Development Sustainability

Design Requirements

RIOCAN™

Version 2.0 – March 2023

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1. INTRODUCTION

1.1 OVERVIEW

This document outlines RioCan's sustainable design requirements, which reflect industry best practices and demonstrate RioCan's commitment to sustainability. The goal is to provide consistency for all developments, guidance to the project team and facilitate integration of sustainability into all new developments. These requirements have been developed to align with the following:

- RioCan's Environmental, Social & Governance (ESG) Policy (May 21, 2021)
- RioCan's Development Sustainability & Safety Policy (May 26, 2021)
- The GRESB ESG Benchmark (2023)

Specific focus has been placed on the below areas for the design and construction of new developments:

- Energy Efficiency;
- Carbon Reduction;
- Resiliency;
- Water Efficiency;
- Health and Wellness;
- Resource Efficiency.

1.2 PROCESS

Each new development will be assigned a Sustainability Tier; Standard, Enhanced or Superior that will determine the level of performance required. This document provides minimum mandatory requirements for all Tiers. Where a project is designated Enhanced or Superior it must pursue an approved Third-Party Certification and only measures within this document not pursued as part of Certification are required. Each of the following sections outlines specific sustainability requirements, the process and deliverables at each stage of development.

1.3 DEVELOPMENT STAGES

The process and deliverables for each section have been aligned with the RioCan development workflow which consists of the following six stages:

- Stage 1 - Viability
- Stage 2 – Feasibility
- Stage 3 – Zoning Approval
- Stage 4 – Site Plan Approval & Construction Early Works
- Stage 5 – Construction
- Stage 6 – Operation

This document mainly applies to Stage 3, 4 and 5, with guidance on Stage 1 and 2 as appropriate. Additional guidance related to Stage 5 Construction is available in the Development Sustainability – Construction Requirements document.

For any inquires or comments, please contact:

Aleks Poniatowski
Manager, Development Sustainability
Aponiato@riocan.com

2. CERTIFICATIONS

2.1 SUSTAINABILITY STANDARDS & CERTIFICATIONS

2.1.1 OBJECTIVE

To provide a consistent and verifiable approach to new developments where a higher level of sustainability is required, utilizing established metrics.

2.1.2 REQUIREMENTS

All new developments will be categorized under one of three Tiers of Sustainability Performance which will determine if a Third-Party Certification is required. Developments are classified into Tiers based on location, scale, tenure and asset positioning. The Tiers of performance are defined below:

- Standard – The development must meet all RioCan Sustainable Development Requirements for Design and Construction and any minimum requirements set by the municipality or regional government.
- Enhanced – The development must meet all RioCan Sustainable Development Guidelines for Design and Construction and any minimum requirements set by the municipality or regional government. In addition, achieve certification in one Sustainability Rating System.
- Superior - Follow all RioCan Sustainable Development Guidelines for Design and Construction and any minimum requirements set by the municipality or regional government. In addition, achieve certification in more than one Sustainability Rating System or exceed minimum required certification levels.

Acceptable Rating Systems include the following:

- LEED Gold or higher,
- Toronto Green Standard Tier 2 or higher,
- Fitwel for 2 Stars or higher.

2.1.3 PROCESS AND DELIVERABLES

STAKEHOLDERS: SUSTAINABILITY CONSULTANT

Stage 1

- RioCan to establish Sustainability Tier based on the project specific parameters, opportunities and constraints.

Stage 2

- RioCan to re-confirm Sustainability Tier based on the project specific parameters, opportunities and constraints.

Stage 3

- Sustainability Consultant to complete a Sustainability Strategy/Feasibility Study for developments.
- Sustainability Consultant to develop a preliminary certification strategy and project team to explore sustainability measures.
- **100% Schematic Design – Sustainability Consultant to complete Sustainability Check-in document outlining certification approach and provide preliminary scorecard.**

Stage 4

- Sustainability Consultant to update certification strategy and once approved by RioCan register the project.
- Project Team to integrate sustainability measures into project documents based on approved Certification Scorecard.
- **100% Design Development & Issued for Tender – Sustainability Consultant to complete Sustainability Check-in with and provide updated scorecard.**

Stage 5

- Construction Team and General Contractor to implement and track sustainability measures.
- Sustainability Consultant to provide twice annual updates on Certification.
- Sustainability Consultant to compile and submit project for certification and obtain confirmation of certification.

3. INTEGRATIVE PROCESS

3.1 INTEGRATIVE DESIGN

3.1.1 OBJECTIVE

To develop optimal sustainability solutions through effective collaboration and open communication between all stakeholders (RioCan, Partners, Consultants, Contractors, etc.)

