

An aerial photograph of a modern building with a green roof. The roof is covered in various types of plants, including large ferns and smaller greenery. Several people are walking on the roof. The building is surrounded by more lush vegetation and trees. The overall scene is dark and moody, with a focus on the green architecture.

 **JLL** | JPMORGAN CHASE & CO.

LEED + Zero Carbon Certification

LEED + ZC Prerequisites (Freestanding)

? What items are **essential** for LEED and Zero Carbon Certification?

LEED Prerequisites (BD+C: Retail)

Prerequisite	Status
Construction Activity Pollution Prevention	Yes/No
Outdoor Water Use Reduction	Yes/No
Indoor Water Use Reduction	Yes/No
Building-Level Water Metering	Yes/No
Fundamental Commissioning & Verification	Yes/No
Minimum Energy Performance	Yes/No
Building-Level Energy Metering	Yes/No
Fundamental Refrigerant Management (no CFCs)	Yes/No
Storage and Collection of Recyclables	Yes/No
Construction and Demolition Waste Mgmt. Planning	Yes/No
Minimum Indoor Air Quality Performance	Yes/No
Environmental Tobacco Smoke Control	Yes/No

Zero Carbon Prerequisites

Prerequisite	Status
25-30% Reduction in Energy Use below ASHRAE 90.1-2010 (Operational Carbon)	Yes/No
10-20% Reduction in Embodied carbon in structure and envelope materials (Embodied Carbon)	Yes/No

Some of these prerequisites will **already be met** with the 20.6 prototype, but **bold items** may require **additional coordination** with the team.



High Efficiency HVAC & Lighting



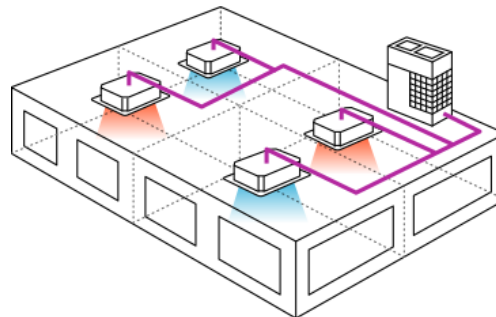
Required for LEED and Zero Carbon Energy Performance

HVAC Requirements:

- ☐ Heat Recovery VRF with dedicated Outside Air Fan Coil Unit
 - With separate split AC for ATM and Data Room
 - Meeting 90.1-2022 Performance Criteria

Lighting and Controls Requirements:

- ☐ Use 20.6 Lighting Schedule and Layout
 - Aim for 0.56 W/sf or less



Landscape Standards



Required for LEED Exterior Water Savings



Has the project already gone through a landscape approval process with the AHJ?

- Excel Tool with detailed guidance by region – will meet LEED outdoor water prerequisite
- **Calls for no irrigation beyond installation period**

Zero permanent irrigation – allows temporary irrigation for landscaping establishment



EXISTING CHASE BANK SITES PRECEDENTS



Solar Feasibility

Project Requirements:

- ✓ Freestanding
- ✓ Utility provider has Net Metering
- ✓ Lease is 10+ years
- ✓ Roof is unshaded

Solar PV Process:

- ❑ JLL to provide DVM or other solar contractor with solar PV performance specs
- ❑ Solar contractor to evaluate and provide bid

Manufacturing and installation of Solar PV panels will be determined on a project-by-project basis – there is currently no JPMC standard vendor



? **Does the project have budget to accommodate estimated Solar PV cost?**

Pricing & Estimated Costs

- Assume \$8.50/SF of gross roof area (incl. mechanical equipment area) for Solar PV hard costs and \$10k for additional Solar PV Labor installation costs

Commissioning / OPR-BOD



Required for LEED Fundamental Commissioning

Commissioning agent must be onboarded by 100% CDs

- This can be a JLL CxA, CBRE CxA, or any other 3rd party CxA

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Owner's Project Requirements with integrated Basis of Design

Project Name
Project Location

JLL Sustainability Consultants:
Commissioning Firm & Agent:
Architecture Firm:

INTRODUCTION TO THIS DOCUMENT

This Owner's Project Requirements (OPR) outlines the goals, values, and priorities that will guide project execution from beginning to end. It is intended to articulate JPMC's vision for this project in a manner that optimizes scope development and implementation by design, engineering, construction, and operational professionals. It is also intended for use by commissioning agents (CxA) as a tool to evaluate systems-related project outcomes against the intended purposes and foundational criteria of the project.

