Owner's Project Requirements

----EXAMPLE----

Office, Condo & Retail Tower

Any City, USA

Date of this version: _____

This version approved by: _____

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1. Overview and Scope

1.1 Overview and Definition

The Owner's Project Requirements (OPR) provide an explanation of the ideas, concepts and criteria that are considered to be very important to the owner, coming out of the programming and conceptual design phases and which are desired to be tracked throughout design and construction. The OPR is developed by the owner, not the design team. The OPR provides the direction for the design team. The OPR document sets the functional goals that the design is judged against and establishes the basis of the criteria used during construction to verify actual performance. The OPR does not list items that are already required by code. The OPR is generally not a description of what specifically will be included in the project design, but is the more general feature and categorical performance criteria to be met by the design. Where practical and known, the OPR includes measurable indicators used to verify that the performance requirements were met.

The OPR will be followed by the basis of design or design narrative written by the design team and included with design package submissions. The basis of design documents the primary thought processes and assumptions behind the design decisions and describes the design elements being incorporated to meet the OPR.

1.2 Scope

This document includes requirements for the systems that are more likely to be included under the formal commissioning umbrella or be impacted by their interactions. For reference, systems not included in this project and OPR that are typically commissioned and should have an OPR developed for them include: process mechanical and plumbing, paging, automatic doors and gates, presentation screens, and other moving mechanical devices.

This document is not a comprehensive project OPR, and does not include all project requirements and directives to the design team which could include: Other disciplines such as fire protection, structural, landscaping, civil, geotechnical and other earth work, utilities, specification division 1 requirements, demolition, all the materials, furnishings and special construction disciplines, drawing, specification and calculation requirements, codes and references, etc.

This document focuses on the mechanical, energy and comfort related systems and on the sustainability requirements of the project. Other areas impacted by commissioning or commissioned systems are covered more broadly. The design areas included in this document are:

Covered More Thoroughly

- Heating, ventilating & air conditioning (HVAC)
- Electrical
- Sustainability
- Commissioning

Covered Peripherally

- General requirements
- Design process
- Building envelope
- Fire alarm
- Plumbing
- Data and communications
- Security and access

1.3 Format

Under each area or building system is a list of pertinent questions and data needed to be answered. Blue, indented italicized text indicates the answers to the questions and specific information about the project requirements for this project.

1.4 OPR Process and Tracking

The following table lists the design areas and the party assigned to fill in the OPR and its current status. Track changes should be used for all versions after the initial.

Design Area	Responsible Party for OPR Input	Status of Input
Overview and Scope		
General Requirements		
Design Process		
HVAC		
Electrical		
Commissioning		
Sustainability		
Building envelope		
Plumbing systems		
Fire alarm		
Data and communications		
Security and access		

Updating Required: The following articles are missing information. This document will be updated when this data is submitted. Sections 3.6.3.2, 7.4.1 and Section 9.

2. General Requirements

2.1.1.1 What are the general overall objectives of this project?

The Office Tower is designed to be a smart building with compelling retail spaces, high performance offices, and condominiums for intelligent living. Comprehensive energy efficiencies will be integrated in a whole building systems approach to significantly reduce carbon dioxide emissions and create an "intelligent building" that is both environmentally, and socially, responsible.

2.1.1.2 Describe the existing conditions of the site.

The site used to contain a 75 year old office building which was removed in 2008. The site takes up an entire city block and is now vacant in the fringes of northern downtown with adjacent low and high rise buildings on four sides.

2.1.1.3 What type of activities/functions will occur in this facility? (Provide a general overview. The space planning / utilization is included in another document by the Architect).

Office, Parking, Retail, Condominiums (no restaurant)

2.1.1.4 What type of facility culture does the owner want designed into the facility (corporate, office, formal, relaxed, business, leisure, academic, natural, etc.)? Explain for each type of occupancy.

Office- formal Class A, high-end office space.
Retail- premium, compelling tenants
Condos- highest-income, upper echelon.

2.1.1.5 How many square feet of floor area is planned for each of the use types (retail, office, condo, parking)? How flexible are the totals and the fraction of each?

See floor area summary table below.

Floor	Flr to Flr Hgt	Floor (GSF)	Floor (NSF) USABLE	Core (NSF)	Retail (NSF) USABLE	Usable (NSF)	# Res Units / efficincy
mech room-top of roof	29.00						
33	13.00	4,934					0
32	13.00	8,417					2
31	13.00	9,847					0
30	13.00	9,909					3
29	11.00	14,438					11
28	11.00	14,255					11
27	11.00	14,084					11
26	11.00	13,659					11
25	11.00	14,200					11
24	11.00	14,200					10
23	11.00	14,200					11
22	13.40	15,634	15,285	2,506		12,779	
21	13.40	15,634	15,285	2,506		12,779	
20	13.40	15,634	15,285	2,506		12,779	
19	13.40	15,634	15,285	2,506		12,779	
18	13.40	15,634	15,285	2,506		12,779	
17	13.40	15,634	15,285	2,506		12,779	
16	13.40	15,634	15,285	2,506		12,779	
15	13.40	15,634	15,285	2,506		12,779	
14	13.40	15,634	15,285	2,506		12,779	
13	13.40	15,634	15,285	2,506		12,779	
12	13.40	15,634	15,285	2,506		12,779	
11	13.40	15,634	15,285	2,506		12,779	
10	13.40	15,634	15,285	2,506		12,779	
9	13.40	15,634	15,285	2,506		12,779	
8	13.40	14,555	14,257	2,506		11,751	
7	13.40	16,317	15,969	2,506		13,463	
6	13.40	16,317	15,969	2,506		13,463	
5	13.40	16,317	15,969	2,506		13,463	
4	13.40	16,317	15,969	2,506		13,463	
3	13.40	16,317	15,969	2,506		13,463	
2	20.00	20,489	18,701	2,090	16,611		
1	20.00	19,339	18,901	2,332	10,240		
LL1	20.41	24,559	23,694	2,663	0		
LL2	10.95	24,074	23,338	2,529			
LL3		23,757	23,110	2,529			
LL4		23,757	23,110	2,529			
LL5		23,757	22,896	3,122			
LL6	10.95	20,517	19,683	3,340			
TOTALS							
33	466.00	486,987			26,851	257,972	81
Including u/g retail/parking/stor.		535,620					

*Not accounted for in GSF of floor 30 is 226 SF of deck space which counts towards FAR
*Not accounted for in GSF of floor 31 is 234 SF of deck space which counts towards FAR

2.1.1.6 What are the floor number and/or building height requirements, desires and limitations?

33 Floors, 515' height with spire, project design falls within designated limitations. 460' ht limitation in code modified to allow increased height.

2.1.1.7 What is the proposed facility's life expectancy?

100 years

2.1.1.8 What future flexibility in function/activities must this facility accommodate?

TBD.

2.1.1.9 The building houses retail, office and residential condominium occupancies. Are spaces anticipated to be converted from one use to another?

No

2.1.1.10 How long does the current owner intend to own this building?

ACE Development Inc., develops commercial properties for its own account with the intention of holding onto the investment indefinitely.

2.1.1.11 Will the Owner operate and maintain the building?

We operate and maintain all our commercial assets.

2.1.1.12 What frequency of change will the building undergo during its lifetime?

We would expect normal "roll-over" of tenants in line with a Class-A office buildings as lease terms expire in the fifth and tenth years.

2.1.1.13 What type of changes and tenant fit-up are envisioned?

High end finish levels typically associated with Class-A office buildings (can we insert our intention to educate new tenants on LEED CI)

2.1.1.14 What are the overall energy efficiency goals and objectives? (ASHRAE 90.1, State Code, Energy Star, other indices, this building's past performance, etc.)

Use of high efficiency HVAC systems with an energy efficiency goal of 30-50% better than code requirements.

2.1.1.15 What other environmental goals and requirements are there?

(Detailed LEED goals will be given later.)

