years exposure, when tested after natural exposure conditions or accelerated light and water conditions simulating natural exposure at project, in accordance with ASTM D 1003-2000; accelerated exposure documented with comparison to natural conditions.

e. Service Temperature: Low temperature equal to historically-recorded low; high temperature equal to that expected due to any combination of air temperature and heat gain from solar and other sources.

f. Freeze-Thaw Resistance: Adequate for climate of project.

g. Corrosion Resistance: In locations exposed to the outdoor air or in potential contact with moisture inside shell assemblies, use only corrosion-resistant metals as defined in this section.

h. Ozone Resistance: Do not use materials that are adversely affected by ozone.

i. Substantiation:

1) Design Development: Details of proven-in-use materials and test reports.

4. Impact Resistance: Design and select materials to resist damage due to impact in accordance with code and the following:

a. Minimize damage from windborne debris propelled at up to 35 mph (56 km/h).

b. Design and select materials to resist damage from hail of size up to 1/2 inch (12 mm).

c. Natural Hazards: Design to resist damage from perching, nesting, and feeding birds.

d. Substantiation:

1) Design Development: Identification of building elements required to resist impact damage, quantification of impact criteria, materials to be used, and methods of substantiation.

5. Moisture Vapor Transmission: Design to prevent deterioration of materials due to condensation of moisture vapor inside assemblies.

a. Use supplementary vapor retarder if necessary to meet requirements.

b. Use method of sealing joints between elements that will be effective given available construction practices.

c. Substantiation:

1) Design: Identification of building elements providing moisture barrier, materials to be used, and data showing performance.

2) Design Development: Proven-in-use or proven-by-mock-up data.

6. Wear Resistance: Design and select materials to provide resistance to normal wear-and-tear in accordance with code and the following:

a. Elements Within Reach of Pedestrians: Minimize degradation from rubbing and scratching caused by pedestrians.

F. Operation and Maintenance:

1. Ease of Maintenance and Alteration:
    a. Provide floors elevated for access, with removable panels, at:
        1) Main Server Room identified in the Project Program.

PRODUCTS

A. Corrosion-Resistant Metals:
    1. Hot-dipped galvanized steel, with minimum zinc coating of 0.90 oz/sq ft (275 gm/sq m) total both sides.
    2. Stainless steel, Type 304 or 316.
    3. Cadmium-plated steel, with minimum coating of 12 micrometers.
    4. Aluminum.

B. Coated Finishes:
    1. Use one of the following:
        a. Fluoropolymer coating (70 percent Kynar 500 (tm) or Hylar 5000(tm)), minimum two coats.
    2. Do not use:
        a. Paint or other field applied coatings.

C. Do not use:
    1. Pre-engineered metal building.
    2. Air-supported structure.
    3. Different metals subject to galvanic action in direct contact with each other.
    4. Aluminum in direct contact with concrete or cementitious materials.
    5. Materials and products that require field finishing on surfaces exposed to the weather.
    6. EIFS- Exterior Insulation Finishing System

END OF SECTION - SHELL

INTERIORS

PERFORMANCE

A. Basic Function:

1. Provide appropriately finished interiors for all spaces indicated in the program, equipped with interior fixtures as required to function properly for specific occupancies.
2. Interiors comprise the following assemblies:
    a. Interior Construction: All elements necessary to subdivide and finish space enclosed within the shell, including applied interior surfaces of the exterior enclosure.
    b. Interior Fixtures: All elements attached to interior construction that add functionality to enclosed spaces, except for elements classified as equipment or services fixtures.
3. Provide physical separation between spaces, constructed to achieve fire ratings required by code, appropriate security between adjacent spaces, and visual, acoustical, olfactory, and atmospheric isolation as necessary to maintain desirable conditions in each space.
4. Provide finishes for interior surfaces that are appropriate for the functions of each space.
5. Provide interior fixtures that are necessary for the proper functioning of each space.
6. Where interior elements also must function as elements defined within another element group, meet requirements of both element groups.
7. In addition to the requirements of this section, comply with all applicable requirements of Facility Performance (Part 3-Performance Specifications).

B. Amenity and Comfort:

1. Natural Ventilation: Design and construct interiors to permit air movement between exterior openings positioned to enhance thermal comfort of occupants in all major spaces.
    a. Substantiation:
        1) Proposal: Information on overall building configuration that will permit natural ventilation of all major spaces.
        2) Design Development: Engineering calculations for representative spaces, predicting anticipated air movement under weather conditions typical for project site.
        3) Construction: Field test of natural air movement, verifying compliance with predicted design performance.
2. Access: Provide access to all primary interior spaces from Circulation spaces (SC Spaces) (no access to any primary interior space exclusively through another primary interior space).
3. View: Provide views to the building exterior or interior atria (if provided) from most locations within primary interior spaces.
    a. View spaces include the following types:
        1) Customer Contact (SP1 Spaces).
        2) Occupant Work (SP2 Spaces).
        3) Assembly (SP5 Spaces).
        4) Meeting and Instruction (SP6 Spaces).
        5) Occupant Services (SR Spaces).

4. Natural Light:
    a. Daylighting: Provide ambient natural lighting in primary spaces that is of intensity adequate for essential tasks when measured on a typical overcast winter day in midafternoon.
        1) Spaces for daylighting include the following types:
            a) Customer Contact (SP1 Spaces).
            b) Occupant Work (SP2 Spaces).
            c) Equipment Utilization (SP3 Spaces).
            d) Assembly (SP5 Spaces).
            e) Meeting and Instruction (SP6 Spaces).
            f) Occupant Services (SR Spaces).
            g) All other spaces to the maximum extent possible.
        2) Light Levels: Provide minimum light levels not less than those recommended in IESNA Lighting Handbook, 2000, for the types of tasks to be anticipated in each category of space.
    b. Natural Lighting: Ambient natural light is not required in the following types of secondary spaces; however, provide natural ambient light to the maximum extent possible and within reason for the following spaces:
        1) Storage (SS Spaces).
        2) Building Services (SU1 Spaces).
        3) Utility Equipment (SU2 Spaces).
    c. Visual Comfort: Provide ambient natural light in primary spaces that is free of excessive direct or reflected glare, as defined in IESNA RP-5, 1999, Recommended Practice of Daylighting.
    d. Substantiation:
        1) Proposal: Information on overall building configuration that will permit daylighting to levels specified.
        2) Design Development: Engineering calculations for representative spaces, predicting anticipated daylighting levels under specified conditions.
        3) Construction: Field test of lighting levels verifying compliance with performance requirements.
5. Acoustical Performance:
    a. Background Noise: Provide interiors that maintain ambient sound levels in primary spaces within the following Noise Criteria (NC) ranges, as defined in ASHRAE HVAC Applications Handbook, 2003, when adjacent spaces are occupied and are being used normally:
        1) Private Office: 20-30.
        2) Conference Room: 25-30.
        3) Semiprivate Office: 30-35.
        4) Library: 30-35.
        5) Large Open Office: 35-45.

b. Impact Insulation: Provide floor-ceiling construction, including floor structure, floor finish, and ceiling finish, to insulate primary spaces from undesirable impact noise when adjacent spaces are occupied and are being used normally.

c. Articulation Index: Provide articulation index (AI) of not less than 0.05 when measured in accordance with ASTM E 1130-2002.

1) Application: Open office areas where multiple work stations occur without intervening full-height partitions.

d. Substantiation:

1) Preliminary Design: Engineering calculations for representative spaces, predicting acoustical conditions.

2) Construction: Field test of acoustical conditions, verifying compliance with performance requirements.

