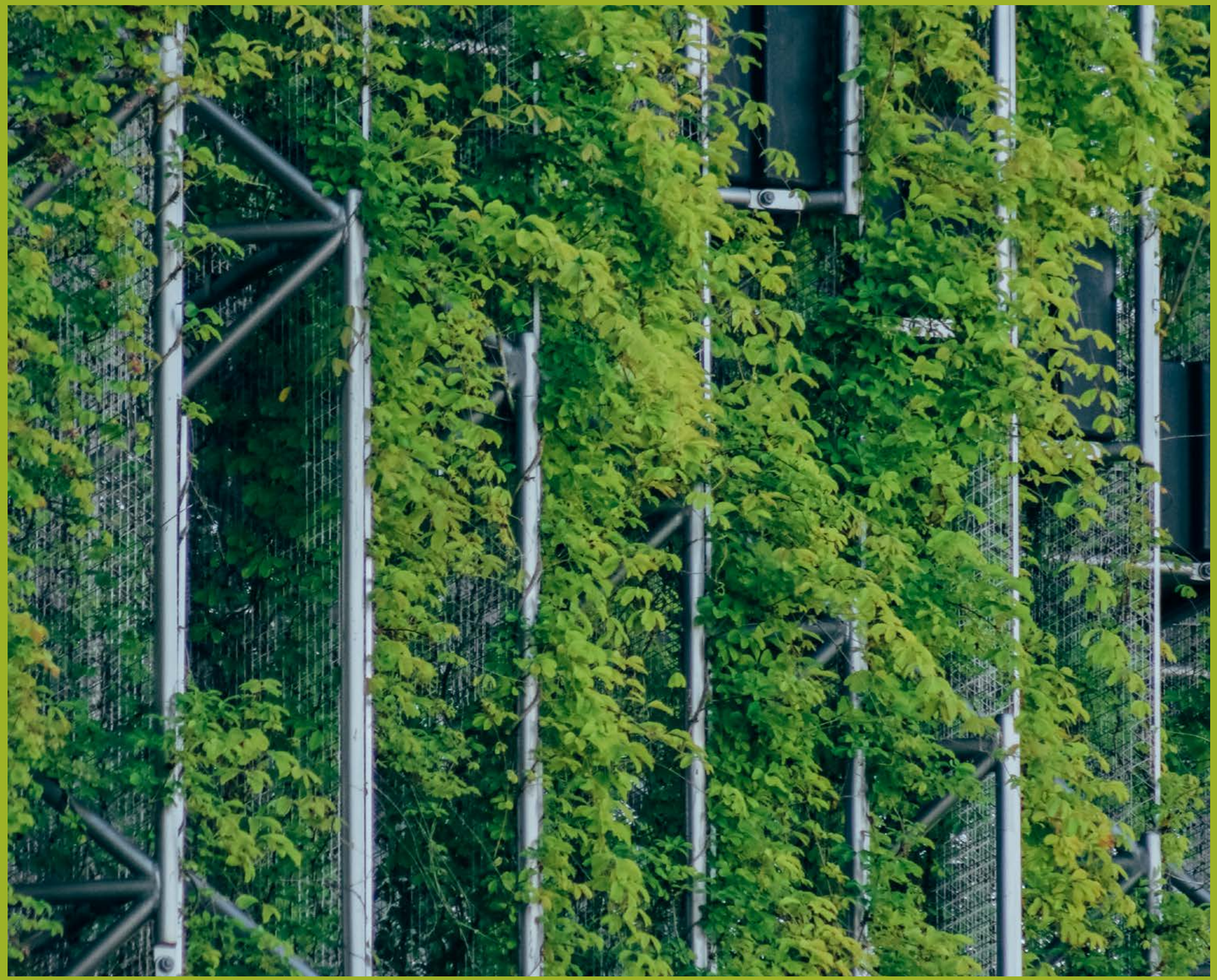


Earth Sciences Building, UBC Vancouver Campus

Credit Guidance

Sustainable Sites

Prerequisite: Construction Activity Pollution Prevention

CAMPUS	MANDATORY	PRIORITY	AVAILABLE
Vancouver			Required
Okanagan			

REQUIREMENTS

Prerequisite

VANCOUVER RESOURCES

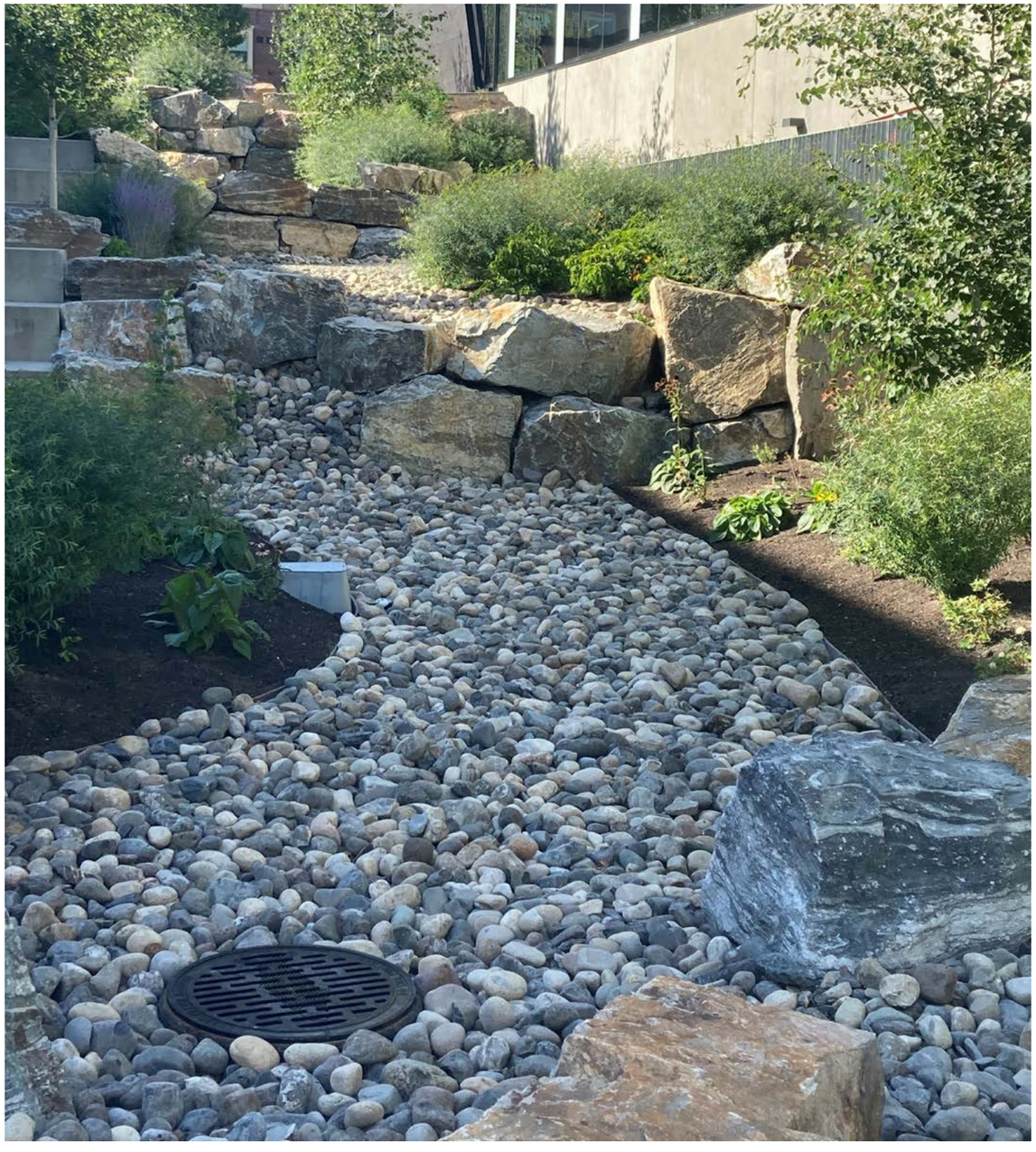
Appendix H – Greater Vancouver Regional District Best Management Practices Guide for Stormwater

OKANAGAN RESOURCES

City of Kelowna Schedule 4 of Bylaw 7900 section 3.14 Erosion and Sediment Control (ESC)

GUIDANCE

The erosion and sedimentation control plan must conform with the EPA's CGP 2017 or local code, whichever is more stringent. Stringency is determined by evaluating the specific needs of each site, and each measure required and implemented to control pollution and other impacts of construction accordingly. In some cases, the EPA's CGP measures may be more stringent, and in others it may be local code. Project teams are encouraged to engage with civil engineering consultants early in the design process to evaluate the specific site conditions and associated control measures. The project's civil engineering consultant is responsible for comparing the EPA's CGP to local code for each control measure implemented, and for providing documentation showing that the most stringent requirement was applied to each measure accordingly.