A building that will provide environmental control utilizing sustainable design practices in the pursuit of achieving LEED Platinum. Incrementally work to achieve the 2030 Challenge to result in zero fossil fuel based energy.

2.1.1.16 What are the objectives relative to the local neighborhood?

The project will be inherently sustainable by virtue of its location, mixed-use "live/work" accommodations, and the higher-density development designated for this site, what is now commonly referred to as the "compact city." There is a direct correlation between urban density and energy consumption as density promotes walking, cycling, and mass transit as alternatives to driving.

Effectively, a dense development in this location leverages the City's significant investments in the adjacent LRT system on SW Markel and Yancey Streets, the Transit Mall on SW Fifth and Sixth Avenues, City Streetcar line on SW Tenth and Eleventh Avenues, and the required supporting infrastructure.

2.1.1.17 What are the challenges relative to the local neighborhood and adjacent buildings?

While the building will necessarily cast shadows to the immediately adjacent properties to the north, it will not shadow the new park located immediately to the south or nearby Pioneer Courthouse Square at any time. The use of a clear, highly transparent low-E glass will transmit abundant daylight to the interiors while minimizing the admittance of infrared solar heat. This high-performance glazing selection will purposefully mitigate unwanted reflections and solar loads on other building's, and along with computer simulations

studies of seasonal solar shading, was reviewed and approved by the City Design Review Commission. A traffic study was conducted and concluded there would be no significant adverse traffic or parking impacts. This traffic analysis was both required and approved by the City Design Review Commission.

2.1.1.18 What direction is intended for the front of the building to face? How much latitude is in this?

Front: West (no latitude).

2.1.1.19 Describe the expected phasing of the project for construction, tenant fit out and occupancy? Include descriptions for each of the occupancy types.

Retail: Anticipated occupancy, 4th quarter 2010, all finished at once.
Office: Anticipated occupancy, 4th quarter 2010, all finished at once.
Condo: Anticipated occupancy, 2nd quarter 2011, all finished at once.

3. Design Process

3.1 Basis of Design Documentation

3.1.1.1 Describe the requirements for the design team to develop the basis of design (including design narratives and design rationale) for the various design packages.

With each design submission the design team will include a written basis of design. This will be updated and become more detailed with each successive submission. The basis of design includes two primary elements—a design narrative and the design rationale.

During the schematic design phase the design narrative is the written description and discussion of the concepts and features the designer intends to incorporate into the design. In subsequent design phases the design narrative is a description of what they have incorporated to meet the owner's project requirements and associated performance criteria.

The design rationale is the basis, rationale and assumptions for calculations, decisions, schemes and system and assemblies selected to meet the owner's project requirements and to satisfy applicable regulatory requirements, standards and guidelines.

3.2 Design Reviews

3.2.1.1 Describe the expected design reviews and the expectations of the design team regarding responding to comments.

There will be owner review as well as third party commissioning review for commissioned systems for each design submission. The design team will respond in writing to each comment and will consult with the Owner on issues that may increase scope, project budget or timeline beyond what they feel the Owner may desire. Reviewer comments will be responded to and comments

with questions or disagreements between reviewers and the design team will be adjudicated prior to proceeding with impacting portions of the next design phase, unless directed by the Owner.

4. Heating, Ventilating and Air Conditioning

4.1 Occupancy, Climatic, Temperature and Sizing Requirements

4.1.1.1 **Time of day schedules.** List tenant types with their time of day and days of week they occupy.

Office: 6am – 6pm M-F.

Data center: 24/7 continuous.

Retail: 8am – 8pm M-F, 8am – 6pm Sat

Residential Condos: 24 hrs/day, 7 days/week

4.1.1.2 List and describe any spaces that will require night time operation. Indicate how often and how long this after hours occupancy is likely to be.

All office areas shall have local override capabilities for the HVAC and lighting to allow after hours occupancy. Override should be accomplished from local override switches in the space. In general, this after hours operation is expected to be rare lasting from a few hours to all night. However, the there shall be 20,000 sf of office space, yet to be located, that will house an accounting firm that will require 2 months, twice a year of 24/7 operation.

4.1.1.3 **Climatic design criteria.** What climatic conditions shall the HVAC systems be designed to--ASHRAE 0.4%, 1% or 2% (the latter being more typical and assumes less extreme weather).

ASHRAE 2%.

4.1.1.4 **Temperature and humidity.** List the interior temperature and relative humidity conditions that must be maintained for each tenant or occupancy type. List any special conditions or spaces.

Relative humidity: All temperatures within a given space should be compliant with ASHRAE 55 standards of 5F in the occupied zone.

Retail spaces: 68F heating, 75F cooling, <55% RH.

Office areas: 68F heating, 75F cooling,, <55% RH.

Data center: 73-76F, 35%-45% RH

Condos: 68F heating, 75F cooling, <55% RH.

Stair towers: 64F heating, 79F cooling.

4.1.1.5 **Tolerances.** List the space temperature and humidity tolerances that each space type must stay within during occupied hours.

The HVAC system shall control the temperature in all spaces, including the data center to within +/-3F of the given heating and cooling set points.

4.1.1.6 **Air Drafts.** How tolerant are the occupants expected to be of noticeable HVAC air movement—none, little, some, moderate.

The occupants of this Class A office building and high end condo tenants will have little tolerance for drafts.

4.1.1.7 **Diversity.** Is it OK to plan for reasonable diversity—typically around 85%—that is, the assumption and likelihood that not all spaces will experience worst case load conditions at the same time?

Assume moderate diversity in both heating and cooling for interior spaces. For perimeter spaces, assume only a small diversity for heating. For perimeter spaces on a given orientation, assume only a small diversity for cooling.

4.1.1.8 **Redundancy.** What redundancies are desired for specific HVAC services (chilled water, hot water, space air temperature, humidity, air quality) and why?

Pumps, floor-by-floor delivery (eliminates 'top down' approach).

Provide redundant (backup) pumps for the condenser water loop system. Provide multiple boilers, cooling towers, and DHW boilers that will allow partial capacity to be met if one were to go down, but none are a full backup or fully redundant.

4.2 Air Quality and Ventilation

4.2.1.1 What are the goals and requirements for indoor air quality--standard, above average, exceptional? List any special requirements.

To maintain ventilation standards as stated by ASHRAE 62.1 2004 while maintaining thermal comfort. Air handlers will be required to be filtered to reduce dust buildup on system components. Building flush out is required to meet LEED requirements.

Generally the goal is to have above average air quality.

4.2.1.2 What are some of the methods considered valid for meeting these goals? (ASHRAE and codes, higher than code required minimum levels of natural ventilation (with associated higher energy costs), additional filtration (with associated higher fan energy and O&M costs), minimizing outdoor air ventilation rates with demand controlled (CO2) ventilation (to minimize energy use), reducing indoor contaminants).

Minimum ventilation requirements as stated in ASHRAE Standard 62.1 2004 and meet thermal comfort requirements as stated in ASHRAE Standard 55-2004. Use of demand control ventilation. CO2 monitors in high occupancy areas.

4.2.1.3 What guidelines should be referenced and applied as much as reasonable for this project?

Indoor Air Quality Guide, ASHRAE.

4.2.1.4 Will there be rooms that store bulk quantities of flammable, combustible, radioactive, or biological materials?

No.

4.2.1.5 Where are operable windows acceptable (office, retail, condominiums)? Where are operable windows desired? Are patio doors desired for the condominiums?

Acceptable in offices. Desired in condominiums. Patios are desired for the condos.

4.2.1.6 Where, if any, will smoking be permitted in the building?

No smoking.

4.2.1.7 What level of air flow separation is desired between condominiums to control odors (standard, above standard, exceptional)?

Exceptional. Makeup air supply and slight corridor pressurization will negate the need for additional odor control.