6. Odor Control: Prevent unpleasant odors generated within a space from affecting occupants of adjacent spaces, by providing physical isolation of the spaces, separate ventilation, or a combination of isolation and ventilation.

a. Control odors from spaces of the following types:

1) Toilet rooms.

2) Trash collection.

3) Janitorial spaces

4) Occupant services

5) Kitchen areas

7. Appearance: Provide interiors that are pleasing in appearance and do not detract from the primary functions performed in each space.

8. Texture: Provide interior elements and surfaces that are textured appropriately for primary functions to be accommodated within each space.

C. Health and Safety:

1. Egress: Provide egress from all interior spaces in accordance with code.

2. Fire Resistance: Design and select materials to provide fire resistance in accordance with code.

a. Substantiation:

1) Design Development: Identification of assemblies required to have fire resistance rating and method to be used to achieve rating.

2) Construction Documents: Identifying numbers placed on the construction drawings.

D. Structure:

1. Structural Performance: Provide interior construction and fixtures to support without damage all loads required by code.

E. Durability:

1. Service Life Span: Same as building service life, except as follows:

a. Interior Doors and Other Operable Elements: Minimum 15 years functional and aesthetic service life.

b. Interior Ceiling Finishes: Minimum 15 years functional and aesthetic service life; including suspended ceilings.

c. Interior Wall and Floor Finishes: Minimum 10 years functional and aesthetic service life.

d. Other Interior Construction: Minimum 15 years functional and aesthetic service life.

e. Substantiation: As specified in Facility Performance (Part 3-Performance Specifications), including service life analysis and life cycle cost analysis.

2. Wear Resistance: Provide interior construction and fixtures that are suitable in durability for the degree and type of traffic to be anticipated in each space.

3. Corrosion Resistance: At toilet rooms and janitorial closets, provide interior construction materials and fixtures that are inherently resistant to corrosion and rot.

F. Operation and Maintenance:

1. Cleaning: Provide interior construction and fixtures that will not be damaged by ordinary cleaning and maintenance operations.

PRODUCTS

A. Do not use:

1. Exposed plastic surfaces.

2. Wood framing.

END OF SECTION - INTERIORS

ACCESSORY FIXTURES

PERFORMANCE

A. Basic Function:

1. Provide accessory fixtures as required to accomplish the design as required by code and as indicated in the project program.
    a. Visual Display Fixtures:
        1) Erasable surfaces, which are identified in the program as whiteboards.
            a) Surface for marking with dry-erase markers and erasure without using water.
            b) Each board identified in the program: 32 sq ft (3 sq m), minimum, usable area.
            c) Holders for writing materials, below and full length of each area of erasable surface.
        2) Tackable surfaces, which are identified in the program as whiteboard, for standard push pin use.
            a) Tackable Strips: 1 inch (25 mm) wide strip above and full length of each area of erasable surface.
        3) Projection surfaces, which are identified in the program as projection surface.
            a) Other than Large Conference Room: 32 sq ft (3 sq m), minimum, usable area.
                (1) Large Conference Room: provide retractable projection screen.
                (2) All others may be 'painted surfaces'.
            b) Projection equipment will be furnished by Owner and installed by Design-Builder as indicated in the Program.
            c) Coordinate the surfaces and equipment provided with the room/space design, lighting, and sound reinforcement equipment, for optimum viewing at all normal seating locations, without hot spots, loss of resolution, excessive dimming of image, or difficulty of hearing.
2. Where accessory fixtures also must function as elements defined within another element group, meet the requirements of both element groups.
3. In addition to the requirements of this section, comply with all applicable requirements of Facility Performance and Interiors.

B. Amenity and Comfort:

1. Visual Properties of Projection Surfaces:
    a. Contrast and resolution sufficient to provide accurate viewing at all normal seating locations in the room or space.
    b. Ambient light rejection as required to provide minimum gain specified under design lighting conditions.
2. Convenience of Visual Display Surfaces:
    a. Except as otherwise indicated, required surface area must be accomplished within the "usable" areas as follows, although additional area is not objectionable:
        1) Erasable Surfaces: Not less than 30 inches (760 mm) above floor; not more than 72 inches (1830 mm) above floor.

2) Tackable Surfaces: Not less than 36 inches (915 mm) above floor; not more than 72 inches (1830 mm) above floor.

3) Projection Surfaces: Not less than 36 inches (915 mm) above floor; not more than 84 inches (2134 mm) above floor.

b. Retractable Projection Surface Access: Easily lowered without the use of tools.

1) Surfaces Concealed When Not in Use: Access by up/down controls conveniently located near space entrance(s) and to session presenter location, if any, but minimizing likelihood of tampering by audience members.

3. Appearance of Visual Display Surfaces:

a. Color: White surfaces are preferred.

b. Tackable Surfaces: Self-healing material or surface finish that minimizes visibility of ordinary thumbtack holes.

C. Health and Safety:

1. Fire Retardance:

a. Projection Surfaces: Free-hanging and tensioned fabric screens flame retardant in accordance with code.

D. Durability:

1. Service Life Span:

a. Erasable Surfaces: Minimum of 20 years, including appearance.

2. Indoor Units: Materials and finish complying with specified requirements for equivalent environments specified in Interiors

3. Wear Resistance:

a. Visual Display Surfaces: Comply with requirements of Interiors for wall finishes for the building spaces in which installed, as a minimum.

b. Erasable Surfaces: Designed to withstand marking with the specified materials without permanent damage, imprint, or visibility of erased markings.

c. Tackable Surfaces: Tackable material and surface finish durability not less than would be provided by applied wall coverings complying with ASTM F 793-2007 Category II-Decorative with Medium Serviceability.

d. Projection Surfaces: Fragile surfaces protected from accidental damage by providing covering or concealment when not in use.

PRODUCTS

A. Projection Surfaces:

1. Use one of the following:

a. Front projection screens manufactured for the purpose.

b. White painted gypsum board or plaster.

END OF SECTION - ACCESSORY FIXTURES

SERVICES

PERFORMANCE

A. Basic Function:

1. Provide the following services:

   a. Conveying Systems: Mechanized means of conveying people and goods.

   b. Water and Drainage: Means of delivery of water to points of utilization; automatic heating and conditioning of domestic water; and unattended removal of water, rainwater, and liquid waste.

   c. HVAC: Artificial means of maintaining interior space comfort and air quality, including heating, cooling, ventilation, and energy supply.

   d. Fire Protection: Automatic fire detection, suppression, and warning; automatic smoke control; and manual fire-fighting equipment.

   e. Electrical Power: Energy to operate all electrically-operated devices and provide emergency backup power for critical equipment, including those included under other services and those provided separately by the Owner.

   f. Artificial Lighting: Means of illuminating spaces and tasks, both interior and exterior, independent of reliance on natural light.

   g. Telecommunications: Services that include voice and data transmission, sound reinforcement, and television distribution, public address and mass notification systems.

   h. Other services: Services that include integrated facility controls, and security access controls and closed circuit television surveillance systems, special grounding and lightning protection.

2. Utility Sources and Outlets:

   a. Water Source: Consolidated Mutual Water Company.

   b. Sewage Disposal: Connect building sewer to the existing public sewage system.

   c. Rain Water Drainage Outlet: Coordinated with Owner's Site Development.

   d. Electrical Power Source: NREL service.

   e. Natural Gas Source: XCEL Energy

3. Equipment That is Not Part of Services Systems: Specified in the project program.

4. Where services elements must also function as elements defined within another element group, meet the requirements of both element groups.

5. In addition to the requirements of this section, comply with all applicable requirements of Facility Performance (Part 3-Performance Specifications).

