Appendix I: Industry Leadership Credits

Appendix to the City of Vancouver Addendum v1.0 to the National wbLCA Practitioner's Guide

Last amended April 14, 2025

I.1. Overview

This Appendix provides additional details to the City of Vancouver Addendum to the National wbLCA Practitioner's Guide[1], referred to as the "City of Vancouver Addendum" in this document. The City of Vancouver Green Demolition By-Law No. 11023[2] shall be used as reference for *recycling*, *reuse*, *salvage*, and *disposal* definitions. The Vancouver Building Bylaw[3] shall be used as reference to define *building* and *floor area*.

A building may claim Industry Leadership Credit (ILCs) as specified in below. These credits can be used for both the Intensity Limit and the Baseline compliance pathways in section 2.1 of the National wbLCA Practitioner's Guide. A maximum of 5% credit can be claimed for any combination of Industry Leadership Credits.

Projects can demonstrate compliance by completing the Embodied Carbon Design Report and submitting the additional documentation outlined in Section I.3. The Design Report automatically calculates the claimed reduction credits based on the provided information.

Table iii: Summary of Industry Leadership Credits

Industry Leadership Credit	Summary Description	Available Industry Leadership Credit % (Max 5%)	Documentation Submission Stage
a. Report Additional Information			
a.i Report Optional Building Element Emissions	Include optional elements in the wbLCA.	1-5%	Building Permit
a.ii Report As-Built Concrete Data	Collect data for the as-built concrete mixes and for the transportation of construction materials to the construction site and compare with the proposed design wbLCA.	1-3%	Building Permit Occupancy Permit
a.iii Report As-Built Transportation Data		2%	Building Permit Occupancy Permit
a.iv Report Project-specific Construction Process Data	Collect construction site activity, measure the associated emissions and compare with the proposed design wbLCA.	1-5%	Building Permit Occupancy Permit
b. Implement Reuse Practices			
b.i Relocate Existing Building	Relocate an existing *building* onsite for *reuse* as a *building*.	5%	Building Permit
b.ii Salvage Materials from Project Site	*Salvage* materials from an existing *building* on the project site for *reuse* elsewhere.	1-5%	Building Permit
b.iii Design for Disassembly	Design and construct the building to be disassembled.	1-5%	Building Permit Occupancy Permit

[1] https://vancouver.ca/files/cov/embodied-carbon-vancouver-addendum-national-wblca-practitioners-guide.pdf
[2] The City of Vancouver Green Demolition By-Law No. 11023, https://bylaws.vancouver.ca/11023c.pdf
[3] The City of Vancouver Building Bylaw, https://www.bccodes.ca/vancouver-bylaws.html

I.2. Detailed Criteria for Industry Leadership Credits

a. Report Additional Information

Table iv: Detailed Criteria and Credits Available for Reporting Additional Information