4.2.1.8 What level of air flow separation (from common mechanical system air and natural air leakage) is desired between restaurants and adjacent spaces to control odors (standard, above standard, exceptional)?

No restaurants.

4.2.1.9 Is the underground parking garage ventilation system desired to be controlled to the ventilation rate to meet code maximum carbon monoxide levels, or at a more liberal constant air change rate?

Keep ventilation to a minimum, using CO control.

4.3 General HVAC Systems Data

4.3.1.1 What system types and brands are not desired or are not acceptable?

No system types or brands have been identified as preferred or excluded.

4.3.1.2 What system types or brands are mandatory?

No system types or brands have been identified as preferred or excluded.

4.3.1.3 Is larger central equipment desired over smaller more numerous distributed equipment? (Central equipment typically is easier to maintain, but requires vendor support, lasts longer, is more energy efficient, but may cost more.)

Because of multiple commercial tenants, staged fit out and individual condominium ownership, smaller distributed equipment is preferred.

4.4 Design Calculation and Tools

4.4.1.1 List the requirements for engineering calculations and assumptions.

The A/E shall perform engineering calculations to support the mechanical design. Standard, recognized computation techniques shall be used; shortcut methods and rules of thumb are not acceptable. All assumptions shall be

clearly stated with supporting documents referenced. The calculations shall be properly indexed and bound, signed, and dated by the designer and checker; approved and stamped by a registered professional engineer holding a valid license and presented as part of the design package.

4.4.1.2 List any special design guidelines or standards besides ASHRAE 62 Air Quality, ASHRAE 90.1 Energy, NFPA 101 and 110 Fire and Emergency Power and applicable state codes and standards that should be used in designing this building with appropriate elements incorporated.

ASHRAE Advanced Energy Design Guidelines

4.4.1.3 What design tools are desired to be used for this project (standard 2-D computer-aided design, 3-D modeling of the exterior building shape, 3-D modeling of the mechanical, electrical and plumbing, 3-D modeling of the interior spaces and lighting levels, 3-D visualization of light levels)?

eQuest, DOE-2, FlowVent (CFD), AutoCad

4.4.1.4 What methods are desired for informing the design relative to energy efficiency, ventilation and comfort (standard written guides and practices, bin analyses, hourly simulation tools, computational fluid dynamic tools for special situations)?

Design Simulation and Computational Fluid Dynamics

4.5 HVAC Budget Issues

4.5.1.1 What are the budget goals for the HVAC system (standard typical cost as % of entire design, OK to exceed the standard cost fraction if justified through life cycle cost analysis)?

Cost effectiveness is a general criteria for system selection but a percentage has not been specified.

4.6 HVAC Performance Requirements

4.6.1.1 Describe the general HVAC performance requirements.

All of the HVAC equipment should perform as described on the project plan and schedules with regards to capacities, pressure drops, efficiencies, etc. While the performance of every piece of equipment precisely to its rating may not be crucial to proper operation of the facility, there is specific equipment whose performance is more vital. Central heating and cooling equipment, for example must be able to meet their intended performance ratings so that building temperatures can be maintained. Sequences of operation which are critical for maintaining precise pressure relationships must perform properly.

The commissioning process will establish that critical equipment and systems perform properly when the building is turned over to the owner. Carefully planned and executed maintenance programs will help ensure that the systems and equipment continue to function as intended over time.

4.6.1.2 *Capacity* for the following systems shall be verified through a) certified factory testing of units shipped, b) field tests, or c) via ARI ratings only (specify). (e.g., Air handler or roof top DX unit cfm, cooling coil capacity or, heating coil capacity. Chiller, cooling tower or boiler heating or cooling capacity.) List.

ARI ratings are acceptable for all equipment.

4.6.1.3 *Efficiency* for the following systems shall be verified through a) certified factory testing of units shipped, b) field tests, or c) via ARI ratings only (specify). (e.g., DX unit EER, boiler efficiency, chiller kW/ton). List.

ARI ratings are acceptable for all equipment.

4.7 Energy Efficiency and Demand Reduction

4.7.1.1 The goals and targets of *overall building* energy efficiency are given in the Sustainability section under Energy Efficiency.

4.7.1.2 List any specific HVAC energy efficiency features or equipment desired or required for this project.

None specifically.

4.7.1.3 What level of HVAC *equipment* energy efficiency are desired (standard, above standard, exceptional)?

The current equipment energy efficiency target is 30-60% better than code requirements.

4.7.1.4 Are power demand reduction features important? These include, listed from moderate to rigorous: staggering of equipment startup, active automatic load limiting, thermal energy storage, etc. List those required or of interest.

Staggering of equipment startup is sufficient.

4.8 Renewable Energy

4.8.1.1 Describe any renewable energy goals.

Renewable energy goal is to provide 2.5% of total design energy cost with renewable energy such as wind or solar. Project seeks to incrementally meet the requirements of the 2030 Challenge, to achieve carbon neutrality by 2030.

4.9 New Concepts and Systems

4.9.1.1 Would incorporating new or relatively untried systems and equipment be seriously considered (no, possibly, likely)?

Yes.

4.10 HVAC Flexibility for Tenant Churn

4.10.1.1 What are the requirements for flexibility in the HVAC systems to accommodate changing floor layouts and occupancy needs (normal, above average flexibility, very flexible. List the areas that apply or any special needs)?

Zones will be able to be added as deemed necessary. HVAC design must be intentionally flexible.

We have two retail tenants on 20 year term leases, with 20 year renewals

Retail HVAC flexibility is also very important.

4.11 Maintainability

4.11.1.1 What are the maintainability objectives for the HVAC equipment (standard level, above standard, exceptionally easy to maintain)?

Require all pumps, motors, terminal units and associated equipment to be easily accessible to maintenance staff. Goal is to be above standard.

4.11.1.2 Is it expected that there will be normal, above normal or exceptional accommodation for replacement of chillers, cooling towers, boilers and air handlers?

Normal.

4.11.1.3 How much desire is there for top of the line equipment features that simplify and make maintenance easier? (e.g., hinged access doors, filter pressure monitoring, direct expansion equipment with refrigerant hose access plugs and taps, hose bibs on roof, lights in cabinets, service outlets in units or nearby, etc.). Little, some, significant.

Significant.

4.12 Reliability and Durability

4.12.1.1 What are the reliability and durability objectives for the HVAC equipment (standard level, above standard, exceptionally reliable)? Would this include smaller components like dampers, actuators, valves, sensors, etc. and not just the larger equipment?

Provide equipment with at least 1 year warranty. Temperature, CO2, and airflow monitoring devices to be calibrated and factory tested before installation.

Above standard reliability and durability of major and smaller components are desired.

4.13 Operations and Maintenance Documentation

4.13.1.1 Are electronic O&M manuals desired?

Yes.

4.13.1.2 Are single-line system flow diagrams beyond the control diagrams desired to be provided for O&M staff of the primary systems? List--chilled water, process water, heating hot water, air handlers, cross section air riser diagrams of floors' supply, return and exhaust flows, etc.

Yes. All listed.

4.13.1.3 What comprehensiveness of Systems Manual is desired (minimum, moderate or very comprehensive)? The Systems Manual describes the operational (in contrast to maintenance) procedures for the systems and equipment and building as a whole—system flow diagrams, set points, strategies for seasonal control optimization, shutdown procedures, emergency procedures, energy optimization and tracking recommendations, restesting and calibration methods and frequencies, etc.

Very comprehensive.

4.14 Training

4.14.1.1 Who will be operating the building HVAC and electrical systems? (in-house staff, outsourced staff)

In-house staff.

4.14.1.2 How much equipment will be maintained by equipment vendors vs. in-house staff?

All equipment will be maintained by in-house staff except for significant issues with major equipment like chillers, boilers and built-up air handlers which will be handled by equipment vendors.

4.14.1.3 What level of training is desired for the in-house staff for operating and maintaining the systems and assemblies of the building?