B. Amenity and Comfort:

1. Artificial Illumination: Provide illumination for all interior spaces that is adequate in level and quality for comfortable performance of tasks typical for each space, regardless of the availability of natural light.

   a. Light Levels: Provide maintained ambient illuminance values for various activities that are within the ranges specified in the IESNA Lighting Handbook-2000.

   b. Accent Lighting: In addition to general and task illumination, provide lighting on architectural features, displays, and artwork in focal areas to produce luminances that are

within the range of 5:1 with respect to ambient background.

c. Substantiation:

1) Design Development: Overall lighting scheme, including types of luminaires and lamps for primary spaces.

2) Construction Documents: Calculations of illuminance levels for representative spaces, prepared by a registered electrical engineer.

3) Construction: Measurements of luminance and illuminance levels for representative spaces throughout the project, with a report setting forth results after correcting for maintenance factors keyed to luminaire design and lamp types.

2. Equipment Producing By-Product Heat: Ventilate housings and cabinets as required by equipment manufacturer and rooms and spaces as required to maintain specified environmental conditions.

3. Moisture: Prevent condensation from forming on service elements.

4. Airborne Sound:

a. Maintain the sound transmission characteristics of assemblies through which services must pass; comply with requirements of Section where penetrated assembly is specified.

b. Prohibited Plumbing Noises: All sounds of flushing and of liquid running through pipes ("bathroom sounds") are prohibited outside of the rooms housing toilets and lavatories, with the exception of when doors to those rooms are open.

c. Equipment Noises: Noise level below that which will be objectionable, based on occupancy of spaces.

d. When services are located within assemblies that perform sound isolation functions, consider the noise produced by the service itself as one of the external sound sources.

5. Structure-Borne Sound and Vibration: Prevent transmission of perceptible sound and vibration from services equipment that rotates, vibrates, or generates sound, by isolating such equipment from superstructure or by isolating equipment support foundations from building foundations.

a. Substantiation:

1) Preliminary Design: Identification of sound- and vibration-generating equipment and method of isolation.

2) Construction Documents: Details of isolation methods.

6. Cleanliness: Prevent accumulation of debris and dirt at floor mounted equipment, such as air handlers, chillers, pumps, switchgear, and panelboards by one or more of the following methods.

a. Provide 4 inch (100 mm) thick, concrete housekeeping pads.

b. Provide corrosion-resistant equipment stands.

7. Odors: Eliminate, isolate, or exhaust odors produced by occupant functions and building services.

8. Appearance:

a. Conceal services elements from view to greatest extent possible, with exposed portions of simple, neutral design and color.

1) Exception: Exposed portions are acceptable in SU1 and SU2 areas.

2) Where exposed portions are acceptable, do not obstruct or diminish clear dimensions

of doorways, windows, other operable openings, access panels and cabinet doors, or passageways, stairs, and other exitways.

3) Where exposed piping is acceptable, install it close to walls and overhead structure, parallel and square to finished construction, plumb and nominally horizontal (except where required to slope for drainage).

b. Cover annular spaces around pipes, ducts, and conduits, where they pass through walls, ceilings, and floors with escutcheons or cover plates.

c. Mountings: On finished surfaces, use concealed attachments with cover plates, frames, or trim overlapping finishes.

C. Health and Safety:

1. Fire Safety:

a. Provide fire-rated separations between equipment rooms and other spaces where required, and as specified by, the code and NFPA 72.

2. Safety Hazards: Avoid safety hazards wherever possible; where services must involve flammable materials or hazardous operations, comply with code.

3. Excess Pressure: Design pressurized components to withstand operational pressures without failure and to relieve or reduce excessive pressure to prevent failure.

4. Misuse: Minimize misuse that could result in damage to property, injury, or loss of life.

5. Electric Shock: Provide equipment which protects personnel from electrical shock provide Arc flash analysis and associated labeling per NFPA 70E-2004 and IEEE Standard 1584-2002.

6. Toxic Materials:

a. Lead: Do not use lead or lead-containing materials in potable water systems.

7. Vermin Resistance: Use components that are resistant to the entry of rodents and insects.

D. Structure:

1. Supports for Piping, Conduit, Ducts, and Components: Attached to, and supported by, the superstructure, not to or by non-structural construction or sheet metal elements, so that they do not move or sag, using the following:

a. Supports that allow movement of the rigid linear elements (pipe, etc.) without undue stress on the piping, tubes, fittings, components, or the superstructure.

b. Intermediate supports mounted between structural members to limit distance between supports.

c. Supports capable of handling seismic forces in accordance with the code.

d. Mounting frames, bases, or pads, designed for ease of anchorage or mounting.

e. Rigid sway bracing at changes in direction of more than one-half of a right-angle, for all pipes.

2. Structural Design of Components and Their Supports: In accordance with code.

a. Anchors: Securely and positively attach all services components to superstructure.

3. Concealed or Buried Components: Design cover or concealment so that components are not subjected to damaging stresses due to applied loads.

E. Durability:

1. Expected Service Life Span: Same as the service life of the building, except as follows:
   a. Ducts, Piping, and Wiring in All Services: Same as the service life of the building.
   b. All Components Permanently Installed Underground or Encased in Concrete: Same as service life of building.
   c. Conveying Systems: Minimum 20 years.
   d. Plumbing:
      1) Shut-Off Valves and Similar Components: Same as service life of building.
      2) Plumbing Fixtures: Same as building service life.
      3) Sink Faucets, But Not Other Fittings: Minimum 10 years.
   e. HVAC:
      1) Shut-Off Valves: Minimum 10 years.
      2) Dampers, Louvers, Registers, Grilles: Same as service life of building.
      3) Main Heat Generation and Cooling Equipment: Minimum 20 years.
      4) Control Components, Except Wiring: Minimum 10 years.
   f. Fire Protection:
      1) Sprinkler Heads, Valves, and Other Inlet and Outlet Components: Same as building service life.
      2) Pumps and Other Operating Components: Minimum 20 years.
   g. Electrical:
      1) Power Distribution Equipment: Same as building service life.
      2) All Components of Life Safety-Related Systems: Minimum 20 years.
      3) Control Components, Except Wiring: Minimum 10 years.
   h. Lighting Fixtures: Minimum 15 years.
   i. Telecommunications Systems: Minimum 10 years.
   j. Integrated Facility Controls: Minimum 15 years.
   k. Security and Surveillance Controls: Minimum 15 years.
   l. Software and Firmware Integral to Operation of Services Equipment: Minimum 20 years functional life without reprogramming required and, specifically, unaffected by millennium date change (Y2K).
2. Weather Resistance:
   a. All components exposed to outdoor environment must comply with the requirements of Section B; equipment enclosures are considered the equivalent of the exterior enclosure.
   b. Buried Water Piping: Minimum of 6 inches (15 mm) below lowest recorded level at which the ground freezes.
   c. Services Passing From Inside to Outside: Openings through shell sealed as required to meet performance specified, and using materials specified, in Section B.
3. Condensation: Provide insulated drain pans and piping to remove condensation from cooling coils.