3.1.2 REQUIREMENTS

All new developments must follow an integrated design approach that fosters collaboration and communication between all project stakeholders.

Each development will kick-off with a sustainability charrette that will include RioCan and the design team. At a minimum discuss the opportunities, challenges and constraints specific to the project and associated with the following topics:

- The requirements of the RioCan Development Sustainability Design and Construction documents;
- Minimum local municipal or regional sustainability requirements and potential to exceed minimum requirements;
- Third Party Certification goals (if applicable);
- Site Conditions and location, Programmatic and Operational Parameters, Massing and Orientation, Envelope Parameters, Electrical System Parameters, Mechanical System Parameters, Indoor/Outdoor Water Demand and Supply, Occupant Health/Wellbeing;
- Future proofing and
- Any other goals and objectives.

The meeting must conclude with specific outcomes and next steps/actions for the project team. Post meeting, a report outlining at a minimum the following must be provided:

- Attendees;
- Topics discussed including opportunities, challenges and constraints for each;
- Outcomes or decisions made;
- Goals/objectives and
- Next steps/action items

3.1.3 PROCESS AND DELIVERABLES

STAKEHOLDERS: ALL CONSULTANTS, RIOCAN & CONSTRUCTION MANAGERS

Stage 2

- Preferably in Stage 2 but no later than the start of Stage 3 the Sustainability Consultant is to Chair Sustainability focused Charette.
- Sustainability Consultant to provide a Charrette Report.
- Project team to explore design approaches to meet RioCan's Development Sustainability requirements.

Stage 3

- Project team to refine design approaches to meet RioCan's Development Sustainability requirements.
- **100% Schematic Design – Project Team to complete the Sustainability Check-in document and submit Charrette Report.**

Stage 4

- Project Team to integrate RioCan's Development Sustainability requirements into project documents as approved by RioCan.
- **100% Design Development – Project Team to complete Sustainability Check-in document and Sustainability Consultant to provide draft Sustainability Specifications.**
- **Issued for Tender - Project Team to complete Sustainability Check-in with document and Sustainability Consultant to provide final Sustainability Specifications.**

Stage 5

- Construction Team and General Contractor to implement and track sustainability measures.

4. ENERGY

4.1 RESILIENCE

4.1.1 OBJECTIVE

To increase the resiliency of developments to severe weather and climate change through the use of passive and active measures.

4.1.2 REQUIREMENTS

CLIMATE RISK ASSESSMENT

Conduct a Climate Risk Assessment of the development site to determine the potential risks to the development associated with changes in weather, and climate. Use the Climate Related Risk Management Planning, LEED Resilient Design Pilot Credit IPpc98 Checklist to determine the High, Medium and Low risk items associated with the project. Determine potential mitigation measures and evaluate the feasibility as well as cost implications of implementing mitigation measures for High Risk items. Work with the project team to integrate mitigation measures for High Risk items.

AREA OF REFUGE & BACKUP POWER

Provide emergency power for the following at a minimum:

- Life Safety: All EM lighting, Elevator(s), fire pump, jockey pump, all fire alarm panels.
- Non-Life Safety: Sump/storm/sanitary/domestic water booster pumps, concierge desk phone, leasing and or rental/management office, communication closets (one/floor), EFP, lobby and loading/garbage areas.

Also consider backup power for Garage door(s) and or gate arm(s), security systems, exterior lighting and entrances, domestic hot water boilers, HVAC/Fans, UPS Systems and Commercial tenants.

For residential developments provide an area of refuge that provides heating, cooling, lighting, potable water and power. The area of refuge should be located in an existing common amenity or lobby and is meant to accommodate residents on a temporary basis. As a guideline the recommended size of the area of refuge should be a minimum 1000 sqft or 5 sqft per occupant.

Minimum 72 hours for backup power must be provided to the additional backup systems and area of refuge.

4.1.3 PROCESS AND DELIVERABLES

STAKEHOLDERS: ALL CONSULTANTS

Stage 3

- The Project Team is to Conduct a Climate Risk Assessment for the development site and highlight any High risk items that require mitigation. The project team is also to identify potential mitigation strategies.
- Project Team in consultation with RioCan is to Identify potential areas of refuge and confirm the systems that will be provided with backup power.
- **100% Schematic Design – Project Team to complete Sustainability Check-in document and submit Climate Risk Assessment Report.**

Stage 4

- Project Team to develop detailed mitigation measures. In consultation with RioCan the project team is to integrate mitigation measures into the project design.
- Confirm area of refuge and integrate backup power for selected subsystems in project documents.
- **100% Design Development and Issued for Tender – Project Team to complete Sustainability Check-in document providing an update on resilience measures.**

4. ENERGY

4.2 PASSIVE DESIGN MEASURES

4.2.1 OBJECTIVE

To increase the resiliency and passive survivability of developments to power interruptions due to severe weather conditions, climate change and other emergencies while minimizing resource use.