All staff will be new to this building. A comprehensive level of training is desired.

4.14.1.4 How much of the training is desired to be video recorded? [All, most, some.]

Most systems will have their trainings recorded.

4.14.1.5 Is it desired to have the engineer and architects provide some orientation / training on the primary mechanical and electrical systems?

Yes.

4.15 Building Automation System (BAS) and Controls

4.15.1.1 Are there special owner control system standards that need to be followed?

No.

4.15.1.2 What sophistication is desired in the control system (standard, above standard, exceptional)?

Above standard

4.15.1.3 Are control schematic diagrams of all controlled equipment required to be in the design documents, or will the sequences of operation suffice?

Control schematics required for all equipment.

4.15.1.4 Is a specific controls points list required in the design documents that lists each point and whether it's a binary or analog input or output and the equipment it is tied to, or is the contractor required to determine control points from the specified features and sequence of control?

Points list required.

4.15.1.5 What level of detail is desired for the control sequences of operation to be included in the design documents—moderate, above standard, very detailed? Detailed sequences are finely numbered and include: overview narrative, interactions, interlocks, delineation of control with packaged controllers, startup, warm up, cool down, occupied, unoccupied, optimal start/stop, capacity control, staging, set points, setbacks, setups, resets, demand limiting, loss of network, loss of power, alarms, delays, etc. and result in fewer questions of, and require only limited adjustment by the controls contractor.

Require detailed sequences.

4.15.1.6 For the operator's interface screens, how many summary tabular screens of conditions of grouped equipment are desired (e.g., air terminal unit zone: cfm design and actual, space temperature set and actual, discharge temperature. All air handlers, etc.). Few, some, many?

Many.

4.15.1.7 What control systems are not acceptable?

Wireless may not be desirable. Mechanical engineer to provide list of approved manufacturers.

4.15.1.8 What control systems are mandatory or highly desirable?

No control system types or brands have been identified as preferred or excluded.

4.15.1.9 List any control element type or brand that is not to be used.

Paddle type flow meters are not to be used in the open condenser loop system.

Paddle or blade type flow switches are not to be used anywhere.

4.15.1.10 Is a web-based accessible system desired?

Yes.

4.15.1.11 Will the control system need to tie into another existing building automation control system from another building? Explain.

No?

4.15.1.12 How much is desired to be included in one integrated work station monitor (HVAC, lighting, fire, security), vs. separate monitors and work stations?

There may be separate controllers or systems, but there should be some monitoring between them. See subsequent questions below.

4.15.1.13 Describe interlocks to the HVAC system from the Security System.

The HVAC OWS will not monitor any security elements other than three levels of general security alarms.

4.15.1.14 Describe interlocks to the HVAC system from the Fire Alarm System.

Fire alarm system is separate, except general alarms are passed to the BAS.

4.15.1.15 Describe interlocks to the HVAC system from the Lighting Control System.

The HVAC operator's work station (OWS) will control the HVAC and monitor the lighting schedules, but doesn't have to be able to change schedules, though that would be OK.

4.15.1.16 Describe interlocks to the HVAC system from the elevators.

An alarm in the elevator will be transmitted to the BAS and the security system for monitoring and the elevator sump pump alarm will be seen at the BAS.

4.15.1.17 How much interoperability communication between the central control system and the mechanical equipment is desired? (none, little, some, significant) Add details in the next article.

Some.

4.15.1.18 Interoperability Details. (edit the following)

For Primary equipment (chillers, boilers, main airhandlers) the BAS just monitors some? many? all? points.
For primary equipment, the BAS passes set points and other commands to the equipment.

For the following other equipment, the BAS sees through BACnet, Modbus or Lon most of the equipment's point values and status: _____

4.15.1.19 For the chiller, boiler and pumps are there any of these that will not require automatic changeover to the backup / lag piece without operator action should one piece of equipment fail?

No.

4.15.1.20 How fast should the refresh rate be on the operator's work station? (standard, above average, exceptional)

Standard.

4.15.1.21 What fraction of the BAS set points should be able to be adjusted from the OWS graphics screens? (none, few, some, most, all)

Most.

4.15.1.22 For non-measurement and verification (M&V) purposes, like energy optimization and troubleshooting, how many system monitoring points are desired, above that required to execute the sequences of control (none, some, many)?

Some.

4.15.1.23 Is there going to be a measurement and verification (M&V)--rigorous energy tracking, or significant ongoing commissioning program after occupancy, requiring numerous additional power and HVAC monitoring points? Mention it's part of LEED, if applicable.

Yes. The M&V credit will likely be included, but cost estimate for the points will determine if the measure remains in the project.

4.15.1.24 Is linking the sequences of operation and/or the O&M manual data to an icon in the graphic screen of each piece of equipment desired?

Yes, both.

4.15.1.25 How much expansion capacity is desired for adding control point inputs and outputs in each field control panel and primary controller? (none, 5%, 10%, 20%, etc.)

10%

4.15.1.26 Are there areas of the building that require essentially uninterrupted delivery of the HVAC (which would affect how the controls were designed)? List.

None.

4.15.1.27 Are there any critical areas that need their controllers to have redundancy in their power supplies?

No.

4.15.1.28 Upon a control system network failure should all equipment not being controlled by local controllers control to the last known value?

Yes.

4.15.1.29 Upon restoration of power after an outage, which equipment is allowed to require an operator to go to the equipment and reset it before it will start? Or require operator action at the workstation?

None to either.

4.15.1.30 Upon a general alarm that shuts down the equipment, upon the condition correcting itself, what equipment is allowed to or should require an operator to reset the unit at the equipment? Or require action at the workstation?

None to either.

4.15.1.31 What other desires for the control system are there?

TBD

4.16 Occupant HVAC Control

4.16.1.1 What level of control is desired for the occupants to have over the temperature and ventilation in their space—list for each occupancy type (temperature adjustable by occupants at a zone thermostat, ventilation control adjustable by occupants for their specific area, temperature control adjustable only by facility staff, ventilation control adjustable only by facility staff)?

Office and Retail: Occupant accessible thermostats should all have timed override buttons in the office and retail areas for HVAC. Every 1,000 sf or so should have an override. The thermostat temperature should be adjustable by the occupant about +/-2F. No ventilation control by occupants, except if there are operable windows.

4.17 HVAC Acoustics --See Acoustics in the Sustainability section.

4.18 Entry Design

4.18.1.1 What level of minimizing drafts in and out of the main entrances are desired (standard, above standard, exceptional)?

Above standard. Desire revolving doors with signage. No vestibule.

4.18.1.2 What types of doorways that control drafts are desired or not acceptable?

Revolving doors desired. One sided lobby.

4.19 Building Pressurization

4.19.1.1 Are there any building pressurization control schemes that are not acceptable, or that are mandatory?

No, project should have standard active positive pressurization.

5. Electrical Systems

5.1 General

5.1.1.1 List general requirements for the electrical system.

All electrical equipment will bear the UL label and no rebuilt, refurbished or remanufactured or used equipment or material shall be specified or installed. Complete raceway routing from panels to the field devices shall be indicated on the drawings for power, fire alarm, security, PA, intercom and CCTV.

Complete 1-line power diagram(s) are required.

5.1.1.2 List any requirements for coordination studies (short circuit study, protective relays/breakers, voltage drop / transient study for large motors, etc.).

Short circuit study is required.

5.1.1.3 List requirements for connected and operating electrical load estimate, including future project loads, if applicable, lighting level calculations.

Both load calcs and lighting level calcs are required.

5.1.1.4 List any specific equipment brand or components that are to be included or not included in this project.

None.

5.2 Power Capacity

5.2.1.1 How much electrical capacity (W/sf) is desired for each type of space—standard for that type of space (typical), slightly above standard, moderately above standard, significantly above standard? List any specific capacity promised to office tenants.

All spaces should have a standard power density capacity provided.