A primary purpose of the OPR is to inform a Basis of Design (BOD). The BOD serves to identify strategies, synergies, and key system specifications via which project goals will be realized. To facilitate tight alignment between the project objectives outlined in the OPR and the design and construction strategies developed in the BOD, this document integrates both narratives into a single shared space. BOD development is a collaborative responsibility shared by multiple project team members in various combinations:

	OPR Topic Areas					
	Overall Project	Site / Community	Water	Energy	Wellness	Operations
Architect	✓	✓		✓	✓	✓
Landscape Architect		✓	✓			
Structural Engineer	✓					
Electrical Engineer		✓		✓		
Mechanical Engineer			✓	✓	✓	
Plumbing Engineer			✓	✓		
Civil Engineer		✓				
General Contractor	✓	✓		✓	✓	✓
Project Manager	✓				✓	✓
Sustainability Consultant	✓		✓			✓

To streamline compliance with JPMC's 20.6 design standard¹ and promote design and construction efficiencies, the BOD has been pre-populated with recommended strategies. Topic area contributors should review and approve pre-populated strategies while keeping these things in mind:

- Pre-populated BOD content should be modified to comply with local regulatory requirements and/or project-specific constraints.
- Project teams are encouraged to engage creatively with pre-populated BOD content, treating it as an essential framework for the nuanced work of teasing out optimal system synergies, maximizing resource efficiencies, and nurturing the holistic integrity of design.

While project teams are encouraged to flesh out and customize pre-populated BOD strategies, any wholesale departures from the 20.6 standard should be tagged and communicated directly to JPMC's project manager and sustainability consultant(s).

¹ Teams must review the 20.6 design standard in full when formulating design strategy.

OPR-BOD Template

Low Embodied Carbon Concrete



Required for Zero Carbon Embodied Carbon

Zero Carbon

Embodied Carbon Prerequisite

10-20% Reduction in Embodied carbon in structure and envelope materials (Embodied Carbon)

GWP Thresholds

- $\leq 2,500$ PSI - ≤ 138 kg CO₂e/ yd³
- 2,500 - 3,000 PSI - ≤ 150 kg CO₂e/ yd³
- 3,000 - 4,000 PSI - ≤ 176 kg CO₂e/ yd³
- 4,000 - 5,000 PSI - ≤ 207 kg CO₂e/ yd³
- 5,000 - 6,000 PSI - ≤ 217 kg CO₂e/ yd³
- 6,000 - 8,000 PSI - ≤ 250 kg CO₂e/ yd³

Cement Substitutions



Ground glass pozzolans, e.g., Pozzotive



Blast furnace slag

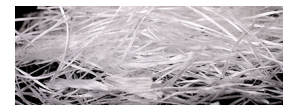


Fly ash

Other Options



Carbon entrained concrete
e.g., Carbon Cure



Steel reinforcement replacement
e.g., Strand-TUF

GC Sustainability Requirements

JPMC is targeting **LEED v4 BD+C certification at a Silver level or greater** for this project. As part of the certification process, the following JPMC environmental goals shall be met by the project's design and construction team:

- Full electrification (no on-site fossil fuel use)
- Application of energy efficiency technologies and strategies sufficient to achieve 25% energy savings (vs ASHRAE 90.1-2010 baseline)
- Usage of sustainable materials and construction methods to achieve a 10% embodied carbon reduction (vs industry baseline)
- Low-flow fixtures and efficient landscape irrigation to reduce potable water usage by 20% (vs LEED baseline)
- Diversion of 75% of construction waste from landfill (percentage by weight, requires on-site sorting per LEED standards)

GC shall include the construction efforts required to obtain certification as part of their proposal and breakout the additional fees associated with obtaining certification as a separate line item in the fee proposal. Certification administration for the LEED certification to be performed by Sustainability Consultant.