4.2.2 REQUIREMENTS

Evaluate and incorporate the following passive measures into the project design:

- Optimize the building orientation and exposure. Consider compactness ratio and use larger floor plates, eliminate inset balconies and simplify building geometry.
- Do not exceed an overall window to wall ratio (WWR) of 50% for residential/mixed use and 60% for commercial buildings.
- The following minimum R-Values are required, inclusive of all thermal bridging: per NECB 2017:
  - Opaque Cladding: R-7
  - Roofing: R-30
  - Soffits: R-30
- Minimize thermal bridging by:
  - Reducing balcony length or removing balconies and or incorporating thermal breaks where feasible.
  - Using true rainscreen cladding that is thermally broken and includes a continuous exterior insulation layer.
  - Rationalizing glazing layout in favour of continuous strips of glazing as opposed to many individual openings.
- Design fenestration systems based on the following:
  - Provide an area weighted U-Value of operable and fixed glazing inclusive of framing of U-0.25 to U-0.32.
  - Rationalize mullion spacing to reduce the number of mullions and increase mullion spacing where possible.
  - Explore the use of lower SHGC on the south, east and west elevations and a higher SHGC on the north elevation. Consider use of double Low-E coatings. Selection of Low-E coatings must balance current heating and cooling loads with potential future changes due to climate change.

4.2.3 PROCESS AND DELIVERABLES

STAKEHOLDERS: ARCHITECT, ENVELOPE CONSULTANT & CONSTRUCTION MANAGERS

Stage 3

- Architect to integrate high level passive design strategies into the project design.
- **100% Schematic Design – Project Team to complete Sustainability Check-in document summarizing passive strategies considered.**

Stage 4

- Architect and Building Envelope Consultant to further refine and integrate passive design measures into the project design.
- **100% Design Development and Issuer for Tender – Project Team to complete Sustainability Check-in document summarizing passive design strategies implemented.**

Stage 5

- Construction Team, General Contractor and Envelope Consultant/Envelope Commissioning Agent to alert Project Team of any significant deviations that impact passive design strategies implemented during design.

4. ENERGY

4.3 ENERGY & CARBON REDUCTION

4.3.1 OBJECTIVE

To reduce the energy consumption and associated carbon emissions through the use of efficient systems.

4.3.2 REQUIREMENTS

ENERGY & CARBON METRICS

Use the following metrics as goals for energy efficiency and carbon reduction, local requirements or project requirements, whichever are more stringent:

- Exceed the Building Code requirements at Building Permit Stage by a minimum of 15% and meet the following:

	TEUI kWh kWh/m2	TEDI kWh/m2	GHGI kg CO2e/m2/yr
Residential	150	55	18
Retail	150	50	18
Office	145	50	18

To develop effective solutions energy modeling must commence early in design with updates at periodic milestones. Use future weather files to assess the development's resilience to climate change. The models can be based on ASHRAE or NECB standards and should follow City of Toronto Energy Modeling Guidance except for Building Permit or as otherwise noted and report VFAR. In addition, meet the following minimum requirements for equipment and systems:

- Mechanical Systems - Boilers, chillers, fans, and other mechanical should at minimum meet the efficiencies provided in ASHRAE 90.1 – 2016.
- Electrical Systems - All lighting fittings installed in the new development must be LED unless not recommended for a specific use. In addition, the total power density (kWh/m2) should not exceed the maximum allowance as given by ASHRAE 90.1 – 2019 Space-by-Space method.
- Appliances - All installed appliances must be energy star certified; where certification is not applicable, select appliances with lower EnerGuide ratings.

4.3.3 PROCESS AND DELIVERABLES

STAKEHOLDERS: ENERGY MODELLER, MECHANICAL & ELECTRICAL ENGINEER & CONSTRUCTION MANAGERS

Stage 2

- Confirm if RioCan Guideline Energy & Carbon Metrics, Local requirements or project/certification specific requirements are more stringent to establish project goals. Energy targets will also be set at the Integrated Design Charette.