5.3 Power Quality

5.3.1.1 What level of power quality are desired (standard, above standard, exceptional)?

Standard.

5.3.1.2 Are there any spaces that require special power quality requirements?

Unsure at this time and no special provisions. TBD in tenant improvement.

5.3.1.3 What level of safeguard is required to monitor and maintain the integrity (such as voltage or phase imbalance) of the incoming power (e.g. - protection of sensitive lab equipment)? What equipment or devices are included in the design to meet this requirement?

TBD

5.3.1.4 Are there special grounding and EMF mitigation requirements for these lab environments and equipment? What measures will be taken to mitigate?

TBD

5.4 Lighting and Visual Quality

5.4.1.1 What is the general level and description of the visual quality desired in the facility? (standard, above standard, exceptional)?

Exceptional for lobby and elevator lobby spaces; above standard for parking levels, with emphasis on minimizing glare while maintaining security and energy efficiency. Exceptional for condominium units, should we move forward with including lighting design in this Contract for interior design for these spaces.

5.4.1.2 Describe the level of aesthetic and artistic license for the lighting design for each of the occupancy types.

Aesthetic design will be made in close concert with the architectural and interior design for condominiums, lobby, elevator lobby and parking spaces.

5.5 Lighting Levels

5.5.1.1 Required average maintained light levels for this project are listed below. For spaces not listed, the current IESNA light level recommendations shall be followed.

Offices: 45 FC with dual level switching and occupancy sensor.

Lobbies: 20 FC

Corridors and means of egress: 15 FC.

Conference rooms: 30 FC to 50 FC with dimming controls as required.

Restrooms: 20 FC

Equipment rooms: 30 FC

Computer Rooms/Data Center: 50FC with dual level switching.

Laboratories (general): 750 to 100FC.

Exterior lighting at building entrances, walkways, streets, and parking lots: Not more than 2 FC.

5.5.1.2 Would task lighting be an acceptable design feature required to achieve desired light levels in office areas?

Task lighting at workstations will be plug-in at discretion of the end-user. Where casework allows for integrated approach, undercounter lighting will be added.

5.6 Light Fixtures and Lamps

5.6.1.1 What level of energy efficiency is desired in the lighting equipment for each occupancy type (standard, above standard, exceptional)?

Exceptional - Premium Super T8 lighting, 3rd generation.

5.7 Lighting Control

5.7.1.1 What control of lighting is required in the various types of spaces (open office, closed offices, common areas, conference rooms, retail spaces, condominiums, exterior, parking garage, etc.)? Examples are manual switches to on, occupancy sensors to turn on or off, scheduled lighting controls and lighting sweeps and daylight dimming.

Open office: manual switch on, occupancy sensor off.

Closed office, storage and copy rooms: manual switch on, occupancy sensor off.

Corridors and other service spaces: time clock schedule.

Perimeter office (open and closed), lobbies and corridors: same as above, but also include daylight dimming.

Conference rooms: manual switch on, occupancy sensor off.

Parking garage: scheduled.

Exterior: photocell and time clock.

5.7.1.2 Do any spaces have special glare requirements?

Exterior of building

5.8 Emergency Generator and UPS

5.8.1.1 In general, what equipment is desired to be on generator power?

Life/safety equipment (fire pumps, emergency lighting, fire alarm, smoke control system fans, etc.) and local area network, building phone system, security system, elevator, data center backup HVAC.

5.8.1.2 How much extra capacity is desired in the generator (for potential special needs by tenants, etc.)?

Provide additional capacity to allow enlarging and powering the data center load by 50%.

5.8.1.3 How many hours of full load operation are desired in sizing the fuel tank?

Meet minimum code requirement.

5.8.1.4 What equipment will require uninterruptible power supplied?

UPS to be addressed by TIs, including the data center.

5.9 Power Monitoring

5.9.1.1 Is submetering of utility power desired? (list for gas, steam, electricity, water) What is the purpose of the monitoring of each? (resource efficiency tracking, measurement and verification (M&V), occupant billing, demand reduction, etc.)

Submetering of electricity is desired for tenants as incentive to reduce energy use.

5.9.1.2 What is the intended level of metering and sub-metering? (Main switchgear only, or including metering of energy consuming sub-systems, such as HVAC central plant, AHUs, lighting panels, etc.)

TBD

5.9.1.3 How will the metered information be presented and reported for the occupants and staff? (Integrated with BAS, separate monitoring station, touch screen displays in lobby/common areas, etc.)

TBD

5.9.1.4 Are peak demand reduction strategies desired?

Yes

5.10 Power Metering and Billing for Tenants

5.10.1.1 What are the needs for submetering and billing of / for tenants?

a. Eight 225-amp, 480Y/277-volt meters for the retail space. If only two tenants appear in the retail spaces, they could each have four meters apiece. If we need to combine these into two large meters, please let us know.
b. Each condo unit has their own meter.
c. The office spaces are served through two electrical risers, each riser have their own meter. Billing for each tenant space will be on pro-rata basis, based on the area of the tenant space.

6. Commissioning

6.1 Scope

6.1.1.1 What systems are desired to come under the commissioning umbrella (HVAC and controls, electrical lighting controls, emergency generator, electrical equipment (switchboards, panel boards, transformers, motor control centers, etc. list), envelope, plumbing (domestic hot water system, circulation, sump and booster pumps, grey and rainwater reclamation, automatic valves and lavatories), irrigation, laboratory and clean room systems and supports, special systems (list), security system, data, intercom, CCTV, fire, life safety, fire alarm, etc.)

Current commissioning scope includes HVAC and controls, lighting controls, domestic hot water system, circulation, sump and booster pumps and HVAC interfaces with fire alarm and emergency power.

6.2 Rigor

6.2.1.1 What level of rigor is desired for the commissioning process (typical, above average, very rigorous)? Discuss the rigor of design review, commissioning specifications, field observation and functional testing.

Current commissioning scope is for above average rigor.

Design Reviews. *During design this is characterized by a thorough independent design review of the commissioned systems and assemblies by qualified engineers focusing on commissioning, performance and O&M issues.*

Commissioning Specifications. *Commissioning specifications will be very thorough and fully describe all requirements of the Contractor, including specific testing requirements for each type of equipment. Roles of all parties and the sequence of the commissioning process will be clearly and completely described.*

Installation Verification. *During early and mid-construction the level of rigor is characterized by field observation by the Commissioning Authority or team, as necessary, to observe component and system installations for general progress and issues affecting performance and testing. Contractors are responsible for the installation, set up and startup of their equipment and*

filling out Commissioning Authority provided and all manufacturer provided checklists.

Performance Verification/Testing. *Performance verification shall be accomplished through review of control code programming, documented field testing of each sequence of operation for all equipment and through monitoring performance over time with trend logs from the building automation system. Testing will be conducted from detailed, step-by-step, repeatable test scripts specifically applicable to this project approved by the Commissioning Authority.*

In general, testing shall include testing each sequence in the sequence of operations, and other significant modes, sequences and control strategies not mentioned in the written sequences; including, but not limited to startup, shutdown, unoccupied and manual modes, modulation up and down the unit's range of capacity, power failure, alarms, component staging and backup upon failure, interlocks with other equipment, and sensor and actuator calibrations. All interlocks and interactions between packaged on-board controls, central control systems and other equipment shall be tested.

All larger, more complex or life-safety equipment will be individually tested. Testing only a sample of some equipment may be allowed where such equipment is small in physical size or importance, is numerous and is not complex or critical for life-safety (many smaller rooftop packaged units, air terminal units, exhaust fans, windows, etc.), as approved by the Commissioning Authority. When sampling is conducted a random spot check is required with sufficient sample size to provide reasonable confidence that the sampled results represent the entire population of units.

Tests for a given system or assembly shall not be conducted until they are fully operational under normal and reliable control with construction checklists, control calibrations, programming and control system graphics complete.