4. Moisture Resistance: Where components are mounted to surfaces that are required to be moisture-resistant, seal mounting surface of components to finish surface so that moisture cannot penetrate under or behind component, using material that is not affected by presence of water, that is mildew-growth resistant, and that has a minimum service life of 10 years.
5. Temperature and Humidity Endurance: Design equipment to endure temperature and humidity that will be encountered and to resist damage due to thermal expansion and contraction.
6. Corrosion Resistance: Prevent corrosion by using corrosion-resistant materials, by preventing galvanic action, by preventing contact between metals and concrete and masonry, and by preventing condensation on metals.
    a. Metals Considered Corrosion-Resistant: Aluminum, stainless steel, brass, bronze, cast iron, ductile iron, malleable iron, hot-dipped galvanized steel, chrome-plated steel, cadmium-plated steel, and steel coated with high-build epoxy or coal tar-based paint.
    b. Piping Connections for Piping of Dissimilar Metals: Dielectric adapters.
    c. Underground Elements: Provide supplementary protection for underground metal pipes, ducts, and conduits, sufficient to prevent corrosion completely, for the service life of the element without maintenance.
        1) 3 inches (150 mm) of concrete cover is considered to be permanent protection.
        2) Bituminous or other waterproof coating or wrapping is considered permanent protection unless cathodic protection is required and unless underground element is subject to movement due to structural loads or thermal expansion or contraction.
        3) Provide cathodic protection if any of the following is true; coatings or wrappings will not be considered sufficient protection for elements falling under these criteria:
            a) Metal elements are submerged or buried in a soil environment known to cause corrosion on similar nearby structures.
            b) Metal elements are submerged and buried in a soil environment in which stray DC electrical currents are present.
7. Accidental Water Leakage: Locate components that would be damaged by water leakage from pipes or through foundations or roof out of likely paths of water and at least 4 inches (100 mm) above floor level.
8. Abuse Resistance:
    a. Buried Components: Minimum of 12 inches (300 mm) below surface of ground.
    b. Underground Piping and Conduit: Watertight and rootproof.
    c. Finishes on Exposed Components Subject to Touching by Occupants: Durable enough to withstand regular scrubbing using ordinary methods.
    d. Provide equipment which has been designed to prevent tampering.
9. Accidental Damage: Protect equipment and piping from accidental damage.
10. Underground Piping Accidental Damage: Protect heating piping and chilled water piping from accidental damage with a warning tape and metallic tracing wire buried 12 inches (300 mm) above the pipe.

F. Operation and Maintenance:

1. Capacity:
    a. Conveying Systems: Adequately sized for the number of personnel within the facility.

b. Water and Drainage: As required by code.

c. Heating, Cooling, and Ventilating: Maintain interior environment within ranges specified in Facility Performance (Part 3-Performance Specifications).

1) Design HVAC to provide partially redundant systems.

d. Fire Suppression: As required by code and the NFPA.

e. Electrical: As required by code and the following:

1) Energy Efficient and ENERGY STAR Products.

f. Telecommunications: As specified in project program and further identified below:

1) For each workstation and/or laboratory, provide a total of four cables.

2) Fiber-Optic cables: workstation cables 2, backbone cables 12.

3) Four each 4-pair enhanced unshielded twisted pair (EUTP, UL Category 6)

4) One 4-fiber multi-mode optical fiber cable.

5) One 4-fiber single mode optical fiber cable.

g. Substantiation:

1) Proposal: Description of systems required, sources, input-side capacities, and means of distribution.

2) Design Development: Engineering calculations showing input- and output-side capacities and loads and sizes of distribution elements.

3) Construction Documents: Complete system details.

4) Construction and Closeout: Functional performance testing, as specified in Design and Construction Procedures (Part 1-Procedures).

2. Efficiency:

a. Energy efficiency as identified in the Project Program and as specified in Facility Performance (Part 3-Performance Specifications).

b. Water consumption as specified in Facility Performance (Part 3-Performance Specifications).

c. Substantiation: As specified in Facility Performance (Part 3-Performance Specifications).

3. Ease of Use:

a. Provide software which is year 2000 compliant.

b. Access: All equipment located to allow easy access. Provide access doors for equipment accessed through walls, partitions, or fixed ceilings.

c. Valves and Other Control Devices: Accessible handles, switches, control buttons; valve handles on top/upper side; chain or other remote operators where located out of normal reach above floor level in SU1 and SU2 spaces.

d. Space Around Components: Working clearances and access routes as required by code and as recommended by component manufacturer.

e. Testing: After completion of installation, prepare services for starting-up by testing appropriately for proper operation.

f. Commissioning: Prepare services for use by eliminating operational anomalies, adjusting control systems for optimum operation, and demonstrating proper functioning, as specified

in Design and Construction Procedures (Part 1-Procedures).

1) Substantiation:

a) Design Development: Identification of systems and equipment to be coordinated for tested and method of test.

g. Preparation for Operation: Provide assistance for the Owner's preparations for operation, as specified in Design and Construction Procedures (Part 1-Procedures).

1) Training Owner personnel in the operation of all service systems.

2) Substantiation:

a) Construction Documents: Schedule of demonstrations.

b) Construction Documents: Training plan and schedule.

c) Construction and Closeout: Documentation of training conducted.

4. Ease of Cleaning: Where not otherwise specified, design equipment mountings to allow easy cleaning around, and under, equipment, if applicable, without crevices, cracks, and concealed spaces where dirt and grease can accumulate and with raised, closed bases for equipment mounted on the floor.

a. Provide equipment with removable access panels to allow cleaning.

5. Ease of Maintenance and Repair:

a. Piping Other Than Gravity Drains: Provide means of isolating convenient portions of piping system, so that small portions may be shut down leaving the remainder in operation and so that drainage of the entire system is not required to enable repair of a portion of it.

b. Piping: Entire systems drainable without disassembly of piping.

c. Above Ground Piping: Labeled to identify contents and direction of flow, each shut-off valve, each piece of equipment and/or fixture, each branch take off, and at 20 ft (6 m) maximum spacing on exposed straight pipe runs.

d. Equipment and Fixtures in Piping Systems: Each unit provided with a union or flanged connector at each pipe connection to allow easy removal.

6. Ease of Equipment Service: As specified in Facility Performance (Part 3-Performance Specifications) and the following:

a. Lighting: Adequate for locating and operating equipment; emergency lighting for critical components. Minimize the number and types of fixtures and lamps for ease of maintenance and repair.

b. Do not locate any equipment requiring maintenance on the roof, in attics, in crawl spaces, where access must be through attics or crawl spaces, or where access must be through toilet rooms used by more than one occupant.

c. Parts Having Service Life Less Than That Specified for Element: Easily replaceable, without de-installation or de-mounting of the entire element, component, or equipment item.

d. Valves: Easily replaceable internal parts, eliminating necessity of removal of entire valve for repair.

e. Parts: Readily available from stocking distributors within 50 miles (80 km) of project location.

f. Substantiation:

1) Construction Documents: Identification of parts normally replaced during routine maintenance and parts replaced only when damaged or unexpectedly worn out; location of stocking distributors.

7. Ease of Equipment Removal: Provide doors and corridors large enough for removal of major pieces of equipment, such as, air handlers, chillers, boilers, fans, transformers, switchgear, and water heaters.

a. Substantiation:

1) Preliminary Design: Identify locations of major pieces of equipment.

2) Design: Submit the measurements of the major pieces of equipment and the path for removal from the building. Verify doors and corridors provide adequate clearance for removal of equipment.

3) Construction Documents: Indicate sizes of doors and corridors used for removal of equipment. Indicate equipment sizes.

G. Metering and Control:

1. Water:

a. Required for all make-up water systems, irrigation, and evaporative cooling systems.

b. Products:

1) Products to be specified by Design-Builder.

2. HVAC:

a. Meters and Sub Meters
1) See Electrical Power below for additional requirements.
2) 1 sub meter for mechanical equipment load
3) 1 meter for chilled water
4) 1 meter for hot water
5) Products:
a) Onicon BTU Flow meter and KEP flow computer compatible in all respects, including equipment and software, with the system currently in place on the NREL campus.