Construction Team Scope of Sustainability Services

General Coordination

Coordinate with the Owner, Design Team, LEED Consultant, and Commissioning Authority on all matters relating to LEED requirements. All documents referenced in this report will be made available to the Construction Team electronically. GC must designate a team member responsible to respond to the LEED Consultant on all LEED related items. The designated person should have knowledge of the LEED standard with a preference for LEED version 4.

Coordination with the Subcontractors

Ensure that LEED requirements, as defined in the contract documents, are fully implemented by the trade subcontractors. Substitutions or other changes to the work proposed by the subcontractors shall not be allowed if such changes compromise the project's LEED requirements.

LEED Compliant Plans

Provide written plans in accordance with the LEED Action Plans detailed in Specification Section 01 81 13 Sustainable Design Requirements. All plans are requested prior to applicable work commencing:

- Construction Waste Management and Disposal
- Construction Indoor Air Quality Management
- Erosion and Sedimentation Control

The following LEED credits require coordination by the GC

- I. SSp1 Construction Activity Pollution Prevention.
 - a. Applies to projects with exterior site work and/or landscaping.
 - b. GC to Comply with all requirements of U.S. Environmental Protection Agency for erosion and sedimentation control, as specified for the National Pollutant Discharge Elimination System (NPDES), Phases I and II, under requirements for the 2017 Construction General Permit (CGP), whether the project is required by law to comply or not.

- c. Develop and follow an Erosion and Sedimentation Prevention Plan and submit three or more inspection reports with descriptions and photos of applicable measures being implemented onsite.
- II. **EAp1/EAc1: Fundamental Commissioning and Verification (REQUIRED) / Enhanced Commissioning (4-5 points)**
 - a. GC to coordinate with the commissioning agent (CxA) and subcontractors on scheduling, documentation and integrating activities into the overall project schedule for commissioning scope per LEED requirements. The following commissioning activities are included:
 - i. CxA reviews contractor submittals
 - ii. CxA verifies installation and performance of applicable systems
 - iii. CxA performs functional performance testing
 - iv. CxA develops manual for commissioned systems
 - v. CxA verifies training requirements are completed
- III. **MRp1/MRc6: Construction and Demolition Waste Management Planning (REQUIRED)**
 - a. Develop and implement a construction and demolition waste management plan:
 - i. Establish waste diversion goals that diverts a minimum of 75% the appropriate demolition and construction debris from the waste stream for the project by identifying at least five waste streams (both structural and nonstructural) targeted for diversion. Approximate a percentage of the overall project waste that these materials represent.
 - ii. Specify whether materials will be separated or commingled and describe the diversion strategies planned for the project. Describe where the material will be taken and how the recycling facility will process the material.
 - b. Reduce total waste material and do not generate more than 2.5 lbs/ft² (12.2 kg/m²) of the building's floor area.
 - c. Provide oversight and coordination of the plan's implementation
 - d. Provide monthly progress reports with the following information:
 - i. Monthly quantities of diverted and non-diverted materials, broken down by waste stream
 - ii. Project to date quantities of diverted and non-diverted material, broken down by waste
 - e. Closeout documentation: a final report detailing all major waste streams generated, including disposal and diversion rates.
 - f. Alternative daily cover (ADC) does not qualify as material diverted from disposal. Land-clearing debris is not considered construction, demolition, or renovation waste that can contribute to waste diversion (and should be excluded from calculations).
- IV. **LEED Materials-Related Credits**
 - a. Relates to all the following LEED v4.1 credits. See linked USGBC Reference for detailed requirements.
 - i. [MRc3](#) BPDO (Building Product Disclosure and Optimization)- EPDs (Environmental Product Declarations)
 - ii. [MRc4](#) BPDO- Sourcing of Raw Materials
 - iii. [MRc5](#) BPDO- Material Ingredients
 - b. Using Green Badger software provided through Sustainability Consultant, GC to verify that products used contribute to the achievement of at least one LEED credit for each of the BPDO LEED credits.
- V. [EQc2: Low-Emitting Materials](#), LEED v4.1 credit (1-3 Points). See linked USGBC Reference for detailed requirements.