See related information in the HVAC Performance Verification Requirements section.

6.3 Objectivity

6.3.1.1 What level of objectivity and independence are desired for the commissioning process (typical, above average, significant)? Describe the independence of the Commissioning Authority, the reporting path of issues, how much testing the Contractor may do on their own, etc.

Current commissioning scope is for a typical level of objectivity.

Commissioning Authority Access. *This is characterized by the commissioning authority having direct access to independently discuss issues with any party of the project team and by all issues identified by the commissioning team from initial identification being concurrently distributed directly to the Owner, Architect and Contractor.*

Issue Management. *Issues are legitimate for identification and distribution when, 1) Any requirements as delineated in the contract documents are not being met, or 2) When significant elements of the Owner's Project*

Requirements are not being met). Issues shall be reported regardless of potential cost impacts to any party or potential impacts to the project schedule.

Testing. *All documented testing for complex equipment shall be directed and overseen by the Commissioning Authority or by another independent party, such as the fire marshal or a certified independent testing company (e.g., electrical equipment testing). Documented testing for less complex equipment and repetitive equipment (of large quantities, e.g., air terminal units) may be directed by the Contractor alone, as approved by the Commissioning Authority, with spot retests and test report review by the Commissioning Authority.*

7. Sustainability

7.1.1.1 What are the general sustainability goals for this project?

The project is required to comply with the CALGreen Green Building Standards Code.

The specific sustainability goals for the project are listed in the categories below. The project has applied for a Green Investment Fund (GIF) grant from the City in the amount of $_____. The grant application describes specific green building strategies that shall be evaluated for their feasibility to be included in the project. These strategies are based on early project strategizing, ideas put forth in the project's green building kickoff meeting and individual meetings with the owner and architect. Failure to evaluate these strategies to the extent necessary as described in the Office Tower GIF proposal jeopardizes the project's eligibility for funding and probability of integration into project design.

7.2 Certifications

7.2.1.1 Describe any LEED or other certification goals and objectives.

The project's LEED goal is to achieve a Platinum level of certification using the LEED for New Construction version 2.2 program. At this time, the project team has identified 47 points as "certain", 14 points as "possible" and 8 points as "not likely". The point range to achieve Gold and Platinum is 39-51 and 52+ respectively. The LEED scorecard must be continuously updated to both inform and reflect design decisions as the project progresses.

LEED certification will make the project eligible for the State Business Energy Tax Credits and Utility Incentives. The amount of incentive money available to the project is significantly impacted by certification level- Gold and Platinum earn approximate pass-through values of $500,000 and $1,000,000 respectively. Obviously, moving below or above the Gold level of certification will strongly influence the project's financial performance.

7.3 Sustainable Siting and Planning

7.3.1.1 Provide the list of LEED sustainable siting and/or CALGreen Planning and Design features desired or required to be incorporated. List the LEED scorecard, if applicable.

The project shall, at a minimum comply with the City management requirements. The owner has a strong interest in rainwater harvesting for irrigation and/or toilet flushing to support LEED performance, GIF grant eligibility and overall project performance.

Most Likely	Possible	Not Probable				Responsible Party	Status
SUSTAINABLE SITES							
Y			SSp1	C	**Construction Activity Pollution Prevention**	KPFF	Open
1			SSc1	D	**Site Selection**	GBS	Open
1			SSc2	D	**Development Density & Community Connectivity**	GBS	Open
1			SSc3	D	**Brownfield Redevelopment**	GBS	Open
1			SSc4.1	D	**Alternative Transportation**, Public Transportation Access	GBS	Open
1			SSc4.2	D	**Alternative Transportation**, Bicycle Storage & Changing Rooms	GBS	Open
1			SSc4.3	D	**Alternative Transportation**, Low Emitting & Fuel Efficient Vehicles	GBS	Open
1			SSc4.4	D	**Alternative Transportation**, Parking Capacity	GBS	Open
		1	SSc5.1	C	**Reduced Site Disturbance**, Protect or Restore Habitat	--	Closed
	1		SSc5.2	D	**Reduced Site Disturbance**, Maximize Open Space	--	Closed
		1	SSc6.1	D	**Stormwater Management**, Quantity Control	--	Closed
1			SSc6.2	D	**Stormwater Management**, Quality Control	KPFF	Open
1			SSc7.1	C	**Heat Island Effect**, Non-roof	GBS	Open
1			SSc7.2	D	**Heat Island Effect**, Roof	TVA	Open
		1	SSc8	D	**Light Pollution Reduction**	--	Closed
10	1	3			Total Points for Sustainable Sites		

7.4 Water Efficiency and Conservation

7.4.1.1 Describe the water efficiency goals of the project.

Project goal is to achieve a minimum 50% potable water use reduction for fixtures and toilets as compared to fixture requirements of the Energy Policy Act of 1992.

7.4.1.2 Is grey water recovery a consideration for this project?

Yes.

7.4.1.3 Is rainwater harvesting and use a consideration for this project?

No.

7.4.1.4 What level of low-water use landscaping is desired or would be considered?

There is not that much landscaping area to result in much actual water saved from extremely low water landscaping, so we are not that interested in these designs if they don't meet our primary landscaping objectives.

7.4.1.5 To what level of sophistication will the irrigation controls be, beyond simple typical time clock functions and above ground sprinklers, to reduce water consumption?

Some. We desire climatic-compensating watering controls.

7.4.1.6 Provide the list of the LEED and/or CALGreen water efficiency features desired or required to be incorporated or those that are not to be considered.

The LEED scorecard is provided below. Refer to the Plumbing section for additional efficiency issues.

WATER EFFICIENCY								
1			WEc1.1	D	**Water Efficient Landscaping**, 50% Reduction	MR	Open
	1		WEc1.2	D	**Water Efficient Landscaping**, No Potable Water Use	MR	Open
		1	WEc2	D	**Innovative Wastewater Technologies**	--	Closed
1			WEc3.1	D	**Water Use Reduction**, 20% Reduction	GBS	Open
1			WEc3.2	D	**Water Use Reduction**, 30% Reduction	GBS	Open
3	1	1			Total Points for Water Efficiency		

7.5 Energy Efficiency

7.5.1.1 What level of *overall building* energy efficiency is required above code? (none, 10%, 20%, 30%, etc.).

The project goal is to reduce design energy cost for electricity by 30% as compared to a comparable baseline building meeting CA Title 24.

7.5.1.2 Describe the desires for incorporating or not, all applicable low-cost / no cost efficiency features beyond code, evaluating moderate-cost efficiency features and state-of-the-art concepts. Define cost effective in relation to simple payback and life cycle cost and requirements for performing these analyses.

The design team shall comply with local codes and shall incorporate all applicable low-cost / no cost energy efficiency features beyond code or not specifically covered by code. The team shall seriously evaluate moderate-cost efficiency features beyond code that could be cost effective. The design team shall iteratively evaluate state-of-the-art concepts that appear to offer cost effective potential with a rough evaluation advancing to more thorough evaluation when promising, after consultation with the Owner. The design team will provide to the Owner lists of considered features whether incorporated or not.

Cost effective is defined as a simple payback of less than 5 years or a life cycle cost less than the baseline. A life cycle cost analysis (first cost, energy, operations, maintenance, replacement, productivity), is not necessary for measures with simple paybacks less than 5 years.

7.5.1.3 Specifics of HVAC energy efficiency are found in the HVAC section, lighting efficiency under Electrical and water heating under Plumbing.