Stage 3

- **100% Schematic Design – Energy modeller to develop and present early-stage archetype model. This will set targets, evaluate feasibility and provide general guidance on design strategies.**

Stage 4

- **50% Design Development – Energy Modeler to develop energy model based on Project Documents, provide report and Project Team to complete Sustainability Check-in document summarizing energy performance. This update may be done in conjunction with the SPA Submission if a requirement for SPA modeling exists already.**
- Mechanical engineer to integrate ASHRAE 90.1 efficiencies and energy conservation measures into the project design.
- Electrical engineer to integrate lighting power densities from ASHRAE 90.1 and energy conservation into the project design.
- Architect/Interior Designer to integrate Energy Star Certification requirements into project documents.
- **Issued for Construction – Energy Modeler to update energy model based on Project Documents, provide report and Project Team to complete Sustainability Check-in document summarizing energy performance.**

Stage 5

- Construction team, General Contractor and Commissioning Agent to alert Sustainability Consultant/ Energy Modeller of any significant deviations that impact project energy conservation measures.

4. ENERGY

4.3 ENERGY & CARBON REDUCTION (cont'd)

4.3.2 REQUIREMENTS

ELECTRIC VEHICLE CHARGING

All new developments are required to provide 10% of residential parking sports with electric vehicle charging equipment and an additional 30% roughed in for future electric vehicle charging equipment (including wiring and conduit) or local requirements, whichever is greater. Provide level 2 electrical vehicle charging equipment. In addition, explore the feasibility and impact of providing electric vehicle charging equipment for 100% of residential parking spaces and 50% of commercial parking spaces on the transformer size and electrical room space requirements. Where deemed feasible transformers with additional capacity and or additional space for future expansion to be provided.

ELECTRIFICATION

When designing building mechanical rooms consider future electrification of combustion equipment (Boilers for Domestic Hot Water and Heating). Design mechanical rooms to accommodate future equipment and ensure transformers have additional capacity or additional space is available for future expansion.

EMBODIED CARBON

Conduct a whole building Lifecycle Assessment (LCA) during early design following the NRC "National Guidelines for whole-Building Life Cycle Assessment" and provide recommendations to reduce the embodied carbon of the development. Based on the measures implemented by the project team, update the LCA and demonstrate a minimum 10% reduction in embodied carbon against the baseline building.

4.3.4 PROCESS AND DELIVERABLES

STAKEHOLDERS: ARCHITECT, ELECTRICAL ENGINEER, SUSTAINABILITY CONSULTANT

Stage 4

- Architect and Electrical Engineer to integrate electric vehicle charging minimum requirements into the project design and explore the feasibility of additional transformer capacity/space for future expansion.
- Electrical Engineer to consider future electrification of combustion equipment and feasibility of providing additional transformer capacity/space for future expansion.
- **50% Design Development – Sustainability Consultant to conduct early stage LCA, provide report including recommendations to reduce embodied carbon and Project Team to complete Sustainability Check-in document summarizing LCA information.**
- **50% & 100% Design Development – Project Team to complete Sustainability Check-in document summarizing EVSE and electrification provisions.**
- **Issued for Tender - Project Team to complete Sustainability Check-in document summarizing EVSE and electrification provisions.**
- **Issued for Construction - Sustainability Consultant to update LCA, provide update report and Project Team to complete Sustainability Check-in document summarizing LCA information.**

4. ENERGY

4.4 VERIFICATION

4.4.1 OBJECTIVE

To track and verify the performance of new developments and ensure that RioCan's requirements for energy, water, indoor environmental quality and durability are being met.

4.4.2 REQUIREMENTS

METERING

Energy and water metering must be included in all new developments. The following minimum metering requirements must be met:

- Total energy consumption (electricity, natural gas chilled water, steam etc);
- The following energy subsystems:
  - Total Common area lighting and plug loads;
  - Central Plant Equipment including Boilers, Chillers etc
- Total potable water consumption of the building.
- The following water subsystems:
  - Irrigation water;
  - Domestic & Heating hot water boilers;
- Suite & Tenant energy and water consumption including the following:
  - Hot and Cold Water
  - Electricity
  - Thermal Energy

The building metering must be set up per the following:

- Meters must be permanently installed;
- All meters in the system must be capable of reporting hourly, daily, monthly, and annual energy use;
- Incorporate a building management system (BMS) that can share energy and loads consumption data online for cooling, heating, lighting, etc and save readings for future studies.

