BC Building Science

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Date: August 6, 2020

To: Wesgroup – Graham Brewster / Stefan Hertel
Cc: IBI Group Architects (Canada) Inc. – Gwyn Vose / Behrang Alijani / Chloe Guyon

Project: Wesgroup – 41st & Oak
1008 West 41st Ave and 5763 Oak St, Vancouver, BC

Subject: **LOW EMISSIONS GREEN BUILDINGS – SUSTAINABLE DESIGN STRATEGY**

BC Building Science Ltd. (BCBS) has been retained as the Building Envelope and Energy Consultant for this project. On behalf of the Client, Wesgroup, we are providing a strategy for consideration in meeting the requirements of the City of Vancouver Green Building Policy for Rezoning (CoV-GBPR).

The following summarizes the proposed Sustainable Design Strategy (SDS) that includes project-specific approaches confirming how the design intends on meeting each requirement of the CoV-GBPR – Low Emissions Green Buildings – Sections B.1.1 to B.1.11:

B.1.1 LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN (LEED)

This requirement is not applicable to the project with 50+% residential occupancy proportion.

B.1.2 PERFORMANCE LIMITS

The BCBS Energy Team has prepared a preliminary Zero Emissions Building Plan (ZEBP) energy checklist and a summary of detailed energy model inputs. These are attached to the Rezoning Application.

The following are the preliminary strategies implemented into the design to comply with the applicable energy targets of the CoV-GBPR:

- High efficiency brick / cladding walls with continuous exterior thermal insulation.
- High efficiency, thermally enhanced aluminum window wall system with triple pane glazing.
- Optimized window-to-wall ratio creating a balance between daylight usage, liveability, desirable winter solar heat gain and reduced overheating in summer, and heat loss minimization.
- Enhanced solar shading and mitigated overheating from distributed balconies around the building.
- High efficiency heat recovery ventilators in suites, amenity, and commercial areas.
- Electric heating throughout the building to minimize GHG emissions from the building operation.
- Combined high efficiency gas and electric boilers for service water heating.

Note that these strategies may adjust as the project progresses, depending upon the detailed design of architectural, envelope, mechanical, and electrical systems in the building. Inputs to the energy model were provided by the Design Team, including thermal bridging calculations by BCBS Envelope Team.

The Design Team will manage the energy parameters and correspond with BCBS for alignment with the model inputs throughout the next phases of the project. Planned energy model milestones include updates at full building permit and at occupancy permit.

B.1.3 AIRTIGHTNESS TESTING

The BCBS Envelope Team is prepared to perform air barrier commissioning including all testing through the design and construction phases to help ensure successful testing at occupancy. The intent is to achieve an air leakage target of below 2.0 L/s/m^2 at 75 Pa for the whole building as well as achieve 1.2 L/s/m^2 at 50 Pa for the suites.

The commissioning of the air barrier through the design phase will include design review of architectural drawings and specifications to help ensure continuity of the air control layers. During construction, on-site field reviews specific to air barrier installation are planned. Further, sample suites are planned to be pre-tested for airtightness during the construction phase. At occupancy, the whole building and a select number of suites will be tested to ASTM E779 by BCBS for alignment with the intended targets.

B.1.4 ENHANCED COMMISSIONING

The BCBS Energy Team is prepared to complete enhanced commissioning for all energy systems in the building in accordance with ASHRAE Guideline 0-2005 and ASHRAE Guideline 1.1-2007. BCBS will assist the Owner in preparation of the Owner's Project Requirements (OPR), and coordinate and review Basis of Design (BOD) developed by the architect, mechanical, and electrical consultants with respect to the sustainable energy design and all applicable green building requirements.

BCBS has been involved since the schematic design phase of the project, taking the lead on the green building design development. BCBS will develop the project commissioning plan in collaboration with the Client, architect, mechanical, and electrical design teams.

BCBS will develop commissioning reports throughout the project based on the commissioning plan and by performing 1) design reviews of energy systems during design and construction phases with respect to energy efficiency, 2) field reviews of energy systems during construction, 3) energy efficiency test verification and documentation during and at the end of construction, and 4) reviewing the training record / documents and operation and maintenance manuals prepared by the corresponding consultants and contractors.

B.1.5 ENERGY SYSTEM SUB-METERING AND REPORTING

B.1.5.1 Energy System Sub-metering

The Client will coordinate with the architect, mechanical, and electrical consultants to ensure master meters are designed and installed for each energy utility and each building usage, and sub-meters are installed for all major energy end-uses and major space uses within each building to provide the basic tools for energy audit and benchmarking.

B.1.5.2 Energy Reporting

The Client will set up an EnergyStar Portfolio Manager account and hire a qualified service provider for an annual energy benchmarking report to the City for a period of at least three years after occupancy.