7.5.1.4 List the LEED Energy and Atmosphere or CALGreen elements desired or required for this project.

ENERGY & ATMOSPHERE							
Y			EAp1	C	**Fundamental Commissioning of Building Energy Systems**	SBE	Open
Y			EAp2	D	**Minimum Energy Performance**	IEI	Open
Y			EAp3	D	**Fundamental Refrigerant Management**	IEI	Open
1			EAc1.1	D	**Optimize Energy Performance**, 10.5% New / 3.5% Existing	IEI	Open
1			EAc1.2	D	**Optimize Energy Performance**, 14% New / 7% Existing	IEI	Open
1			EAc1.3	D	**Optimize Energy Performance**, 17.5% New / 10.5% Existing	IEI	Open
1			EAc1.4	D	**Optimize Energy Performance**, 21% New / 14% Existing	IEI	Open
1			EAc1.5	D	**Optimize Energy Performance**, 24.5% New / 17.5% Existing	IEI	Open
1			EAc1.6	D	**Optimize Energy Performance**, 28% New / 21% Existing	IEI	Open
1			EAc1.7	D	**Optimize Energy Performance**, 31.5% New / 24.5% Existing	IEI	Open
1			EAc1.8	D	**Optimize Energy Performance**, 35% New / 28% Existing	IEI	Open
1			EAc1.9	D	**Optimize Energy Performance**, 38.5% New / 31.5% Existing	IEI	Open
		1	EAc1.10	D	**Optimize Energy Performance**, 42% New / 35% Existing	--	Open
		1	EAc2.1	D	**On Site Renewable Energy**, 2.5%	--	Closed
		1	EAc2.2	D	**On Site Renewable Energy**, 7.5%	--	Closed
		1	EAc2.3	D	**On Site Renewable Energy**, 12.5%	--	Closed
1			EAc3	C	**Enhanced Commissioning**	SBE	Open
1			EAc4	D	**Enhanced Refrigerant Management**	IEI	Open
1			EAc5	C	**Measurement & Verification**	IEI	Open
1			EAc6	C	**Green Power**	TMT	Open
13		4			Total Points for Energy & Atmosphere		

7.6 Materials and Resource Efficiency

7.6.1.1 Describe any sustainability material and resources goals. Provide the LEED Materials and Resources scorecard or list of CALGreen applicable elements.

Project shall integrate interior materials that support very healthy, productive and safe indoor air quality. Project will specify and install materials to meet or exceed the LEED Materials and Resources credits requirements shown in the project LEED checklist. Construction and demolition waste recycling shall strive to achieve a 95% landfill diversion rate.

Most Likely	Possible	Not Probable				Responsible Party	Status
MATERIALS & RESOURCES							
Y			MRp1	D	**Storage & Collection of Recyclables**	GBS/TVA	Open
		1	MRc1.1	C	**Building Reuse,** Maintain 75% of Existing Walls, Floors and Roof	--	Closed
		1	MRc1.2	C	**Building Reuse,** Maintain 95% of Existing Walls, Floors and Roof	--	Closed
		1	MRc1.3	C	**Building Reuse,** Maintain 50% of Interior, Non-Structural Elements	--	Closed
1			MRc2.1	C	**Construction Waste Management**, Divert 50%	Hoffman	Open
1			MRc2.2	C	**Construction Waste Management**, Divert 75%	Hoffman	Open
		1	MRc3.1	C	**Materials Reuse**, Specify 5%	--	Closed
		1	MRc3.2	C	**Materials Reuse**, Specify 10%	--	Closed
1			MRc4.1	C	**Recycled Content**, Specify 10%	Hoffman/TVA	Open
	1		MRc4.2	C	**Recycled Content**, Specify 20%	Hoffman/TVA	Open
1			MRc5.1	C	**Regional Materials**, 10% Extracted, Processed & Manufactured Regionally	Hoffman/TVA	Open
	1		MRc5.2	C	**Regional Materials**, 20% Extracted, Processed & Manufactured Regionally	Hoffman/TVA	Open
		1	MRc6	C	**Rapidly Renewable Materials**, Specify 2.5%	--	Closed
	1		MRc7	C	**Certified Wood**	Hoffman/TVA	Open
4	3	6			Total Points for Materials & Resources		

7.7 Indoor Environmental Quality

7.7.1.1 HVAC related IEQ goals and requirements are listed in the HVAC section.

7.7.1.2 List any indoor environmental quality goals or elements from LEED or CALGreen.

Some elements are listed below. The LEED scorecard is also provided.

7.7.2 Lighting and visual quality requirements.

These are listed under the Electrical section.

INDOOR ENVIRONMENTAL QUALITY								
Y			EQp1	D	**Minimum IAQ Performance**	IEI	Open
Y			EQp2	D	**Environmental Tobacco Smoke (ETS) Control**	TMT	Open
		1	EQc1	D	**Outside Air Delivery Monitoring**	--	Closed
		1	EQc2	D	**Increased Ventilation**	--	Closed
1			EQc3.1:	C	**Construction IAQ Management Plan**, During Construction	Hoffman	Open
1			EQc3.2:	C	**Construction IAQ Management Plan**, After Constn./Before Occ.	Hoffman	Open
1			EQc4.1	C	**Low-Emitting Materials**, Adhesives and Sealants	Hoffman/TVA	Open
1			EQc4.2	C	**Low-Emitting Materials**, Paints and Coatings	Hoffman/TVA	Open
1			EQc4.3	C	**Low-Emitting Materials**, Carpet	Hoffman/TVA	Open
1			EQc4.4	C	**Low-Emitting Materials**, Composite Wood & Agri-fiber products	Hoffman/TVA	Open
1			EQc5	D	**Indoor Chemical & Pollutant Source Control**	IEI	Open
1			EQc6.1	D	**Controllability of Systems: Lighting**	TMT	Open
1			EQc6.2	D	**Controllability of Systems: Thermal comfort**	TVA	Open
1			EQc7.1	D	**Thermal Comfort**, Design	IEI	Open
1			EQc7.2	D	**Thermal Comfort Verification**, Verification	TMT	Open
1			EQc8.1	D	**Daylight and Views**, Daylight 75% of Spaces	GBS	Open
1			EQc8.2	D	**Daylight and Views**, View for 90% of Spaces	GBS	Open
13		2			Total Points for Indoor Environmental Quality		

7.7.3 Acoustics

7.7.3.1 What is the desired level of acoustical performance and control (background noise levels) of each of the occupancy types (standard, above standard, exceptional)? List any spaces with special acoustical requirements. Give NC targets for each.

General goal: Above standard. Meet local code requirements and industry standards at a minimum.
Office general: Standard, NC 35-40
Office executive: Above Standard, NC 30-35
Condominium: Above Standard, NC 30-33 in Master Bedrooms, NC 30-35 in other bedrooms, NC 30-35 in primary living areas rooms, dining rooms (not kitchens and bathrooms, or utility rooms), and NC 35-40 in corridors.
Public Areas: Standard, NC 35-45
Retail: Standard, 35-40
Fitness: Standard, 35-45

7.7.3.2 Are there any areas where a special level of acoustical separation is desired to adjacent rooms, spaces or from outdoors? (e.g., between condominiums, executive offices, strategic planning rooms, recreation rooms, rest areas, conference rooms, mechanical rooms, etc.) Minimally, indicate these special acoustical separations to be above standard or exceptional. Ideally, provide a target separation (wall, ceiling, floor) Sound Transmission Class (STC).

Between condominiums: Walls. Minimum Laboratory rated, Sound Transmission Class (STC) for walls of 55, and 55 for floors. Higher performance is expected with the designed systems. Floors. Minimum Laboratory rated, Impact Insulation Class (IIC) for floors of 58, 60+ preferable.

8. Building Envelope

8.1 Overall Envelope Criteria

8.1.1.1 Describe the overall envelop design criteria and any special concerns that exist. List any special features desired or required to be considered or a part of this project. (e.g., rain penetration, sun and dryness, stack effects, envelope air leakage, façade mockup requirements, insitu water or air leakage testing, etc.)

The building envelope shall be designed to meet the wet City climate without water leaks of any kind during normal and extreme rainfall and winds. The design shall include provisions to weep to the outside any moisture that penetrates the outer façade without causing degradation to the building elements. Rain screens are required behind outer surfaces that are moisture permeable, like masonry. Water leakage integrity of the outer surface shall not rely solely on caulking, without a proper weepage plane and path.