<table>
<tr><th>Industry Leadership Credit</th><th>Criteria</th><th colspan="2">Credit (Max 5%)</th></tr>
<tr><td>a.i Report Optional Building Element Emissions</td><td>Expand the scope of assessment to include one or more building elements in their entirety. The table in Section I.4 builds on Table 4 of the National wbLCA Practitioner's Guide and contains a detailed list of sub-elements that are required for claiming this credit.
Refer to Section 4.2 (b) of the National wbLCA Practitioner's Guide for the bill of materials completeness requirements.
* If the project includes incomplete spaces, such as tenant spaces, elements with an * can exclude up to 10% of the building gross floor area.
If data availability prohibits the inclusion of the required sub-elements, refer to the note box in section 3.3 Building Elements of the National wbLCA Practitioner's Guide.
For landscaping, it is optional to report biogenic carbon. However, it should be reported separately and cannot be used for compliance. Default tool values or the Pathfinder tool from Climate Positive Design can be used.</td><td colspan="2"><table><tr><th>Credit Given (Max 5%)</th><th>Element by Level 3 OmniClass™</th></tr><tr><td>3%</td><td>Interior Construction*</td></tr><tr><td>2%</td><td>Interior Finishes*</td></tr><tr><td>1%</td><td>Conveying</td></tr><tr><td>3%</td><td>Plumbing</td></tr><tr><td>5%</td><td>Heating, Ventilation, and Air Conditioning (HVAC), Excluding Refrigerants</td></tr><tr><td>4%</td><td>Electrical</td></tr><tr><td>2%</td><td>Furnishings*</td></tr><tr><td>1%</td><td>Site Preparation (Earthwork)</td></tr><tr><td>2%</td><td>Site Improvements (except Landscaping)</td></tr><tr><td>1%</td><td>Landscaping</td></tr></table></td></tr>
<tr><td>a.ii Report As-Built Concrete Data</td><td>Track the as-built concrete data and compare against the proposed design wbLCA submitted for Building Permit.
As-built concrete should be per contractor tracking or as verified by licensed design professionals.
Follow completeness guidelines in section 4.2 (b) of the National wbLCA Practitioner's Guide. The total volume of the excluded materials shall not be greater than 5% of the total volume of concrete materials.</td><td colspan="2">1% for reporting the volume of as-built concrete mixes.
Additional 2% for reporting the as-built concrete GWP substantiated by mix-specific EPDs.</td></tr>
</table>

Industry Leadership Credit	Criteria	Credit (Max 5%)
a.iii Report As-Built Transportation Data	Track data on transportation to construction site (Module A4) for the top 5 Key Products and compare the associated embodied carbon against the A4 emissions reported at Building Permit. • Key Products are defined as the most impactful products or materials in the Bill of Materials in terms of the percentage of the asset's life-cycle embodied carbon impact. • Priority should be given to last-leg transportation of materials heavier than 100 kg, with transportation distances over 50 km.	• **2%**
a.iv Report Project-specific Construction Process Data	Track the Construction Installation Process (Module A5) activities for one or more of the following sub-modules. Compare the associated embodied carbon against the A5 emissions reported at Building Permit. A5 sub-Modules are as follows: • Preconstruction Demolition (Module A5.1). • Construction Activities (Module A5.2). • Construction Waste (Module A5.3). GHG emissions reported for the above activities at a minimum must include the following: • A5.1 and A5.3: Any transportation of waste or activities requiring the use of equipment, tools, or facilities consuming fuel or energy on the construction site. • A5.2: Electricity, natural gas, or other fuels consumption in construction site. Use a wbLCA or embodied carbon assessment tool that allows for adjustment of default inputs or conduct manual calculation using the emission factors provided in the Embodied Carbon Design Report to estimate the A5 Module embodied carbon from project-specific data. Professional judgement of project team should be used when determining cut-offs for reporting.	• **2%** for A5.1. • **2%** for A5.2. • **1%** for A5.3.

b. Implement Reuse Practices

Table v: Detailed Criteria and Credits Available for Reusing Materials

Industry Leadership Credit	Criteria	Credit (Max 5%)
b.i Relocate Existing Building[4]	Relocate an existing *building* on the project site for *reuse* as a *building* in another site. Ancillary *buildings*, such as detached garages or storage sheds, are excluded from this credit.	• **5%**
b.ii Salvage Materials from Project Site[4]	*Salvage* materials from an existing *building* on the project site and demonstrate they are *reused* in the new *building*[5], stored for the purpose of future *reuse,* or sold or donated for *reuse*. • **Path 1:** *Salvage* at least 3.5 kg or 2.6 board feet of lumber per square foot of finished floor space of the existing *building*. Finished floor space is the gross floor area shown on the BC Assessment property assessment, including basement finish area. • **Path 2:** Quantify *salvaged* materials and estimate their embodied carbon value by using the embodied carbon of equivalent new materials in a wbLCA or embodied carbon assessment tool.	• **Path 1: 2%** • **Path 2:** Project can claim credit **equal to the embodied carbon value of the *salvaged* materials**.
b.iii Design for Disassembly	Design and construct the building such that the building components can be removed intact and undamaged for *reuse*. Refer to Section I.5 for credit criteria and documentation requirements.	• **1%** for every 2% of the building that has been designed for disassembly as measured by gross *floor area* or embodied carbon. Refer to Appendix I.5 (b) for sample calculations.