4.4.3 PROCESS AND DELIVERABLES

STAKEHOLDERS: ARCHITECT, ELECTRICAL ENGINEER, SUSTAINABILITY CONSULTANT

Stage 4

- Mechanical and Electrical Engineer to identify the systems requiring metering and integrate compliant meters into the project documents.
- **100% Design Development – Project Team to complete Sustainability Check-in outlining metering strategy.**
- **Issued for Tender - Mechanical/Electrical to complete Sustainability Check-in confirming systems that will be metered, locations of meters and BMS/BAS system capabilities.**

4. ENERGY

4.4 VERIFICATION (cont'd)

4.4.2 REQUIREMENTS

COMMISSIONING

Commission mechanical, electrical and plumbing systems/equipment in accordance with ASHRAE Guideline 0–2013 and ASHRAE Guideline 1.1–2007 for HVAC&R systems as related to energy, water, indoor environmental quality and durability.

Building Envelope Commissioning will be implemented depending on specific project requirements, opportunities and challenges. Where required Commission the Building Envelope in accordance with ASHRAE Guideline 0–2013 and ASTM E2947-16: Standard Guide for Building Enclosure Commissioning as related to energy, air and water tightness, indoor environmental quality and durability.

Process and all noted deliverables apply to both Mechanical/Electrical/Plumbing Commissioning as well as Building Envelope Commissioning.

4.4.4 PROCESS AND DELIVERABLES

STAKEHOLDERS: COMMISSIONING AUTHORITY

Stage 4

- **100% Design Development – Commissioning Authority to assist in the development/review of the OPR and BOD and complete Sustainability Check-in.**
- 50% Construction Documents – Commissioning Authority to review project documents, issue comments log and provide Commissioning Plan.
- 100% Construction Documents – Commissioning Authority to review project documents, issues specifications and Cx forms, confirm incorporation of Commissioning requirements (systems manual requirements, operator and occupant training requirements etc), update comments log and update Commissioning Plan.
- **Issued for Tender - Project Team to complete Sustainability Check-in confirming status of commissioning items.**

Stage 5

- Commissioning Agent to undertake at a minimum the following activities during construction.
  - Chair a Commissioning Kick off Meeting and attend periodic Commissioning meetings.
  - Maintain an issues log throughout the Commissioning process.
  - Review contractor submittals.
  - Develop construction checklists.
  - Develop system test procedures.
  - Verify system test execution.
  - Verify seasonal testing.
  - Verify systems manual updates and delivery.
  - Verify occupant training delivery and effectiveness.
  - Develop an on-going commissioning plan.
  - Review building operations 10 months after substantial completion.
  - Prepare a final Commissioning report.

4. ENERGY

4.4 VERIFICATION (cont'd)

4.4.2 REQUIREMENTS

AIR TIGHTNESS TESTING

All new developments must demonstrate the as constructed air infiltration rate does not exceed 2.0 L/s m2 @75Pa (0.4 cfm/ft2 @75Pa by carrying out the following:

- Quality assurance activities including but not limited to drawing and specification review, shop drawing review, manufacturer plant and site visits must be conducted by the BE Consultant during design and construction. Proper quality assurance activities are critical in reducing air infiltration rates.
- Conduct mock-up testing of representative envelope areas/suites as soon as possible. Mock-up testing may be carried out to ASTM E779 to permit testing isolated areas early on. Mock-up testing is an important part of the quality assurance process and can help identify issues early during the construction that can be rectified and remedial measures applied to the rest of the development. Sampling must be adequate to capture typical envelope conditions.
- Conduct a Whole Building Air Leakage test in general accordance with ASTM E-3158-18 Standard Test Method for Measuring the Air Leakage Rate of a Large or Multizone Building. If WBALT is not feasible guarded testing may be conducted instead based on the following floor sampling methodology: podium, base of tower, top of tower, unique floors and 2 contiguous floors for every 10 floors.

Project teams must strive to reduce air infiltration rates beyond the minimum requirement where feasible. More stringent air infiltration rates may be set by RioCan based on project specific needs and requirements.

4.4.5 PROCESS AND DELIVERABLES

STAKEHOLDERS: ARCHITECT & ENVELOPE CONSULTANT

Stage 3

- Architect to consider air infiltration when selecting the number and types of building envelope assemblies being utilized on the development.