B.1.6 CALCULATING REFRIGERANT AND EMBODIED EMISSIONS

B.1.6.1. Refrigerant Emissions

The BCBS Energy Team will perform calculations and report the life cycle equivalent annual carbon dioxide emissions of the building from the refrigerants. BCBS will acquire the type and capacity of refrigerants in all the installed cooling and heating equipment containing refrigerants in the building in collaboration with the mechanical consultant and will perform and document the related calculations.

B.1.6.2. Embodied Emissions

The BCBS Energy Team calculates and reports embodied emissions from all envelope and structural elements using the Canadian-based Athena Impact Estimator as a whole-building life cycle assessment software tool.

The preliminary embodied emissions calculation summary is included in the Rezoning Application. The preliminary results will be updated by BCBS at later stages of the design using the completed architectural and structural designs. Planned embodied emissions milestones include updates at full building permit and at occupancy permit.

B.1.7 VERIFIED DIRECT VENTILATION

The BCBS Energy Team is prepared to commission the building ventilation system through the design and construction phases with respect to direct ventilation based on VBBL and ASHRAE 62 standard.

Based on the energy model results reported by BCBS, all suites, amenity, and commercial areas in the building will be ventilated by heat / energy recovery ventilator to provide direct ventilation to the occupied areas.

BCBS will work with the mechanical consultant, perform design reviews of the ventilation system during design and construction phases, and perform field reviews and measure the ventilation rates during and at the end of the construction phase to verify the provision of direct ventilation to all occupiable areas in the building.

B.1.8 LOW-EMITTING MATERIALS

The Client will coordinate with all consultants to ensure that all requirements for low-emitting materials are met. It will be ensured that urea-formaldehyde resins are not used at all, and the emissions from interior materials containing volatile organic compounds (VOCs) or added urea-formaldehyde are minimized by meeting the content requirements of Green Seal, Green Label, Green Label Plus, FloorScore, or South Coast Air Quality Management District (SCAQMD) Rules. Design and construction of the building with acceptable low-emitting materials is within the scope of most consultants in the project.

B.1.9 INDOOR AIR QUALITY TESTING

The Client will ensure a qualified contractor is retained to perform indoor air quality testing regarding concentrations of formaldehyde, particulates, ozone, total volatile organic compounds, and carbon monoxide prior to occupancy, and report the results to the City as compared to acceptable target concentration levels and standards listed in the CoV-GBPR.

B.1.10 INTEGRATED RAINWATER MANAGEMENT AND GREEN INFRASTRUCTURE

The Civil Consultant will implement the Integrated Rainwater Management and Green Infrastructure. The applicable members of the design team will ensure that the appropriate treatment and safe conveyance of rainwater are considered in the site design and all related measures are aligned with the City-Wide Integrated Rainwater Management Plan (IRMP) requirements. A preliminary Integrated Rainwater Management plan (IRMP) is included in the Rezoning Application.

B.1.11 RESILIENT DRINKING WATER ACCESS

The Client will coordinate with the architect and mechanical consultants to ensure that at least one drinking water fixture capable of operating on city water pressure with no electricity requirement is provided and easily accessible for occupants in the building.

We are submitting this letter on behalf of the Client, Wesgroup, for the above noted project. Fulfilment of all the commitments in this letter are deemed within the ultimate control and responsibility of the Client throughout the design, construction, and post-occupancy phases of the project. A letter of commitment by the Client is attached in support of the Rezoning Application.

Should you require any additional information, please contact our office.

Respectfully Submitted,
BC Building Science

Prepared by:



Farshid Bagheri
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Enclosed: Owner Commitment Letter (+1 page)

WESGROUP

August 5, 2020

City of Vancouver
Planning, Urban Design, and Sustainability
West Annex, 515 West 10th Ave
Vancouver, BC V5Y 1V4
Attn: Development Planner

Attention: Tiffany Rougeau, Development Planner

Re: Owner Commitment Letter (Green Building Policy for Rezoning)
Address: 1008 W. 41st Ave. & 5763 Oak St., Vancouver, BC

I, Graham Brewster, representing West 41st Avenue & Oak Street Investments Ltd., and 5763 Oak Street Investments Ltd. as the Owners of the development at the above addresses, confirm that the project will implement all the applicable requirements of the Vancouver Green Building Policy for Rezoning in this project per below and the required documentations will be submitted at later stages of the project:

- B.3: design, build, and test to meet an airtightness target of 2.0 L/s/m² at 75 Pa;
- B.4: complete an enhanced commissioning process;
- B.5: design and build to include building metering and sub-metering of energy, and to enter into agreement on energy reporting, including assistance for building future owners;
- B.6.1: complete refrigerant emissions calculations;
- B.7: design and build a direct ventilation system;
- B.8: design and build with low-emitting materials;
- B.9: test indoor air quality prior to occupancy;
- B.11: design and build a resilient potable water access point.

If there are any questions, please contact me.

Thank you,



Graham Brewster
Senior Development Manager

CC: Ryan Thé
Vice President of Development

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