[4] To be eligible for these credits, the project must be using the City's Certified Professional Program. https://vancouver.ca/home-property-development/certified-professional-program.aspx

[5] Material reuse in the new building, regardless of the source, can follow the methodology in section 4.3 (c) (vi) of the National wbLCA Practitioner's Guide. https://nrc-publications.canada.ca/eng/view/ft/?id=533906ca-65eb-4118-865d-855030d91ef2

I.3. Documentation for Industry Leadership Credits

In addition to filling the related fields in the Embodied Carbon Design Report (referred to as the Design Report) and submitting it with applicable rezoning and Building Permit applications, projects shall provide all of the following with their submission, for any Industry Leadership Credits claimed in the Design Report. Unless otherwise instructed by the project authority, these documents should be submitted as separate files.

Table vii: Summary of Industry Leadership Credit Submission Requirements

Industry Leadership Credit	Rezoning Permit	Building Permit	Occupancy Permit
a.i Report Optional Building Element Emissions	No Additional Requirements.	Include reported optional elements in the Embodied Carbon Emissions Data submitted (see Section 6.2 (a) of the National wbLCA Practitioner's Guide).	No Requirements.
a.ii Report As-Built Concrete Data		Commit, within the Design Report, to meet credit requirements at Occupancy Permit.	Updated Design Report submitted in both Excel and PDF format.
a.iii Report As-Built Transportation Data, and **a.iv** Report Project-specific Construction Process Data			Updated Design Report submitted in both Excel and PDF format. Manual Calculations in Excel format showing the data tracking for as-built information.
b.i Relocate Existing Building		Provide proof of building relocation such as photos.	No Requirements.
b.ii Salvage Materials from Project Site		Provide proof of *salvaged* materials claimed in the Design Report, such as photos and receipts from facilities receiving the materials for *reuse*.	
b.iii Design for Disassembly		Commit, within the Design Report, to meet credit requirements at Occupancy Permit.	Deconstruction Plan in compliance with Section I.5 (c) and proof that a physical copy of the Deconstruction Plan is located within the building. The architectural drawings shall indicate on the title page that the project is designed for disassembly and reference the Deconstruction Plan.

I.4. Specification of the Object of Assessment for Building Elements, Required and Optional Scope for Compliance

The below Table expands on the element list provided in Table 4 of the National wbLCA Practitioner's Guide to show optional sub-elements that shall be included in the assessment if a.i credit, Report Optional Building Elements, is perused.

Addition to Table 4: Mandatory and Optional Element Scope for Compliance with a.i Credit (Report Optional Building Elements)

Legend:

Optional (R): Required sub-elements if Industry Leadership Credit for the Level 3 element is claimed.