Stage 4

- Architect to consider air infiltration when designing cladding details and interfaces between cladding and glazing systems.
- 100% Design Development & 50% Construction Documents – Envelope Consultant to conduct drawing review including a focus on air infiltration, continuity of critical barriers, constructability and durability.
- **Issued for Tender - Envelope Consultant to submit airtightness testing plan indicating the testing procedure plan, number and location of fans, electrical/mechanical/elevator requirements etc.**

Stage 5

- BE Consultant to review for air infiltration when reviewing proposed envelope assembly shop drawings, submittals, test reports etc.
- BE Consultant to conduct manufacturing plant and site quality assurance reviews to confirm envelope assemblies are being manufactured and installed as per approved design drawings and shop drawings.
- Complete mock-up testing per approved air tightness testing plan and provide report. If targets are not met identify areas of extraneous air infiltration, propose remedial measures and re-test once remedial measures have been completed.
- Complete whole building air leakage testing or guarded air leakage testing per approved testing plan and provide report. If targets are not met either identify areas of extraneous air infiltration, propose remedial measures and re-test once remedial measures have been completed or provide a lessons learned report.

5. WATER

5.1 INDOOR WATER USE

5.1.1 OBJECTIVE

Reduce potable water use for indoor fixtures and appliances to conserve water resources.

5.1.2 REQUIREMENTS

Achieve a minimum 40% reduction in potable water use through the selection of efficient, low flow and low flush fixtures for all suite kitchens and washrooms as well common/amenity spaces. Requirements do not apply to process water fixtures.

5.1.3 PROCESS AND DELIVERABLES

STAKEHOLDERS: MECHANICAL ENGINEER & INTERIOR DESIGNER

Stage 3

- Project Team to evaluate the use of low flow and flush fixtures and set potable water use reduction target.

Stage 4

- Mechanical Engineer or Interior Designer to integrate low flow and flush fixture requirements into the project design documents and develop preliminary water use calculations.
- 100% Design Development – Mechanical Engineer, Interior Designer or Sustainability Consultant to complete Sustainability Check-in, provide preliminary fixture selection information and LEED v4.1 Water Use Calculator.
- **Issued for Tender - Project Team to complete Sustainability Check-in, provide final fixture selection information and LEED v4.1 Water Use Calculator.**

5.2 OUTDOOR WATER USE

5.2.1 OBJECTIVE

Reduce or eliminate potable water use for irrigation and support the development of resilient, biodiverse landscapes.

5.2.2 REQUIREMENTS

Where irrigation is required, eliminate potable water use through the re-use of rainwater and implementation of efficient irrigation. If it is not possible to eliminate potable water use for irrigation, then reduce it by a minimum of 60% through plant selection, implementation of drip irrigation systems and other efficient technologies. Utilize a bio-diverse selection of plants that are native, adaptive and drought tolerant that include pollinator species. Do not use any invasive plant species.

5.2.3 PROCESS AND DELIVERABLES

STAKEHOLDERS: LANDSCAPE ARCHITECT, IRRIGATION CONSULTANT

Stage 3

- Landscape Architect to integrate plant requirements into the project landscape design and evaluate irrigation needs of the proposed design.
- **100% Schematic Design – Project Team to complete Sustainability Check-in providing description of landscape design intent**

Stage 4

- Landscape Architect to finalize plant selection and carryout preliminary irrigation calculations.
- **100% Design Development – Project Team to complete Sustainability Check-in and provide a narrative detailing plant selection and irrigation design.**
- **Issued for Tender - Project Team to provide an updated narrative detailing plant selection and provide irrigation design drawings.**

5. WATER

5.3 RESILIENCE

5.3.1 OBJECTIVE

To increase the resiliency of developments to severe weather conditions and climate change through passive design measures.

5.3.2 REQUIREMENTS

STORMWATER MANAGEMENT

Retain a minimum of 5mm from each rainfall event from the impervious site areas or local requirements whichever is more stringent. Prioritize Low Impact Development practices that promote infiltration, evapotranspiration, rainwater harvesting/re-use. Preferred strategies include intensive or extensive green roofing, blue roofs and rainwater re-use for irrigation. Where site design permits utilize bio-retention, raingardens, soakways, infiltration trenches and chambers.

Heat Island

Minimize heat island effect associated with the development through the use of high albedo hardscapes, shade at grade and green/high albedo roofing. At grade hardscapes and roofing must be a minimum 50% treated with compliant materials/strategies.

High albedo hardscapes are defined as those with initial solar reflectance of 0.33 or more and high albedo roofing is defined as roofing materials with an initial SRI of 82.

5.3.3 PROCESS AND DELIVERABLES

STAKEHOLDERS: CIVIL ENGINEER, LANDSCAPE ARCHITECT, & ARCHITECT

Stage 3

- Civil Engineer, Landscape Architect and Architect to explore and review the feasibility of potential stormwater management and heat island effect reduction strategies.