4. Electrical Power Monitoring and Control:

a. Provide a complete system capable of monitoring the demand, consumption and power quality at designated points in the power distribution system.

b. Provide a system that is compatible in all respects, including equipment and software, with the General Electric PQM monitoring system presently in use on the NREL campus. General Electric (GE) Multilin instruments shall be an acceptable alternative to Model PQM instruments.

c. Include remote devices for monitoring and protective functions; device communication interface hardware; inter-communication wiring; analysis software; and accessories as specified and indicated.

d. Metering will be designed and arranged so that the following electrical loads are measured independently as follows:

1) Building Load

2) Lighting Load

3) Mechanical Equipment Load

4) Server Room Load

5. Environmental Monitoring (Server Room only)
   a. Integrated with the security system, provide ambient environmental temperature monitoring and alarm.
   b. Raised floor panels should dissipate static electricity.
   c. Input air temperature to the front of the racks will be between 65-75 degrees.
   d. Input humidity to the front of the racks will be between 40-60%.
6. Capacity (Server Room only)
   a. Space will allow for 100% growth to support the predicted 100% growth of the lab and GO's office.

PRODUCTS

A. Do not use:

1. CFC-based refrigerants.
2. HCFC's or Halon.
3. Aluminum electrical conductors.
4. Valves:
   a. NREL has chosen to use only ball valves for all valves 2" size and smaller, and butterfly valves for all valves 2 1/2" size and larger.
      1) Several manufactures of ball valves are allowed
      2) Only Keystone butterfly valves are allowed.
   b. Hydronic System Balance Valves shall be:
      1) Bell and Gossett Circuit Setter
      2) FlowSet Manual Venturi Balance Valve
      3) No other substitutions
      4) Automatic flow control valves, such as Griswold or AutoFlow are prohibited.

END OF SECTION - SERVICES

FIRE PROTECTION

PERFORMANCE

A. Basic Function:

1. Provide services systems to all locations in the facility to protect life and property.

2. Where fire protection elements also must function as elements defined within another element group, meet the requirements of both element groups.

3. In addition to the requirements of this section, comply with all applicable requirements of Section- Facility Performance, Section– Services, NFPA 72, NFPA 13- Ordinary Hazard 2, and the West Metro Fire and Rescue Supplemental Rules and Regulations.

B. Products:

1. All items of the Fire Alarm Control Panel (FACP) shall be UL listed and a product of "SimplexGrinnell" as the fire alarm system manufacturer.

C. NREL Design Standards:

1. General

a. Provide a wet pipe sprinkler systems per NFPA 13 shall be used for all NREL facilities requiring fire protection unless other types are approved by Site Operations and ES&H.

1)The minimum Occupancy Hazard Classification is Ordinary Hazard Group 2.

2. Fire Detection and Alarm Systems

a. All occupied facilities shall be equipped with an automatic fire detection system with addressable devices (smoke and/or heat detectors) in compliance with NFPA-72.

D. Data Center Fire Suppression Requirements:

1. Provide a clean agent fire extinguishing per NFPA 2001, 2008 edition.

END OF SECTION – FIRE PROTECTION

TELECOMMUNICATIONS

PERFORMANCE

A. Basic Function:

1. Provide the following telecommunications services:
    a. Voice and Data: Infrastructure for voice and data transmission and telephone equipment.
    b. Television: Television distribution, reception, and equipment.
    c. Provide a paging system to all locations in the building, and fully integrate with the NREL campus wide paging system.
2. Where telecommunications elements also must function as elements defined within another element group, meet the requirements of both element groups.
3. In addition to the requirements of this section, comply with all applicable requirements of Section - Facility Performance and Section- Services.

B. Health and Safety:

1. Electrical Hazards: Design in accordance with all NFPA standards that apply to the occupancy, application, and design.
    a. Comply with NFPA 70-2002 requirements for hazardous locations applications.
2. Emergency Systems: Provide emergency power when normal power is interrupted, for the following:
    a. Systems and areas as required by code.

C. Products:

1. The NREL paging system controller is a proprietary paging system controller manufactured by PagePac/ Valcom Inc., 5614 Hollins Road, Roanoke, VA 24019

END OF SECTION - TELECOMMUNICATIONS

DIRECT DIGITAL CONTROL

PERFORMANCE

A. Basic Function:

1. Other services include:

a. Integrated Facility Controls (Direct Digital Control): Elements for centralized monitoring and operation of services and non-services elements.

B. Where services elements also must function as elements defined within another element group, meet requirements of both element groups.

C. NREL Design Standards (DIRECT DIGITAL CONTROL)

1. NREL uses a Delta Controls System, referred to as the Direct Digital Control System (DDC), with direct digital control throughout the facilities (currently South Table Mountain and NWTC sites) to monitor and control heating, venting, and air conditioning (HVAC) systems. There are no substitutes for Delta Controls.

a. This system shall consist of field stand alone Direct-Digital Controllers (DDC's) and Smart Local DDC's. Firmware and software shall match existing NREL system unless approved by NREL. All field devices shall be rated by the manufacturer as suitable for its intended use.

b. The software programs shall be provided as an integral part of the DDC panel and shall not be dependent upon any higher level computer for execution.

c. Dynamic color graphics shall be provided for each mechanical or controlled system, including air handling systems, chilled water systems, hot water systems, other mechanical systems, and floor plans with zone level temperature controls.

2. Control Systems at NREL are also referred to as EMCS (Energy Management Control Systems) and BAS (Building Automation Systems) in various documents. DDC, EMCS, and BAS may be used interchangeably in many documents, although they have slightly different definitions.

a. Unless otherwise specified in the design criteria, include the DDC system in the design of facilities.

b. Coordination is required between Mechanical and Electrical Disciplines for the installation of this system.

c. All drawings must be fully integrated into the NREL master set of existing control drawings. This includes using NREL's standard border for drawings, and numbering the new drawings to match existing master drawing set, as well as updating any impacted existing drawings. A complete single set of control drawings must be maintained for this facility.

3. Specifications and Design Guidelines

a. The mechanical engineer issues the control discipline specifications. The following documents should be obtained before starting the system design:

1) Specialty Equipment information for additional equipment utilizing DDC

b. DDC Design: The monitoring and control functions are accomplished by using a local DDC control panel

1) Connect the DDC control panel to the existing NREL network. Ethernet communication is acceptable within a building. Fiber optics communication is required between buildings. Existing fiber optics may be available, but new fiber

optics lines must be provided if this is not the case. Verify availability prior to construction.

2) Monitoring and control functions are achieved through pneumatic or electrical means. No new pneumatic controls are to be provided. Pneumatic controls will only be used on existing pneumatic systems. Any retrofit using existing pneumatic devices will utilize I/P control and electronic sensors.

3) The mechanical designer specifies the means and assigns the digital or analog input or output devices to specific locations.

4) Design the wiring system according to code.

a) Color code input and output wires for easy troubleshooting.

b) All runs continuous (no splices) between DDC control panel and sensor or controlled device.

5) Enclosures and DDC panels must be designed with 30% capacity for expansion available for future use.

c. DDC System Design: DDC is required for all permanent buildings at NREL

d. Control Center

1) New buildings must be provided with a workstation on the Delta Controls Network.

e. General Requirements

1) Install DDC system cables in a dedicated raceway not shared with other system cables. DDC cables may be routed with other communication cables in underground ducts but must be separated into a dedicated DDC raceway at the service entrance to the building.