Exclude | Optional

UniFormat	OmniClass				Inclusion in Scope
Level 3	Level 3		Level 4		
C	03 00 00	Interiors			
C10	03 10	Interior Construction			
C1010	03 10 10	Interior Partitions	03 10 10 10	Interior Fixed Partitions	Optional (R)
			03 10 10 20	Interior Glazed Partitions	
			03 10 10 40	Interior Demountable Partitions	
			03 10 10 50	Interior Operable Partitions	
			03 10 10 70	Interior Screens	
			03 10 10 90	Interior Partition Supplementary Components	Optional
C1020	03 10 20	Interior Windows	03 10 20 10	Interior Operating Windows	Optional (R)
			03 10 20 20	Interior Fixed Windows	
			03 10 20 50	Interior Special Function Windows	
			03 10 20 90	Interior Window Supplementary Components	Optional
C1030	03 10 30	Interior Doors	03 10 30 10	Interior Swinging Doors	Optional (R)
			03 10 30 20	Interior Entrance Doors	
			03 10 30 25	Interior Sliding Doors	
			03 10 30 30	Interior Folding Doors	
			03 10 30 40	Interior Coiling Doors	
			03 10 30 50	Interior Panel Doors	
			03 10 30 70	Interior Special Function Doors	
			03 10 30 80	Interior Access Doors and Panels	Optional
			03 10 30 90	Interior Door Supplementary Components	
C1040	03 10 40	Interior Grilles and Gates	03 10 40 10	Interior Grilles	Optional
			03 10 40 50	Interior Gates	
C1060	03 10 60	Raised Floor Construction	03 10 60 10	Access Flooring	Optional (R)
			03 10 60 10	Platform/Stage Floors	Optional
C1070	03 10 70	Suspended Ceiling Construction	03 10 70 10	Acoustical Suspended Ceilings	Optional (R)
			03 10 70 20	Suspended Plaster and Gypsum Board Ceilings	
			03 10 70 50	Specialty Suspended Ceilings	
			03 10 70 70	Special Function Suspended Ceilings	
			03 10 70 90	Ceiling Suspension Components	

UniFormat	OmniClass				Inclusion in Scope
Level 3	Level 3		Level 4		
C1090	03 10 90	Interior Specialties	03 10 90 10	Interior Railings and Handrails	Optional
			03 10 90 15	Interior Louvers	
			03 10 90 20	Information Specialties	Exclude
			03 10 90 25	Compartments and Cubicles	
			03 10 90 30	Service Walls	
			03 10 90 35	Wall and Door Protection	
			03 10 90 40	Toilet, Bath, and Laundry Accessories	
			03 10 90 45	Interior Gas Lighting	
			03 10 90 50	Fireplaces and Stoves	
			03 10 90 60	Safety Specialties	
			03 10 90 70	Storage Specialties	
			03 10 90 90	Other Interior Specialties	
C10	**03 20**	**Interior Finishes**			
C2010	03 20 10	Wall Finishes	03 20 10 10	Tile Wall Finish	Optional (R)
			03 20 10 20	Wall Paneling	
			03 20 10 30	Wall Coverings	
			03 20 10 35	Wall Carpeting	
			03 20 10 50	Stone Facing	
			03 20 10 60	Special Wall Surfacing	
			03 20 10 70	Wall Painting and Coating	
			03 20 10 80	Acoustical Wall Treatment	
			03 20 10 90	Wall Finish Supplementary Components	Optional
C2020	03 20 20	Interior Fabrications	-	-	Optional (R)
C2030	03 20 30	Flooring	03 20 30 10	Flooring Treatment	Optional (R)
			03 20 30 20	Tile Flooring	
			03 20 30 30	Specialty Flooring	
			03 20 30 40	Masonry Flooring	
			03 20 30 50	Wood Flooring	
			03 20 30 60	Resilient Flooring	
			03 20 30 70	Terrazzo Flooring	
			03 20 30 75	Fluid-Applied Flooring	
			03 20 30 80	Carpeting, Athletic Flooring	
			03 20 30 85	Entrance Flooring	
			03 20 30 90	Flooring Supplementary Components	Optional
C2040	03 20 40	Stair Finishes	03 20 40 20	Tile Stair Finish	Optional (R)
			03 20 40 40	Masonry Stair Finish	
			03 20 40 45	Wood Stair Finish	
			03 20 40 50	Resilient Stair Finish	
			03 20 40 60	Terrazzo Stair Finish	
			03 20 40 75	Carpeted Stair Finish	
C2050	03 20 50	Ceiling Finishes	03 20 50 10	Plaster and Gypsum Board Finish	Optional (R)
			03 20 50 20	Ceiling Paneling	
			03 20 50 70	Ceiling Painting and Coating	
			03 20 50 80	Acoustical Ceiling Treatment	
			03 20 50 90	Ceiling Finish Supplementary Components	Optional