Stage 4

- Civil Engineer, Landscape Architect and Architect to integrate stormwater management and heat island effect reduction strategies into the project documents.
- **100% Design Development & Issued for Tender – Project Team to complete Sustainability Check-in providing descriptions of stormwater management strategies.**
- **100% Design Development & Issued for Tender – Project Team to complete Sustainability Check-in providing descriptions of heat island mitigation strategies.**

6. HEALTH AND WELLNESS

6.1 INDOOR ENVIRONMENTAL QUALITY

6.1.1 OBJECTIVE

To provide a healthy indoor environment that supports the wellbeing of building occupants.

6.1.2 REQUIREMENTS

VENTILATION

For all mechanically ventilated spaces design the HVAC systems to meet the requirements of ASHRAE 62.1-2010 or newer.

THERMAL COMFORT

Design all occupied areas to meet the requirements of ASHRAE Standard 55–2017, Thermal Comfort Conditions for Human Occupancy.

INDOOR AIR QUALITY

Low Emitting Materials: Select low emitting Paints, Coatings, Adhesives, Sealants, Flooring, Wall Panels, Ceilings and Insulation.

- For paints, coatings, adhesives and sealants 75% of site wet applied materials, installed within the air barrier must meet the VOC requirements, 100% must meet the VOC content evaluation. Materials within the air barrier tracked by volume or surface area.
- For Flooring, wall Panels, Ceilings and insulation 75% of materials must meet the VOC emissions evaluation or be inherently non-emitting by cost or surface area.

Entryway Systems: Install entryway systems with a minimum length of 3 meters in the main direction of travel at all main entrances including parking garage vestibules.

Filtration Media: For all mechanical ventilation systems that supply outdoor air to occupied spaces provide MERV 13 or equivalent or higher filters. Where mechanical equipment cannot accommodate MERV 13 filtration use best available filter.

Interior Cross-Contamination Prevention: For spaces where hazardous gases or chemicals may be present provide sufficient exhaust to create a negative pressure in relation to adjacent spaces, provide self-closing doors and sealed full height partitions.

6.1.3 PROCESS AND DELIVERABLES

STAKEHOLDERS: ARCHITECT, MECHNICAL ENGINEER & CONSTRUCTION MANAGERS

Stage 4

- Mechanical Engineer to design HVAC systems to meet ASHRAE 62.1, ASHRAE 55 and integrate filtration media requirements.
- Project Team to Explore feasibility of utilizing low emitting materials and products. Project Team to integrate selected low emitting materials and products in the project documents.
- Architect to integrate entryway systems and interior cross contamination requirements into project documents.
- **100% Design Development and Issued for Tender – Project Team to complete Sustainability Check-in and confirm implementation of IAQ measures.**
- **100% Design Development and Issued for Tender – Project Team to complete Sustainability Check-in and confirm implementation of IAQ measures.**

Stage 5

- Construction Manager to track use of low emitting materials and provide updated tracking information along with required supporting documentation on a monthly basis.
- **Substantial Completion – Construction Manager to submit final documentation demonstrating targets for low emitting materials have been achieved**

6. HEALTH AND WELLNESS

6.1 INDOOR ENVIRONMENTAL QUALITY (cont'd)

6.1.2 REQUIREMENTS

ACTIVE DESIGN FEATURES

Explore and integrate active design features aimed to positively contribute towards occupant health and well-being through physical activity.

BIOPHILIC DESIGN

Explore and integrate design measures that align with the 14 Patterns of Biophilic Design. Although all patterns can be explored prioritize the following where possible:

- Visual Connection with Nature
- Presence of Water
- Dynamic and Diffuse Light
- Connection with Natural Systems
- Biomorphic Forms & Patterns
- Material connection with nature
- Prospect, Refuge and Mystery

OCCUPANT CONTROLS

- Thermal Comfort controls: Provide sufficient thermal comfort controls to allow occupants to adjust the conditions of their local environment. Thermal comfort controls can include control over air temperature, air speed, radiant temperature and humidity. For suites provide humidity monitoring.
- Lighting Controls: Provide sufficient general and task lighting controls in all spaces to allow occupants to set lighting levels to suit individual tasks and preferences.

DAYLIGHT ANALYSIS

Conduct a daylighting simulation for all regularly occupied areas (or a representative sample of rooms/suites). The simulation must demonstrate the illumination (lux level) at 9 am and 3 pm for both March 15th, and September 15th under clear sky conditions. There is no minimum requirement for daylighting, however efforts should be made to ensure that adequate daylighting is provided in all regularly occupied spaces.

