**Owner’s Project Requirements- SUSTAINABILITY and ENERGY EFFICIENCY**

**Guidance: This document is intended to provide a framework for creating the Owner’s Project Requirements (OPR). Owner to complete all sections indicated by** *red, italicized font.* **Revert to standard font upon completion and also edit/delete other sections as appropriate to clearly communicate the OPR to the design and construction team. Please delete guidance before finalizing OPR document.**

Owner Representative Contact:

*Name*

*Position*

*Date*

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Owner’s Project Requirements

* 1. Sustainability Goals and Requirements: *Insert general sustainability narrative here. Include discussion of cost-payback analysis as applicable, building materials discussion as applicable etc.* The project goal is to achieve the following benchmarks: *Delete criteria that do not apply, add others as necessary*
     1. LEED or LEED equivalent: *version and anticipated rating*
     2. Living Building Challenge: certified, or number of petals
     3. Passivehouse: certified
     4. Green Globes: *version and anticipated rating*
     5. ASHRAE Standard 90.1-2010: *% better than baseline building*
     6. Energy Use Intensity (EUI): XX kBtu/yr site energy use
     7. Zero Net Energy (ZNE) building
  2. Mechanical Systems Comfort Criteria:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Space Name | Summer Temp  °F | Summer Humidity  %RH | Winter Temp  °F | Winter Humidity  %RH | Radiant Mean Temp  RMT °F | Sound Level  NC | Special considerations: unusual plug loads, pressure relationship, IAQ, etc. |
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* 1. Commissioning Requirements:
     1. The commissioning agent (CxA) has/will be engaged to assist tin the delivery of a high-performance, fully functional building. Systems to be commissioned include: *(edit list as appropriate)* building envelope, mechanical systems, lighting systems, renewable energy production systems, electrical systems, fire protection systems, fire alarm, security, and communications systems.
     2. CxA responsibilities by phase:

|  |  |
| --- | --- |
| Phase | Commissioning Responsibility |
| Pre-design Phase | * Review OPR (and provide template) * Review BOD |
| Design Phase | * Create Design Commissioning Plan * Create and Manage Design Issue Log * Review Design Documents * Supply Cx Specifications * Attend Pre Bid Meeting |
| Construction Phase | * Create Construction Commissioning Plan * Review Submittals * Create and Manage Construction Issue Log * Hold Commissioning Kick Off Meeting * Create PFT & FPT Check Sheets and Forms * Perform Site Inspections * Observe / Verify / Perform site PFT tests |
| Acceptance Phase | * Observe / Verify FPT * Review O&M Manuals and As Built Drawings * Verify Operator Training * Create Commissioning Report * Create Systems Manual |
| Warranty Phase | * Observe/Verify deferred testing * Perform a warranty site visit and review report * Verify documentation of utility baselines |
| Ongoing Cx Phase | * Assist operators with maintaining baselines |