The design will result in a very low air leakage rate for this type of structure and will minimize and mitigate impacts of the stack effect of this tall structure.

All horizontal sills will slope down to the outside. Wall assembly, flashing and caulking details will be clearly shown in the drawings for each configuration, type of joint, attachment and connection.

The specifications will require a mock-up or insitu performance testing of each major glazing type and adjacent building elements for air and water penetration using ASTM standard field tests.

8.2 Additional Envelope Criteria

8.2.1.1 Are there any envelope (roofing, façade, fenestration) products or techniques that are not acceptable, including glazing tinting, etc.?

No reflective glass. Glass shall not appear too "green" from interior.

8.2.1.2 Describe the basic building envelope requirements and concerns (roof, exterior wall, fenestration, daylighting, subgrade elements) in broad terms. Include issues such as aesthetics, context, durability, maintainability, sustainability, energy efficiency.

Transparency is important to this owner. Promote daylighting while avoiding significant heat loads that will overburden cooling systems. Highly reflective roofing is desired to comply with LEED (SRI >78). Low maintenance materials should be specified. US-based materials shall be preferred.

8.2.1.3 What are the fenestration requirements (natural daylighting for perimeter or deeper spaces, elimination of daylight, access to daylight views, solar orientation, internal uses, entrance location requirements based on site specific considerations, functional needs, aesthetics, climate)?

Revolving doors to be included. Natural daylighting shall be promoted to reduce electrical lighting dependence. Natural ventilation is desired and

operable windows shall be evaluated. In general, the fenestration should respond to the region's temperate climate.

8.2.1.4 What are the roof shape and material considerations (climatic, aesthetic, traffic bearing, equipment support, cost, local expertise in materials considerations, etc.)?

The roof shape should pronounce the building as an icon. The building will be strategically lit at night to have the appearance of a lantern. Energy Star rated, low maintenance roof membrane. Mechanical equipment will be screened to be invisible.

The lighting of the building top will be accomplished using low-energy LED lights which will uniformly light translucent glass internally from behind to achieve a glowing, lantern effect while minimizing night-time light pollution.

8.2.1.5 What are the thermal performance criteria for the building envelope (energy code minimums, super-insulated, energy payback, green building components, occupant comfort)?

Goal was 60% energy use reduction beyond Oregon Energy Code. Meet ASHRAE 55 at a minimum.

The building envelope thermal performance will exceed code minimums by utilizing thermally broken and insulated curtain wall support members, insulated low U-value glass, and insulated metal panel components that minimize both unwanted exterior solar heat gain and interior heat and cooling losses.

8.2.1.6 What are the durability requirements (first cost considerations vs. life cycle cost, long-term monument vs. short-term speculative building, sustainability, future additions and/or transformations, flexibility for reuse)?

The building will be held by the owner. Life cycle costs for the envelope elements and assemblies will be evaluated to inform material and design strategy decision making. The goal is long-term value.

8.2.1.7 What are the maintenance requirements (minimum maintenance, availability of well staffed maintenance department, most maintenance outsourced, sophistication of maintenance department, availability of sustainable products for maintenance tasks, costs)?

The Office Tower will be maintained by in house fully accredited and licensed engineering and maintenance staff.

8.2.1.8 What are, if any, constraints on building envelope performance from future/proposed development and/or changes to adjacent lots/properties?

None

9. Plumbing Systems

9.1 Water Efficiency

9.1.1.1 Refer to the Water Efficiency section under Sustainability for details of the water efficiency objectives of this project.

9.2 Fixture Controls

9.2.1.1 Are auto-flushing and on/off controls desired on urinals, lavatories, toilets?

Yes

9.2.1.2 Are waterless urinals a consideration? Where?

Not at this time, but 1 pint urinals are desired.

9.3 Energy Efficiency

9.3.1.1 The water heating system energy design is desired to be: standard code, somewhat more efficient that code, much more efficient than code?

Much more efficient than code requires.

9.3.1.2 Are there specific system types that shall be incorporated or that are not to be considered (e.g., point of use heaters, electric heaters, etc.)?

No. This is up to the design team.

10. Fire Alarm

10.1.1.1 List the specific brand and/or model of fire alarm system required, if any.

No specific type required.

10.1.1.2 List any special features desired or required of the fire alarm system.

Fully addressable system required. Code compliant minimum system with additional features mentioned below.

10.1.1.3 Describe where the fire alarm signal is to be sent to off site.

Alerts or troubles will remain in the fire alarm panel. Alarms will be sent to the BAS as a general alarm and to the municipal fire department.

10.1.1.4 Is the FA system to have addressable and monitored fire smoke dampers (ones that can be commanded open or closed from the fire alarm panel)?

Yes.

10.1.1.5 Are the fire smoke dampers to have end switches that positively confirm closed and open positions or is the commanded position notification acceptable?

End switches are required.

11. Data and Communications Systems

11.1.1.1 Describe the data requirements in the building.

Data requirements for building are currently under review by the electrical designer and owner. However, scope of work at this time includes horizontal cabling for condominium units (phone and CATV), backbone cabling to each office level and each of two major retail tenant spaces, and house cabling needs. This includes copper, cable TV and fiber optic for backbone, and copper UTP and CATV for horizontal cabling.

11.1.1.2 Describe the needs for future expansions.

TBD.

11.1.1.3 Will special backbone, conduit and cabling be required to unfinished areas so offer those tenants adequate data and communications?

Conduit shall be provided through closed-in in accessible spaces

11.1.1.4 Describe the wireless internet systems desired for the building.

TBD

11.1.1.5 Describe the communication systems desired for the building.

TBD

11.1.1.6 Will the property owner/manager be reselling phone and internet services or will those services be provided directly to the tenant/resident by a service provider?

TBD

11.1.1.7 Are both CATV and Satellite availability required?

TBD

11.1.1.8 Are there any requirements for A/V system (condo home theater) options or pathways in the residential units?

TBD

11.1.1.9 Will wireless access to the internet be provided for the residential areas, or will this be by the tenants? For the office areas? For the retail areas?

TBD

11.1.1.10 Describe any tie-in between the data and communication systems and the security system or building automation system.

TBD

12. Security and Access

12.1.1.1 What are the securities concerns for this facility?

Controlling access to office floors and condo floors during the day and after hours. 24/7 monitoring of CCTV system.

12.1.1.2 List the specific brand and/or model of security system required, if any.

No specific type required.

12.1.1.3 What access control must this facility accommodate?

Office floors and condo floors should be securable during the day and/or after hours, depending on needs of tenants. Entry into the elevator lobbies themselves should also be controlled, ideally by the use of a proximity card access controls system, similar to the systems in place in both the Liberty Tower and 1000 Tahoma St. Buildings.

12.1.1.4 What areas of the facility will require controlled access?

All above retail floors including office, condo, and mechanical areas. All areas housing critical building systems will also need to be secured. Mail rooms and delivery areas should also be securable. Freight elevator access to all floors should also be controlled. Loading dock area after hours should be securable. Locker rooms/workout facilities/other amenity areas should also be secured.

12.1.1.5 Describe the desired security system features (e.g., card reader, fingerprint, retina scanner types, length of image storage capacity, remote access capabilities and backup features, user programmability, reporting functions, battery backup duration, etc.).

HD CCTV DVR systems; programmable magnetic proximity card reader system for individual door/floor access; steel rolling door to secure loading dock and/or garage entry; two way communication "distress" devices strategically placed throughout with direct communication to 24/7 on duty Security officer; 24/7 manned Security console/desk; possibly biometric fingerprint or retina scanners for highly sensitive areas.

12.1.1.6 Describe any required interlocks between the security system and the building automation system and HVAC.

None.

---END of OPR---