Nechako Rain Garden, UBC Okanagan Campus

SS Credit: Site Assessment

CAMPUS	MANDATORY	PRIORITY	AVAILABLE
Vancouver	1		1
Okanagan	1		

REQUIREMENTS

All projects must comply as per LEED BD+C v4.1.

RESOURCES

USGBC LEED v4.1 Site Assessment Worksheet

BC Conservation Data Centre

Appendix A – UBC Integrated Sustainability Process

GUIDANCE

Projects must complete a site-specific assessment to account for unique local conditions and changing ecological status. Project teams are encouraged to consider the requirements of this credit early and to align the assessment and research with the Integrative Process credit, Sensitive Land Protection credit, as well as reference the UBC Integrated Sustainability Process.

Projects are required to submit a Site Assessment Worksheet following Sustainability Workshop 2 as per the UBC Integrated Sustainability Process (Appendix A).

SS Credit: Protect or Restore Habitat

CAMPUS	MANDATORY	PRIORITY	AVAILABLE
Vancouver		2	2
Okanagan		2	

REQUIREMENTS

Projects are encouraged to comply as per LEED BD+C v4.1 to earn two points.

VANCOUVER RESOURCES

UBC Vancouver Campus Plan – Part 3 Design Guidelines Section 2.4.3 - Planting Guidelines

Green Building Action Plan (Biodiversity section)

OKANAGAN RESOURCES

UBC Okanagan Campus Design Guidelines Section 2.3.1 – Planting

UBCO Whole Systems Infrastructure Plan (Refer to Ecological Landscape and Biodiversity)

GUIDANCE

Projects are encouraged to carefully consider vegetation and soil condition requirements of the areas to be restored and vegetated and align with rainwater management strategies. Most projects will not be required to protect 40% of greenfield area, because there are very few greenfield sites left on either campus.

SS Credit: **Open Space**

CAMPUS	MANDATORY	PRIORITY	AVAILABLE
Vancouver		1	1
Okanagan	1		

VANCOUVER REQUIREMENTS

All project are encouraged to comply as per LEED BD+C v4.1 to earn one point.

VANCOUVER RESOURCES

Vancouver Campus Plan

VANCOUVER GUIDANCE

Projects are encouraged to pursue compliance with the credit requirements and to satisfy them within the project site area if possible. Site boundaries and the urban nature of most sites on campus make this credit challenging to achieve. Pedestrian oriented hardscape and green roofs can contribute.

OKANAGAN REQUIREMENTS

All projects must comply as per LEED BD+C v4.1 to earn one point.

OKANAGAN RESOURCES

Okanagan Campus Plan

OKANAGAN GUIDANCE

The minimum requirement for 25% of open space to be vegetated aligns with the UBCO Integrated Rainwater Management Plan, and the more suburban nature of the Okanagan campus allows for site boundaries to accommodate increased landscape and planted area. Pedestrian oriented hardscape and green roofs can contribute towards credit calculations.

Note that wetlands are valued as natural and ecological features and several low-lying areas on campus have developed into stormwater retention. Wetlands and naturally designed ponds with vegetated side slope gradients of 1:4 or less may also be counted as open space.

Public Art Installation by Les Louis, UBC Okanagan Campus

SS Credit: Rainwater Management

CAMPUS	MANDATORY	PRIORITY	AVAILABLE
Vancouver	2	1	3
Okanagan	2	1	

REQUIREMENTS

All projects must comply as per LEED BD+C v4.1 to earn a minimum of two points.

VANCOUVER RESOURCES

Appendix E – Vancouver Campus: Rainwater Infiltration Map

UBC Climate Ready Building Requirements

USGBC LEED v4.1 Rainfall Events Calculator

Vancouver Campus Plan

UBC Water Action Plan

UBC Integrated Stormwater Management Plan

Rainfall Events on Vancouver Campus

PERCENTILE	RAINFALL EVENT (MM 24H STORM)
90th	72.7
85th	46.7
80th	37.4
75th	29.0
70th	24.0

VANCOUVER GUIDANCE

UBC requires that each new building on campus consider and manage rainwater within the project site to contribute to campus-wide stormwater management, and are required to be adaptable to the climate of 2100, as per the UBC Climate Ready Requirements. The UBC Integrated Stormwater Management Plan aims to manage runoff and overland flow to protect sensitive adjacent sites. There are limitations on the stormwater practices that may be implemented on campus to navigate challenging conditions. Infiltration may not be used within 300 metres of the top of the cliffs surrounding the campus, to ensure the cliffs are protected from erosion due to excess water received by and passing through the lower aquifer. Refer to Appendix E Vancouver Campus: Rainwater Infiltration Map for a map of infiltration zones on campus.