2) Install lightning arrestor/surge protection devices to protect devices installed in a new structure or in any location subject to induced voltages and currents caused by lightning or other sources.

f. Drawings Required

1) The following drawings are required when modifying or installing a new DDC system:

a) DDC floor plans

b) Mechanical system drawings showing all control devices and locations

c) DDC Equipment List

d) All DDC points must be indicated on the Controls Drawings.

g. Electrical Standards

American National Standards Institute (ANSI)

Telecommunications Industry Association (TIA)

Electronics Industries Association (EIA)

ANSI/TIA/EIA 568A, Commercial Building Telecommunications Cabling, Standard ANSI/EIA/TIA 569, Commercial Building Standard for Telecommunications,

Pathways and Spaces ANSI/EIA/TIA 570, Residential and Light Commercial Telecommunication, Wiring Standards

ANSI/TIA/EIA 606, Administration Standard for the Telecommunications, Infrastructure of Commercial Buildings

ANSI/TIA/EIA 607, Commercial Building Grounding and Bonding, Requirements for Telecommunications

ANSI/TIA/EIA-472OOOO-A, Generic Specification for Fiber Optic Cable

ANSI/TIA/EIA-472COOO-A, Sectional Specification for Fiber Optic Communications, Cable for Indoor Use

ANSI/TIA/EIA-472CAAA, Detail Specification for All-Dielectric (Construction 1), Fiber Optic Communications Cable for Indoor Plenum Use, Containing Class Ia, 62.5 μm Core Diameter/125 μm, Cladding Diameter Optical Fiber(s)

ANSI/TIA/EIA-472DOOO-A, Sectional Specification for Fiber Optic Communications, Cable for Outside Plant Use

Building Industry Consulting Service International (BICSI)

Telecommunications Distribution Methods Manual

LAN Design Manual

Federal Information Processing Standards (FIPS)

Publication 94 Guideline on Electrical Power for ADP Installations

Insulated Cable Engineers Association, Inc. (ICEA)

S-80-576, Standard for Telecommunications Wire & Cable for Wiring of Premises

Underwriters Laboratories Inc. (UL) 94, Standard for Safety Tests for Flammability of Plastic Materials for Parts in Devices and Appliances

Underwriters Laboratories Inc. (UL) 910, Test Method for Fire and Smoke Characteristics of Electrical and Optical - Fiber Cables Used in Air-Handling Spaces

Underwriters Laboratories Inc. (UL) 1449, Transient Voltage Surge Suppression (TVSS)

Underwriters Laboratories Inc. (UL) 1666, Standard Test for Flame Propagation Height of Electrical and Optical - Fiber Cables Installed Vertically in Shafts.

END OF SECTION – DIRECT DIGITAL CONTROL

SURVEILLANCE AND SECURITY CONTROLS

PERFORMANCE

A. Basic Function:

1. Provide remote surveillance of specified areas, intrusion detection, and automatic and remote control of access to building areas, as required by the code, the Program, and as follows.

B. NREL Design Guide Standards:

1. Security Access Control and Closed Circuit Television Surveillance Systems: Provide a complete closed circuit television (CCTV) system including, but not limited to, color cameras, software, programming, cabling and accessories as specified and indicated. System shall be connected to and integrated into existing system. Subcontractor shall verify existing system interface requirements, capacities, etc. and provide all necessary hardware and software required for a complete functional system. Final connections to existing system and programming shall be by Design-Builder.
2. Provide a complete Access Control System (ACS) including but not limited to card readers, access cards, programming, cabling, door contacts, request to exit motion sensors, controllers, system interface hardware, and accessories as specified and indicated. Subcontractor shall verify existing system interface requirements, capacities, etc. and provide all necessary hardware, software and programming required for a complete functional system. Final connections to existing system and programming shall be by the Design-Builder.
3. Integrated systems performing all functions are preferred, subject to requirements of code for separated, independent systems.
4. Sound Communication Functions:
    a. Public address and alarm notifications, including pre-recorded emergency messages.
5. Data Communications Functions: As required to accomplish security functions.
    a. Connection between campus central system and building system.
    b. Provide 100% spare capacity for all security related data communication wiring.
6. Visual Communications Functions:
    a. Point-to-Point Video Communication:
        1) Visual monitoring, for intrusion detection and access/entry control.
7. Access/Entry Control and Intrusion Detection Functions: See definition of security zones in Facility Performance and identified in the program space data sheets.
    a. Public Access Zones Outdoors: Remote visual monitoring and recording. Keyless entry to this zone requires additional keypad PIN input capability.
    b. Approaches to Reception Zone from Outside: Remote visual monitoring and recording.
    c. Doors Between Public Access Zone and Reception Zone: remote visual monitoring, door status monitoring, keyless entry for occupants, and remote locking/unlocking.
    d. Inside Reception Zone: Remote visual monitoring and recording of large open spaces.
    e. Operations Zone Entrances: door status monitoring and recording and keyless entry for occupants.
    f. Secure Zone Entrances: remote visual monitoring and recording, door status monitoring and recording, and keyless entry for occupants. Keyless entry to this zone requires additional keypad PIN input capability.

g. Inside Secure Zone: Remote visual monitoring and recording.

h. Recording of door status changes and proper and improper access attempts.

i. Continuous recording of all visual monitoring.

j. User-programmable entrance controls.

k. Real-time status display of all controlled and monitored points; display located in security office.

l. Digital and hard-copy output of cumulative status reporting.

8. Where surveillance and security control elements also must function as elements defined within another element group, meet the requirements of both element groups.

9. In addition to the requirements of this section, comply with all applicable requirements of Facility Performance, Services.

10. Substantiation:

a. Preliminary Design: Outline description of systems, inter-system interfaces, and functions provided.

b. Design Development: Details of each type of input and output device; capacities of systems; manufacturer data.

c. Construction Documents: Detailed layout of input and output device locations.

d. Closeout: Complete functional performance testing as specified under Commissioning.

C. Amenity and Comfort:

1. Visual Image Quality:

a. Television Monitors: Minimum 13 inch (330 mm) diagonal, color.

D. Durability:

1. Moisture Resistance and Thermal Compatibility: Materials that will resist degradation and failure of signals under ambient conditions expected.

E. Operation and Maintenance:

1. Power Supplies:

a. Dedicated Battery Backup Power: For:

1) Access/entry controls; fail-secure, 90 minutes.

2) Intrusion detection, 90 minutes.

2. Data Storage Capacity:

a. Keyless Entry Devices: Minimum of 100,000 unique combinations, with minimum of 4 levels of access authorization.

3. Ease of Operation:

a. Time/date displays centrally synchronized and adjustable.

b. Minimum of one centralized monitoring display for all systems is preferred; locate in security office.

c. Keyless Entry Devices: Reprogrammable from central control location.

PRODUCTS

A. Control Systems for All Applications:

1. Use the following:

a. Access Control Panels: Software House.

1) All components shall be fully compatible with the existing Software House (C-Cure800 System- CCM80-20S)

2) Software House APC/8X controller unit: Each APC/8X shall have a minimum capacity to:

a) Control up to 8 readers and/or keypads

b) Monitor up to 8 supervised alarm-sensing devices

c) Carry up to 8 on-board relays: 30VDC/AC, 5Amps resistive, 2.5 Amps inductive.

3) Software House APC/L controller unit: Each APC/L controller shall have at a minimum the capacity to:

a) Control two card readers and or keypads.

b) Control two relays: Rated 125 VAC, 0.4 amps resistive, 0.2 amps inductive and Rated 30VDC, 2.0 amps resistive, 1.0 amps inductive.

4) Software House RM-4K controller unit: Each RM-4K controller shall have at a minimum the capacity to:

a) Control one reader and or keypad.

b) Control two supervised inputs.

c) Control two + 12VDC driver relays.

5) Software House APC/L and the APC/8X unit:

a) Shall monitor fire alarm panel and automatically annunciate on the Software House workstation monitor located at the Site Entrance Building upon an alarm signal.

b) The APC/L and APC/8X shall have 24-hour battery backup in an enclosure. Enclosure shall have a tamper switch installed and connected to the APC's as a monitored input point.

6) Contact door switches:

a) Must be triple-biased and activate within an inch of separation from the base magnet. Must be capable of over 500,000 activations before failure. Must be wired with pry tamper and magnetic tamper alarms. Sentrol 2707-A. Overhead rollup door switch, Sentrol 2727A.