UniFormat	OmniClass				Inclusion in Scope
Level 3	Level 3		Level 4		
D	04 00 00	Services			
D10	04 10	Conveying			
D1010	04 10 10	Vertical Conveying Systems	04 10 10 10	Elevators	Optional (R)
			04 10 10 20	Lifts	
			04 10 10 30	Escalators	
			04 10 10 50	Dumbwaiters	Optional
			04 10 10 60	Moving Ramps	Optional (R)
D1030	04 10 30	Horizontal Conveying	04 10 30 10	Moving Walks	Optional (R)
			04 10 30 30	Turntables	Optional
			04 10 30 50	Passenger Loading Bridges	
			04 10 30 70	People Movers	Exclude
D20	04 20	Plumbing			
D2010	04 20 10	Domestic Water Distribution	04 20 10 10	Facility Potable-Water Storage Tanks	Optional (R)
			04 20 10 20	Domestic Water Equipment	
			04 20 10 40	Domestic Water Piping	
			04 20 10 60	Plumbing Fixtures	Optional
			04 20 10 90	Domestic Water Distribution Supplementary Components	
D2020	04 20 20	Sanitary Drainage	04 20 20 10	Sanitary Sewerage Equipment	Optional (R)
			04 20 20 30	Sanitary Sewerage Piping	
			04 20 20 90	Sanitary Drainage Supplementary Components	Optional
D2030	04 20 30	Building Support Plumbing Systems	04 20 30 10	Stormwater Drainage Equipment	Optional (R)
			04 20 30 20	Stormwater Drainage Piping	
			04 20 30 30	Facility Stormwater Drains	
			04 20 30 60	Gray Water Systems	
			04 20 30 90	Building Support Plumbing System Supplementary Components	Optional
D2050	04 20 50	General Service Compressed-Air	-	-	Optional (R)
D2060	04 20 60	Process Support Plumbing Systems	04 20 60 10	Compressed-Air Systems	Optional (R)
			04 20 60 20	Vacuum Systems	
			04 20 60 30	Gas Systems	
			04 20 60 40	Chemical-Waste Systems	
			04 20 60 50	Processed Water Systems	
			04 20 60 90	Process Support Plumbing System Supplementary Components	Optional
D30	04 30	Heating, Ventilation, and Air Conditioning (HVAC)			
D3010	04 30 10	Facility Fuel Systems	04 30 10 10	Fuel Piping	Optional (R)
			04 30 10 30	Fuel Pumps	
			04 30 10 50	Fuel Storage Tanks	
D3020	04 30 20	Heating Systems	04 30 20 10	Heat Generation	Optional (R)
			04 30 20 30	Thermal Heat Storage	
			04 30 20 70	Decentralized Heating Equipment	
			04 30 20 90	Heating System Supplementary Components	Optional
D3030	04 30 30	Cooling Systems	04 30 30 10	Central Cooling	Optional (R)
			04 30 30 30	Evaporative Air-Cooling	