- a. Relates to low-emitting products in the following categories:
 - i. Interior paints and coatings
 - ii. Interior adhesives and sealants applied on site (including flooring adhesive)
 - iii. Flooring
 - iv. Composite Wood
 - v. Ceilings, walls, thermal, acoustic insulation
 - vi. Furniture
 - vii. Inherently nonemitting sources. Products that are inherently nonemitting sources of VOCs (e.g. stone, ceramic, powder-coated metals, plated or anodized metal, glass, concrete, clay brick, and unfinished/untreated solid wood flooring) are considered fully compliant if they do not include surface coatings, binders, or sealants.
- b. Using Green Badger software provided through Sustainability Consultant, GC to verify that products used contribute to the achievement of at least 3 LEED points for this credit.

VI. EQc3: Construction Indoor Air Quality Management Plan

- a. Develop and implement an indoor air quality (IAQ) management plan for the construction and preoccupancy phases of the building. The plan must address the following:
 - i. During construction, meet or exceed all applicable recommended control measures of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings under Construction, 2nd edition, 2007, ANSI/SMACNA 008–2008, Chapter 3.
 - ii. Protect absorptive materials stored on-site and installed from moisture damage.
 - iii. Do not operate permanently installed air-handling equipment during construction unless filtration media with a minimum efficiency reporting value (MERV) of 8, as determined by ASHRAE 52.2–2007, are installed at each return air grille and return or transfer duct inlet opening such that there is no bypass around the filtration media. Immediately before occupancy, replace all filtration media with the final design filtration media, installed in accordance with the manufacturer's recommendations.
 - iv. Prohibit the use of tobacco products inside the building and within 25 feet (7.5 meters) of the building entrance during construction.
 - v. Provide oversight and coordination of the plan's implementation.
 - vi. Provide three or more progress reports on IAQ Plan-related activities through email or Green Badger, including photos.
 - vii. Closeout Documentation: Provide all LEED required closeout documentation in accordance with the Plan.

VII. EQc4: Indoor Air Quality Assessment: Flushout

- a. Conduct a pre-occupancy flushout. Install new filtration media and perform a building flush-out by supplying a total air volume of 14,000 cubic feet of outdoor air per square foot of gross floor area while maintaining an internal temperature of at least 60°F and no higher than 80°F and relative humidity no higher than 60%.

The following non-LEED sustainability measure requires coordination by the GC

VIII. Blower Door Testing

- a. Blower door testing to be performed per the ASTM E779 standard. The whole building air leakage rate under normal operating conditions shall be determined by two separate blower door tests: one test holding the building under negative pressure and one test holding the building under positive pressure. 50 Pascals of pressure differential shall be

obtained between the building interior and exterior in both tests. The whole building air leakage rate shall be reported as the average of the results of both tests (negative and positive pressurization). The air leakage rate shall be reported in units of ACH50 (total whole building air exchanges per hour at 50 Pascals of pressure difference).

- b. For ground-up freestanding buildings, whole building blower door testing shall be performed twice during the construction process:
 - i. After completion of the envelope and shell, prior to closing walls and finishes
 - ii. After substantial completion of construction, prior to occupancy
- c. For tenant build-outs inside freestanding buildings, blower door testing shall be performed once at substantial completion.
- d. For tenant build-outs inside multi-tenant buildings, blower door testing is not required.