For projects where site boundaries can accommodate Low Impact Development (LID) strategies compliance via *Option 2: Natural Land Cover Conditions* is encouraged. Projects with limited setback distances from site boundaries, *Option 1: Percentile of Rainfall Events* is a more likely path to demonstrate compliance.

Projects are encouraged to evaluate integrated strategies that consider the use of rainwater to offset both indoor and outdoor potable water needs, in addition to LID strategies. Refer to the UBC Integrated Stormwater Management Plan for details on campus-wide management strategies, and ensure proposed site strategies are considered as part the Integrative Process and Site Assessment credits.

OKANAGAN RESOURCES

Appendix E – Okanagan Campus: Rainwater Infiltration Map

UBCO Integrated Rainwater Management Plan

UBCO Whole Systems Infrastructure Plan

Okanagan Campus Plan

USGBC LEED v4.1 Rainfall Events Calculator

Rainfall Events on Okanagan Campus

PERCENTILE	RAINFALL EVENT (MM 24H STORM)
90th	11.9
85th	9.7
80th	8.4
75th	7.6
70th	6.8

OKANAGAN GUIDANCE

As per the UBC Okanagan Campus Integrated Rainwater Management Plan, the campus is required to control and retain 100% rainwater on-site, and aims to improve hydrological and ecological conditions through responsible management of rainwater. Minimum rainwater retention targets have been established to achieve, at minimum, a "no-net impact" (or risk beyond current levels) to existing infrastructure. Refer to Appendix E Okanagan Campus: Rainwater Infiltration Map. Where opportunity exists, future projects and development are asked to stretch beyond this minimum standard and provide additional retention storage.

Where site boundaries can accommodate low impact development (LID) strategies, compliance via Option 2: Natural Land Cover Conditions is highly encouraged.

Projects are encouraged to evaluate integrated strategies that consider the use of rainwater to offset both indoor and outdoor potable water needs, in addition to LID strategies. Refer to the UBC Okanagan Campus Integrated Rainwater Management Plan for details on the campus-wide management strategies, and ensure proposed strategies are considered as part the Integrative Process, Site Assessment and Open Space credits.

Access the USGBC LEED v4.1 Rainfall Events Calculator to document management strategies and demonstrate compliance. The following tables provide rainfall data calculated from historical records for UBC Campuses. This data is made available for guidance and planning purposes; historical records should be accessed for the relevant 30-year period.

SS Credit:
Heat Island Reduction

CAMPUS	MANDATORY	PRIORITY	AVAILABLE
Vancouver	2		2
Okanagan	2		

REQUIREMENTS

All projects must comply as per LEED BD+C v4.1, Option 1: Nonroof and Roof to earn two points.