UniFormat	OmniClass				Inclusion in Scope
Level 3	Level 3		Level 4		
			04 30 30 50	Thermal Cooling Storage	
			04 30 30 70	Decentralized Cooling	
			04 30 30 90	Cooling System Supplementary Components	Optional
D3050	04 30 50	Facility HVAC Distribution Systems	04 30 50 10	Facility Hydronic Distribution	Optional (R)
			04 30 50 30	Facility Steam Distribution	
			04 30 50 50	HVAC Air Distribution	
			04 30 50 90	Facility Distribution Systems Supplementary Components	Optional
D3060	04 30 60	Ventilation	04 30 60 10	Supply Air	Optional (R)
			04 30 60 20	Return Air	
			04 30 60 30	Exhaust Air	
			04 30 60 40	Outside Air	
			04 30 60 60	Air-to-Air Energy Recovery	
			04 30 60 70	HVAC Air Cleaning	
			04 30 60 90	Ventilation Supplementary Components	Optional
D3070	04 30 70	Special Purpose HVAC Systems	04 30 70 10	Snow Melting	
D50	**04 50**	**Electrical**			
D5010	04 50 10	Facility Power Generation	04 50 10 10	Packaged Generator Assemblies	Optional (R)
			04 50 10 20	Battery Equipment	
			04 50 10 30	Photovoltaic Collectors	
			04 50 10 40	Fuel Cells	
			04 50 10 60	Power Filtering and Conditioning	Optional
			04 50 10 70	Transfer Switches	
			04 50 10 90	Facility Power Generation Supplementary Components	
D5020	04 50 20	Electrical Service and Distribution	04 50 20 10	Electrical Service	Optional (R)
			04 50 20 30	Power Distribution	
			04 50 20 70	Facility Grounding	
			04 50 20 90	Electrical Service and Distribution Supplementary Components	Optional
D5030	04 50 30	General Purpose Electrical Power	04 50 30 10	Branch Wiring System	Optional (R)
			04 50 30 50	Wiring Devices	
			04 50 30 90	General Purpose Electrical Power Supplementary Components	Optional
D5040	04 50 40	Lighting	04 50 40 10	Lighting Control	Optional
			04 50 40 20	Branch Wiring for Lighting	Optional (R)
			04 50 40 50	Lighting Fixtures	Optional
			04 50 40 90	Lighting Supplementary Components	
D5080	04 50 80	Miscellaneous Electrical Systems	04 50 80 10	Lightning Protection	Optional
			04 50 80 10	Cathodic Protection	
			04 50 80 10	Transient Voltage Suppression	
			04 50 80 10	Miscellaneous Electrical Systems Supplementary Components	
E	**05 00 00**	**Equipment and Furnishings**			
E20	**05 20**	**Furnishings**			
E2010	05 20 10	Fixed Furnishings	05 20 10 10	Fixed Art	Exclude
			05 20 10 20	Window Treatments	Optional (R)

UniFormat	OmniClass				Inclusion in Scope
Level 3	Level 3		Level 4		
			05 20 10 30	Casework	
			05 20 10 70	Fixed Multiple Seating	
			05 20 10 90	Other Fixed Furnishings	
E2050	05 20 50	Movable Furnishings	05 20 50 10	Movable Art	Exclude
			05 20 50 30	Furniture	Optional (R)
			05 20 50 40	Accessories	
			05 20 50 60	Movable Multiple Seating	
			05 20 50 90	Other Movable Furnishings	
G	**07 00 00**	**Sitework**			
G10	**07 10**	**Site Preparation**			
G1070	07 10 70	Site Earthwork	07 10 70 10	Grading	Optional (R)
			07 10 70 20	Excavation and Fill	
			07 10 70 30	Soil Reinforcement	
			07 10 70 35	Slope Protection	
			07 10 70 40	Gabions	
			07 10 70 45	Riprap	
			07 10 70 50	Embankments	
			07 10 70 55	Erosion and Sedimentation Controls	Optional
			07 10 70 60	Soil Stabilization	
			07 10 70 65	Rock Stabilization	
			07 10 70 70	Wetlands	
			07 10 70 80	Earth Dams	
			07 10 70 90	Site Soil Treatment	
G20	**07 20**	**Site Improvements**			
G2010	07 20 10	Roadways	07 20 10 10	Roadway Pavement	Optional (R)
			07 20 10 20	Roadway Curbs and Gutters	
			07 20 10 40	Roadway Appurtenances	Optional
			07 20 10 70	Roadway Lighting	
			07 20 10 80	Vehicle Fare Collection	
G2020	07 20 20	Parking Lots	07 20 20 10	Parking Lot Pavement	Optional (R)
			07 20 20 20	Parking Lot Curbs and Gutters	
			07 20 20 40	Parking Lot Appurtenances	Optional
			07 20 20 70	Parking Lot Lighting	
			07 20 20 80	Exterior Parking Control Equipment	
G2030	07 20 30	Pedestrian Plazas and Walkways	07 20 30 10	Pedestrian Pavement	Optional (R)
			07 20 30 20	Pedestrian Pavement Curbs and Gutters	
			07 20 30 30	Exterior Steps and Ramps	
			07 20 30 40	Pedestrian Pavement Appurtenances	Optional
			07 20 30 70	Plaza and Walkway Lighting	
			07 20 30 80	Exterior Pedestrian Control Equipment	
G2040	07 20 40	Airfields	07 20 40 10	Aviation Pavement	Optional
			07 20 40 20	Aviation Pavement Curbs and Gutters	
			07 20 40 40	Aviation Pavement Appurtenances	
			07 20 40 70	Airfield Lighting	
			07 20 40 80	Airfield Signaling and Control Equipment	
G2050	07 20 50	Athletic, Recreational, and Playfield Areas	07 20 50 10	Athletic Areas	Optional (R)
			07 20 50 30	Recreational Areas	
			07 20 50 50	Playfield Areas	