7) Touch Sense Bar: Securitron series TSB-3.

a) 24 VDC operation. Color - polished aluminum (silver).

8) Card reader:

a) Match existing system on NREL Campus

9) APC/8X and APC/L

a) Model- Securitron BPS-24-4

b) Input- 120VAC

10) System Cable: Verify and coordinate all wiring sizes, requirements, etc. with each access control manufacturer's components.

b. Closed Circuit Television Surveillance System:

1) Cameras:

a) Low light level outdoor color camera, pan/zoom/tilt.

b) Panasonic: WV-CS854A

c) Wall mounted environmental housing, weatherproof with heater, fan and defroster glass: Panasonic POS854ADW.

2) Active Video System:

a) Active video system shall be capable of receiving broadband type monochrome or color video signals over unshielded twisted pair (UTP)CAT 3 or better, 24 gauge or heavier up to a maximum length of 6000 feet (1800 meters).

b) The transmitter and receiver units shall have built-in transient voltage protection. The system shall operate within specifications without causing interference or interfering with any other base band video, communication, data and/or other low voltage signals operating in multi-twisted pair UTP cables.

c) The active system shall be warranted for a minimum of 5 years.

d) Active Receiver: NITEK EX560

e) Active Transmitter: NITEK TT560

f) RS422 Line Driver: NITEK DL 1142

END OF SECTION – SURVEILLANCE AND SECURITY

LIGHTNING PROTECTION

PERFORMANCE

A. Basic Function:

1. Provide grounding systems that:

   a. Provide protection from lightning strikes; scope and design of protection as defined in Section 111.

   b. Reduce static electricity and transient and induced current in raised access flooring and electronic equipment cabinets, racks, and supports.

   c. Comply with applicable recommendations of IEEE 142-1991 and IEEE 1100-2005 and NFPA 780.

END OF SECTION – LIGHTNING PROTECTION

EQUIPMENT AND FURNISHINGS

PERFORMANCE

A. Basic Function:

1. Design the facility to accommodate the equipment and furnishings required by the Owner, which are specified in the project program.
2. Equipment and furnishings comprise the following elements:
    a. Equipment: Mechanized, plumbed, and electrical devices, other than equipment that is part of a service system (HVAC, electrical, etc.), and permanently installed fixtures not covered by another Section.
    b. Furnishings: Systems furniture (wired), modular furniture (including desks, storage cabinets, casework, and storage systems) identified in the Project Program as Design-Builder supplied and installed.
    c. Furnishings NIC: Movable (loose) furniture and fittings, without electrical or plumbing connections identified in the Project Program as Owner supplied.
3. The following equipment and furnishings are to be provided by the Design-Builder:
    a. All permanently installed equipment and furnishings.
    b. Electrically-operated equipment with a permanently wired connection.
    c. Items requiring a water supply or drainage connection.
    d. Items requiring an air distribution or exhaust connection.
    e. Items requiring a special services connection.
    f. Items NOT indicated as Not in Subcontract (NIC).
    g. Items required by the code.
4. The following equipment and furnishings are to be provided by the Owner:
    a. Items indicated as Not in Subcontract (NIC).
5. Owner-Furnished Items: Performance requirements that specify characteristics of equipment or furnishings items do not apply; requirements for accommodating items to the project do apply.
6. Where equipment or furnishings elements also must function as elements defined within another element group, meet requirements of both element groups.
7. In addition to the requirements of this section, comply with all applicable requirements of Facility Performance (Part 3-Performance Specifications).

B. Amenity and Comfort:

1. Appearance:
    a. Services Connections to Equipment: Concealed behind or under items or their housings.

C. Health and Safety:

1. Accident Prevention:
    a. Comply will the requirements of 29 CFR 1910, regulations of Occupational Safety and Health Administration.
    b. Prevent accidental pinching, crushing, and cutting of operator limbs, fingers, and toes in or

by moving parts of equipment by using intelligent design or guards or other protection, without reliance on self-protective operation by operator.

D. Durability:

1. Service Life Span: 30 years.
    a. Substantiation:
        1) Proposal: Identification of proven-in-use assemblies of the same type, for inspection by Owner.
        2) Preliminary Design: Identification of proven-in-use assemblies of the same type, for inspection by Owner.
        3) Design Development: Identification of actual products to be used.
2. Weather Resistance: Items located outdoors must comply with requirements of Section B.
3. Vandal Resistance: Parts not easily removed without the use of tools.

E. Operation and Maintenance:

1. Ease of Maintenance: Not requiring any routine measures to maintain operation or finishes, other than washing with soap and water.
2. Ease of Repair: Serviceable parts and access panels easily removable with common tools.
3. Ease of Equipment Service: As specified in Facility Performance (Part 3-Performance Specifications) and the following:
    a. Parts Having Service Life Less Than That Specified for Element: Easily replaceable, without de-installation or de-mounting of the entire element, component, or equipment item.
    b. Valves: Easily replaceable internal parts, eliminating necessity of removal of entire valve for repair.
    c. Parts: Readily available from stocking distributors within 50 miles (80 km) of project location.
    d. Substantiation:
        1) Construction Documents: Identification of parts normally replaced during routine maintenance and parts replaced only when damaged or unexpectedly worn out; location of stocking distributors.

END OF SECTION - EQUIPMENT AND FURNISHINGS

GENERAL EQUIPMENT

PERFORMANCE

A. Basic Function:

1. Provide general building equipment of the type and in the quantity required by the program and in accordance with the code and the following:
2. General equipment comprises the following elements:
    a. Loading dock equipment, including bumpers and levelers.
    b. Solid waste disposal and handling equipment, including compactors, dumpsters, waste receptacles, and recyclable receptacles.
    c. Anchorage equipment for working on roofs.
3. Loading Docks: Goods movement will be loading and unloading.
    a. See the project program for number of loading bays and sizes required.
    b. Types of trucks to be accommodated include tractor-trailers (semis), city delivery trucks, and panel trucks or vans.
    c. Each bay must accommodate the full range of required truck sizes.
    d. Loading and unloading will be accomplished by Owner's personnel using hand carts and manual pallet jacks.
    e. Substantiation:
        1) Design Development: Loading dock space layout with methods of conveying goods to and from trucks identified.
4. Solid Waste Disposal: Provide for efficient removal of waste from the building while minimizing both the amount of labor required to do so and the cost of disposal.
    a. Owner's and/or tenants' personnel will transfer waste to temporary waste collection areas.
    b. Owner will engage a refuse collection service to remove solid waste from temporary waste collection areas.
    c. Owner requires that waste be compacted as much as possible, to reduce the waste volume.
    d. Recyclable Waste: Separate storage and removal of newspaper, glass, metals, plastics, paper and cardboard, and batteries.
    e. Estimated Waste Generation: ____ cu ft (____ cu m) or ____ pounds (___ kg) per 1000 sq ft (92 sq m) of habitable space (excluding circulation, storage, and utility spaces) per year, total.
        1) Owner will be instituting on-site recycling programs for _____, which may be subtracted from the total volume of waste generated.
    f. Temporary Waste Collection Areas: Storage space for waste waiting for pick-up by refuse collection service.
        1) Capacity: Not less than that required to allow pickup only one time per week by one truck on a regular route; if compaction is used and multiple containers are required to achieve capacity, manual shifting of filled containers is acceptable.
        2) Containers: Garbage cart size, for automated dumping into trucks; coordinate type with refuse collection service.

g. Waste Collection:

1) Provide waste containers, of capacity required to allow emptying only once a day.

2) Recycling: Provide for manual separation of specified types of recyclable waste, for removal in separate containers.