VANCOUVER RESOURCES

Vancouver Campus Plan Part 3 Design Guidelines Section 2.5.1 Paving

UBC Technical Guidelines: Division 32 – Vancouver Campus

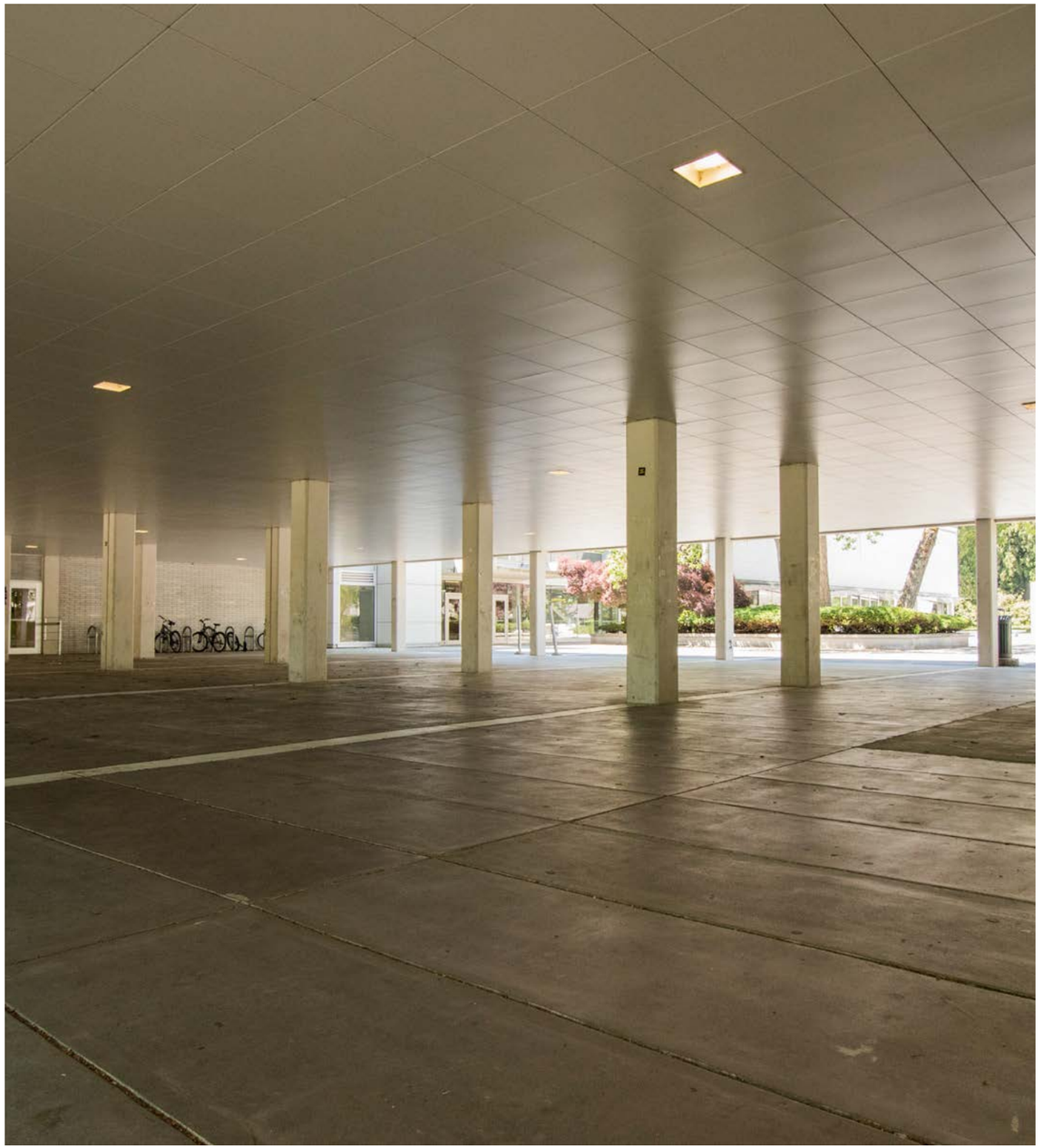
OKANAGAN RESOURCES

UBC Okanagan Design Guidelines Section 2.2.2 Paving

UBC Technical Guidelines: Division 32 – Okanagan Campus

GUIDANCE

Project teams are encouraged to consider materials and strategies to reduce heat island effects early in the design process and avoid the use of dark, non-reflective surfaces. Light grey roofing products that meet the solar reflectance requirements are preferred over white-coloured products for easier maintenance.



Buchanan Courtyard, UBC Vancouver Campus

SS Credit: Light Pollution Reduction

CAMPUS	MANDATORY	PRIORITY	AVAILABLE
Vancouver	1		1
Okanagan	1		

REQUIREMENTS

All projects must comply as per LEED BD+C v4.1 by applying either Option 1 or Option 2 to earn one point.

VANCOUVER RESOURCES

UBC LEED v4 Implementation Guide

Vancouver Campus Plan Part 3 Design Guidelines Refer to Section 2.5.2 – Lighting

International Dark Sky Association Model Lighting Ordinance

VANCOUVER GUIDANCE

A revised Vancouver Campus: Lighting Zone Map is in progress. Until the new map is available, project teams should refer to the Lighting Zone Map in the UBC LEED v4 Implementation Guide, to identify the applicable Model Lighting Ordinance, Lighting Zone. In addition, refer to the Illuminance Hierarchy table and site plan in the Vancouver Campus Plan where required exterior lighting levels for each area of campus are described.

Note per the credit guidance that the lighting boundary may be expanded to include campus properties having the same or higher lighting zone that are contiguous to the project site.

OKANAGAN RESOURCES

Appendix F – Okanagan Campus: Light Zone Map

UBC Okanagan Campus Design Guidelines Refer to Section 6 Lighting

International Dark Sky Association Model Lighting Ordinance

OKANAGAN GUIDANCE

To determine the Uplighting and Light Trespass requirements for the project, teams should locate the project site on the UBC Lighting Zone Map in Appendix F, prepared to reflect the Model Lighting Ordinance, Lighting Zones across campus. In addition, refer to the Illuminance Hierarchy table and site plan in the Okanagan Campus Plan where required exterior lighting levels for each area of campus are described.

Note, per the credit guidance that the lighting boundary may be expanded to include campus properties having the same or higher lighting zone that are contiguous to the project site.