UniFormat	OmniClass				Inclusion in Scope
Level 3	Level 3		Level 4		
G2060	07 20 60	Site Development	07 20 60 10	Exterior Fountains	Optional (R)
			07 20 60 20	Fences and Gates	Optional
			07 20 60 25	Site Furnishings	
			07 20 60 30	Exterior Signage	
			07 20 60 35	Flagpoles	
			07 20 60 40	Covers and Shelters	
			07 20 60 45	Exterior Gas Lighting	
			07 20 60 50	Site Equipment	
			07 20 60 60	Retaining Walls	Optional (R)
			07 20 60 70	Site Bridges	
			07 20 60 80	Site Screening Devices	Optional
			07 20 60 85	Site Specialties	
G2080	07 20 80	Landscaping	07 20 80 10	Planting Irrigation	Optional (R)
			07 20 80 20	Turf and Grasses	
			07 20 80 30	Plants	
			07 20 80 50	Planting Accessories	Optional
			07 20 80 70	Landscape Lighting	
			07 20 80 80	Landscaping Activities	

I.5. Design for Disassembly Requirements

The following section includes the Design for Disassembly Industry Leadership Credit requirements.[6]

> **Note:**
>
> Light wood frame construction projects may refer to Design for Deconstruction in Light Wood Frame Guidebook[6] for guidance and sample details and material choices for design for deconstruction in typical light wood frame construction practices.

a. Criteria

A building element that can be removed intact for *reuse* counts towards compliance if the following criteria are met:

- All connections are reversible.
- Connections can be safely accessed, and element safely removed from the building.
- The time to remove elements is approximately equivalent to or shorter than the time to install them.
- Elements are sized for compatibility with common uses to ease *reuse*.
- Elements are uncontaminated by other materials.
- It is labelled or otherwise identified, and its removal methodology is documented in a Deconstruction Plan.
- The building element is not Furniture, Fixtures, and Equipment (FFE), as FFE elements are not eligible for DfD credit.

b. Credit Calculation

Two methods can be used to calculate the Industry Leadership Credits (ILCs) that can be claimed for designing for disassembly (DfD): the gross floor area calculation method, or the embodied carbon calculation method. Both calculation methods can be used, as long as no building element or material is double counted. ILCs from both calculation methods can be added.

A 50% discount rate (i.e., 1% credit for every 2% that is DfD) is used in calculating the credits because the carbon reductions of DfD are a probable future benefit, instead of a current reduction in carbon emissions.