3) Waste Receptacles: One in each room or space, typically a waste basket.

a) Movable Receptacles: Furnished by Owner, unless otherwise indicated.

b) Fixed Receptacles: Furnished by Design-Builder, at following locations:

(1) Lobbies, locker/shower rooms, and restroom.

h. Substantiation:

1) Design Development: Location of temporary waste collection areas; identification of method of transporting waste to the collection areas from other floor levels; equipment required.

2) Construction Documents: Required performance characteristics of equipment necessary to achieve waste removal performance specified.

5. Roof Worker Safety: Provide fixed equipment required by code and Safe Design criteria for worker safety on roofs and other elevated areas, complying with ANSI Z359.1-1992(R99).

6. Where general equipment elements also must function as elements defined within another element group, meet requirements of both element groups.

7. In addition to the requirements of this section, comply with all applicable requirements of Facility Performance.

B. Amenity and Comfort:

1. Convenience:

a. Dock equipment for changing levels permanently installed.

b. Solid Waste: Travel distance to waste collection area of not more than 300 feet (91 m) maximum, including vertical travel required by person performing the collection.

c. Refuse Collection Service Access: Vehicular access to temporary collection area sufficient to accommodate trucks of size required.

d. Horizontal Transport of Waste: Manual, by means of rolling bins.

e. Vertical Transport of Waste: Provide facilities that eliminate need to carry waste up or down.

1) Passenger elevators may be used; service elevators not required for passenger elevator capacity may be used.

2. Odor Prevention:

a. If temporary waste collection areas must be located inside building, provide waterproof separation from areas below, air-tight and odor-tight separation from adjacent areas, and container cleaning facilities inside collection area.

C. Health and Safety:

1. Accident Prevention:

a. Loading Docks:

1) Design to allow movement of goods and goods-handling equipment from the interior

of trucks to loading dock surface and vice versa without manual lifting or traversing a slope greater than 1:20.

2) Design to prevent accidental movement of trucks away from docks.

3) Design to prevent accidents due to changing of levels of lifts or levelers.

4) Dock Levelers: Comply with safety requirements of ANSI MH30.1-1993.

5) Dock Lifts: Comply with safety requirements of ANSI MH29.1-2003.

D. Durability:

1. Service Life Span: Same as for building.

a. Substantiation:

1) Preliminary Design: Identification of proven-in-use assemblies of the same type, for inspection by Owner.

2) Design Development: Identification of actual products to be used.

3) Close-Out: Demonstration of waste all handling and loading-dock equipment.

2. Impact Resistance:

a. Loading Docks: Prevent accidental damage to building elements caused by trucks backing up to loading dock.

E. Operation and Maintenance:

1. Capacity:

a. Loading Dock Levelers and Lifts: As required for loading conditions, with minimum 20 percent extra capacity based on manufacturer's rating.

b. Loading Dock Levelers: 25,000 pounds (11,325 kg).

2. Ease of Operation:

a. Dock Lifts and Levelers: Easily adjusted without the use of tools.

3. Ease of Maintenance: Not requiring any routine measures to maintain operation or finishes, other than washing with soap and water.

END OF SECTION - GENERAL EQUIPMENT

LIMITED SITEWORK

PERFORMANCE

A. Basic Function:

1. Provide all modifications to the immediate facility site and utilities (including connections to within 5 (five) feet of the facility required for proper functioning of the facility and as indicated in the project program.
2. Limited Sitework comprises the following elements:
    a. Immediate Facility Site Preparation: All modifications to the facility site and grades required for construction of new work and for proper functioning of the project program.
    b. Limited Site Improvements: All elements required to provide finished and durable site surfaces to within 5 (five) feet of the facility, indoor plantings, and outdoor improvements described in the project program.
    c. Limited Site Services: All outdoor and underground elements required to complete the connections of services defined in Services (Part 3-Performance Specifications).
3. Where site elements also must function as elements defined within another element group, meet the requirements of both element groups.
4. In addition to the requirements of this section, comply with all applicable requirements of Facility Performance (Part 3-Performance Specifications).

B. Amenity and Comfort:

1. Weather:
    a. Provide shelter from weather for:
        1) Persons waiting for entrances to open, minimum of 10 people standing.
        2) Sitting outdoors; minimum of 20 seating locations
        3) Eating outdoors; seating 16 people; both covered and sheltered from wind.
2. Heat/Cold: Design to minimize heat gain in summer and maximize heat gain in winter.
3. Wind: Design to shield entrances from wind in all seasons.
4. Cleanliness: Provide above grade elements, fixtures, and equipment that:
    a. Prevent attraction and adherence of dust and air-borne dirt and soot, and minimize appearance of settled dust and dirt.
    b. Are washed reasonably clean by normal precipitation.
5. Comfort:
    a. Provide outdoor seating as described in the project program and as follows:
        1) Quantity:
            a) 2 bench seats at each entrance to the facility.
            b) 6 tables minimum with 4 chairs each at outdoor seating areas.
6. Appearance:
    a. Fit the new activities on site to the topography, soils, and existing vegetation as much as possible.

b. Finished Surfaces:

1) Make finished surfaces smooth and uniform in appearance, without depressions that collect water.

2) Do not leave soil surfaces exposed in finished work; minimize the amount of time soil surfaces are left exposed.

3) If, after consideration of other performance requirements, options remain as to methods of finishing soil surfaces, the Owner prefers:

a) Landscaping, rather than paving.

b) Native perennial shrubbery and ground covers, rather than lawns.

c. Conceal unsightly site elements from view from the street.

C. Durability:

1. Weather Resistance of Built Elements: Comply with requirements of the Shell.

2. Soil Erosion Resistance: Comply with the code and the following:

a. Maintain the existing site features that contribute to erosion resistance to the greatest extent possible.

b. Design to minimize soil erosion.

c. If erosion occurs during construction and within one year after completion, relocation or replacement of eroded soil and repair of eroded areas shall be performed by the Design-Builder at no cost to the Owner.

d. If erosion occurs within one year after completion, provide improved erosion control measures within one week after notification by Owner.

3. Traffic Resistance: Provide finished site surfaces that are permanently resistant to the type of traffic to be expected, under all weather conditions.

a. Substantiation, Hard/Soft Surfacing:

1) Preliminary Design: Identification of types and thicknesses of paving and surfacing for various functions.

2) Design Development: Proven-in-use documentation of paving and surfacing consistent with types of traffic anticipated; manufacturer's data may be submitted for modular paving units.

3) Construction Documents: Engineering calculations, based on anticipated weights and intensity of traffic.

4. Flooding:

a. Control storm water runoff as required to prevent damage to project elements, including vegetation, and to prevent damage to the greater site, neighboring sites, including vegetation.

b. Coordinate (with Site Work Subcontractor) storm runoff so as to prevent storm water runoff into public utilities in excess of actual capacity or amount allowed by public agencies, whichever is less, under conditions of the most extreme rainfall that might occur in 50 years.

D. Operation and Maintenance:

1. Utilities: See Services for design parameters.

2. Ease of Maintenance:

   a. Snow Removal: Design to facilitate removal of snow from pedestrian trafficways using mechanized equipment or automatic means wherever possible; where not possible, design to minimize the effort required to use manual snow removal methods.

3. Theft Deterrence:

   a. Provide fixtures that are either anchored securely to the ground using fastenings not easily removable or that are too heavy for one person to carry, and that are made of materials with no intrinsic or salvage value.

APPENDIX LIST

Appendix A: Geotechnical Information and Boring Logs for Adjacent Site

Appendix B: Site Use Plan

Appendix C: South Table Mountain Overall Site Plan

Appendix D: West Metro Fire Rescue - Supplemental Rules and Regulations