6.1.4 PROCESS AND DELIVERABLES

STAKEHOLDERS: ARCHITECT, INTERIOR DESIGN, MECHANICAL & ELECTRICAL ENGINEER

Stage 4

- Mechanical and Electrical Engineer to integrate occupant controls into project documents.
- Architect and Interior designer to explore active design and biophilic design strategies for the project and present potential options to RioCan. Once approved, integrate selected active and biophilic design strategies into the project documents.
- Architect to refine strategies to maximize daylighting and views in regularly occupied spaces.
- **100% Design Development and Issued for Tender – Project Team to complete Sustainability Check-in and confirm adequate controls have been provided.**
- **100% Design Development and Issued for Tender – Project Team to complete Sustainability Check-in and confirm implementation of Active and Biophilic Design measures.**
- **100% Design Development and Issued for Tender – Project Team to complete Sustainability Check-in and submit Daylight study showing occupied areas and lux levels.**

6. HEALTH AND WELLNESS

6.2 VIRAL RESPONSE

6.2.1 OBJECTIVE

To provide a healthy indoor environment that reduces the potential for spread of illness.

6.2.2 REQUIREMENTS

Integrate the following measures into the development design:

- Touchless entry to the building at main entrance and common entrances.
- Touchless entry and floor selection in the elevator via FOB or similar technologies/devices.
- All regularly used common area door handles and pulls (ie garbage room, mailroom, amenity space etc) to include an antimicrobial copper coating.
- If FOB or other similar technologies/devices are not used for elevators, use antimicrobial copper coating for buttons.
- Barrier free access devices that can be activated by waving and allow for longer open times.
- Sanitization Stations.
- Touchless washroom fixtures and water fountains for common areas.

6.2.3 PROCESS AND DELIVERABLES

STAKEHOLDERS: ARCHITECT & INTERIOR DESIGNER

Stage 4

- Project Team to integrate viral response measures as applicable into project documents.
- **100% Design Development and Issued for Tender – Project Team to complete Sustainability Check-in and confirm implementation of viral response measures.**

7. MATERIALS & RESOURCES

7.1 RESPONSIBLE SOURCING OF MATERIALS

7.1.1 OBJECTIVE

To encourage the use of responsibly sourced materials which reduce the environmental impacts resulting from extraction, processing and transportation.

7.1.2 REQUIREMENTS

- Recycled Content: Source a minimum of 10% of materials on a cost basis of the total value of materials (Division 3-10, 31 & 32) in the project with recycled content (sum of post-consumer content + ½ of pre-consumer content). Recycled content is defined as a product or material containing pre-consumer and or post-consumer recycled content that is diverted from the waste stream.
- Regional Content: Source a minimum of 15% of materials on a cost basis of the total value of materials (Division 3-10, 31 & 32) in the project with regional content. Regional content is defined as a product or material that is extracted, harvested, recovered and manufactured within an 800km radius if transported by road and 2400km distance if transported by rail or water.
- Environmental Product Declarations (EPD's): Source a minimum of 25 different permanently installed products from at least 5 different manufacturers with EPD's. EPD's must conform to ISO 14025, 14040, 14044, EN 15804 or ISO 21931, or have publicly available, reviewed life-cycle assessment, conforming to ISO 14044.
- Health Product Declarations (HPD's): Source a minimum of 25 different permanently installed products from at least 5 different manufacturers. HPD's must be publicly available, list all ingredients used and provide a full disclosure of hazards and associated effects.

7.1.3 PROCESS AND DELIVERABLES

STAKEHOLDERS: ALL CONSULTANTS & CONSTRUCTION MANAGERS

Stage 3

- Project Team to consider responsible sourcing of materials when making preliminary material selections for major components of the structure and building envelope.

Stage 4

- Project Team to integrate responsibly sourced materials and associated requirements into the project documents including relevant specification sections.
- **100% Design Development – Project Team to complete Sustainability Check-in confirming intent to source responsible materials.**
- **Issued for Tender - Project Team to complete Sustainability Check-in confirming incorporation of responsibly sourced material requirements into project documents.**

Stage 5

- Construction Manager to track use of responsibly sourced materials and provide updated tracking information along with required supporting documentation on a monthly basis.
- **Substantial Completion – Construction Manager to submit final documentation demonstrating targets for responsible sourcing of materials have been achieved.**

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