* 1. Accessibility Requirements: The building shall meet all current Americans with Disabilities Act (ADA) or other governing standards or requirements. Systems requiring routine operation and maintenance, such as HVAC components and electrical panels, shall be designed to provide adequate access and clearances for all operation and maintenance tasks. *List any additional requirements here.*
  2. Building Envelope: The building envelope is the most important component of the mechanical system. All components must be evaluated to determine the energy impact of this component. For example, adding more glazing at a lower U-value may reduce total building heating (or not). It is anticipated that this project will use high-performance for all of the thermal components of the building envelope. Massing, shading and glazing will need to be studied in detail to assure that the envelope harvests solar energy in the appropriate quantities to avoid summer cooling loads and winter heating loads.
  3. Mechanical System Requirements: The HVAC system shall be designed to contribute to the overall energy goals and space controllability and to meet the design data matrix of this OPR. The system shall be constructed to industry best practices using standard industry components such that the operation and controllability are well understood by typical operators. All systems must be accessible and the design should take into consideration ease of operation and maintenance. Specific systems requirements: *List any additional requirements such as specific DDC interfaces, equipment types to be used or avoided, etc.*
     1. No combustion will be allowed on site.
     2. Filtration will be to *(choose one, list any spaces with higher criteria) MERV 7, 8, 11, 13*.
     3. All pumps and fans will be variable speed.
     4. Users in the space *will/will not* have access to thermal setpoints.
     5. Provisions will be made to install additional heating/cooling if the Owner finds that building thermal comfort is not acceptable.
     6. Ventilation Requirements:
        1. Mechanical ventilation systems shall be designed to meet minimum ASHRAE standard 62.1 ventilation required for all spaces. Ventilation shall be determined based on occupancy type, area, and of height of space.
           1. Office occupant density: xxx sqft/person
           2. Conference room occupant density may be based on total peak head count RMI will expect in the space, which may be over typical ASHRAE occupant density assumptions.
        2. Mechanical ventilation system design *shall not* be increased to 30% above ASHRAE standards per LEED or any other
  4. Building Dashboard System Requirements: This project will include a building dashboard to allow real-time monitoring, interaction and education of building visitors with the building systems. The primary objective of this system is to educate building visitors about the energy used, energy produced on site, how the building envelope and/or mechanical systems are operating to reduce energy use. This interface will also be used by building operators and during the M&V exercise to understand the building energy use/production.
  5. Plumbing System Requirements: The plumbing system shall be designed to provide excellent service to the occupants and meet the sustainable water use goals of this OPR.
  6. Fire Protection System Requirements: The building shall be fully sprinkled with a system that meets code requirements for the building type, use and occupancy.
  7. Lighting Requirements: The lighting systems will be designed to meet applicable codes, meet project stated energy goals and provide excellent indoor lighting comfort. It is anticipated that daylighting controls will be used in all main spaces and occupancy controls used in all service spaces to limit lighting energy use. *List any additional requirements such as specific interfaces, fixture types to be used or avoided, etc.*
  8. Electrical Power System Requirements: The electrical system shall be designed to provide all building power requirements for occupant transportation, HVAC, plug load, emergency load, lighting load and other special loads of the building as required by local or regional codes and the design of the other building components. *List any requirements for power quality or redundancy.*
  9. Emergency Power will be provided to the following systems:
  10. Fire Alarm Requirement: The building shall have a fire alarm and notification system throughout the building. The system shall provide primary notification of any smoke or fire event directly to the building occupants and to a UL station.
  11. Security Requirements: The building shall have a security system throughout the building. The system will include: *(edit lists as appropriate)*
      1. Card access system
      2. Security station
      3. Intrusion alarm
      4. Closed circuit television system
  12. Communication Requirements: *Describe anticipated communication systems for example: wifi throughout, Ethernet connections at all workstations, any special speed requirements etc.*
  13. Acoustical Requirements: The design shall prevent ambient noise from intruding into the building and causing noise levels above those indicated in the OPR. The design shall also prevent internally generated noise from rotating and vibrating equipment from infringing on adjacent spaces not to exceed those levels indicated in the OPR.
  14. Benchmarking Requirements: The design shall provide predicted utility usage benchmarks for each utility system in the building. These benchmarks shall be based upon the engineers *design calculations and/or design modeling. The designer shall also include predicted possible uncertainty predictions for the baselines provided.* These baselines will be used to evaluate future building performance and operator evaluation.
  15. Measurement & Verification (M&V) Requirements: The Owner intends to use a M&V program to verify ongoing opeartions and commissioning of the building. The building will use the following M&V systems and procedures: *(Select one of the following M&V performance levels and delete the others as needed. Add/delete design components and features as needed to reflect expected systems.)*
      1. Level I M&V shall include using the building’s master electric, gas and water meter readings to evaluate monthly performance from previous readings to present readings. The operators shall be provided with simple work tools to normalize the meter readings for weather and occupancy variations on an annual or monthly basis, and compare these uses against anticipated (i.e. modeled) energy performance.
      2. Level II M&V shall include using sub meters to separate loads to more accurately determine operator performance of electric, gas and water usage over time. At a minimum the building shall be provided with the following meters:
* Main electric meter, lighting load sub-meter, and HVAC load sub-meter
* Main water meter, landscape sub-meter, kitchen sub-meter, cooling tower sub-meter and water feature sub-meter
* Main gas meter, domestic hot water sub-meter, kitchen sub-meter
* Metering for on-site renewable energy systems (PV or SHW)

The operators shall be provided with simple work tools to normalize the meter readings for weather and occupancy variations on a monthly basis.

* + 1. Level III M&V shall include using sub meters to separate loads to more accurately determine operator performance of electric, gas and water usage over time and all data shall be normalized through the use of a calibrated simulation model. At a minimum the building shall be provided with the following meters:
* Main electric meter, lighting load sub-meter, and HVAC load sub-meter
* Main water meter, landscape sub-meter, kitchen sub-meter, cooling tower sub-meter and water feature sub-meter
* Main gas meter, domestic hot water sub-meter, kitchen sub-meter
* Metering for on-site renewable energy systems (PV or SHW)
  1. Operations Training: The construction documents will require operation and maintenance instruction on all systems/equipment used on this project. *Insert any additional specific training requirements.*
  2. O&M Manuals: All Operating and Maintenance manuals shall provide the information needed to understand start-up, operation, maintenance, shut down and repair of the equipment and assemblies used on the project. *Insert any additional specific training requirements.*
  3. As-Built Drawings: As-built drawings shall be provided that record all revisions and changes to construction documents. *Insert any additional specific training requirements.*
  4. System Manual: The system manual shall be the repository of information and operating documents to provide systems-based organizational information for system managers and operators.