[6] Design for Deconstruction in Light Wood Frame, 2025. https://blogs.ubc.ca/design4deconstruction/files/2025/03/Design-for-Deconstruction_Final_20250327.pdf

i. Gross Floor Area Calculation Method (for volumetric or panelized construction only)

This method can only be used for volumetric modular units or panels that create volumetric units (i.e. floor, wall, and ceiling/roof panels) with documented disassembly capabilities.

The Industry Leadership Credit is calculated using the following formula:

$$ILCs = \frac{\Sigma\, GFA_{VU}}{GFA} \times 0.5$$

Wherein:

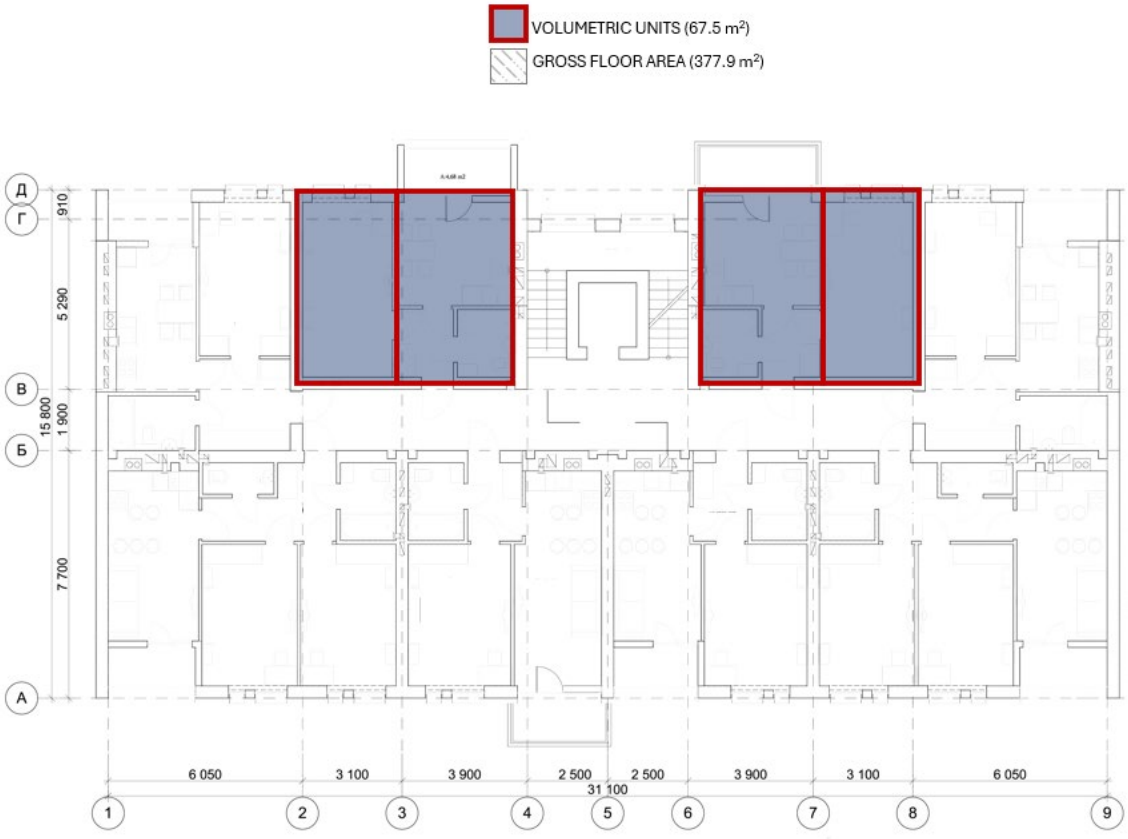
$ILCs = Industry\ Leadership\ Credits\ for\ DfD\ (\%)$

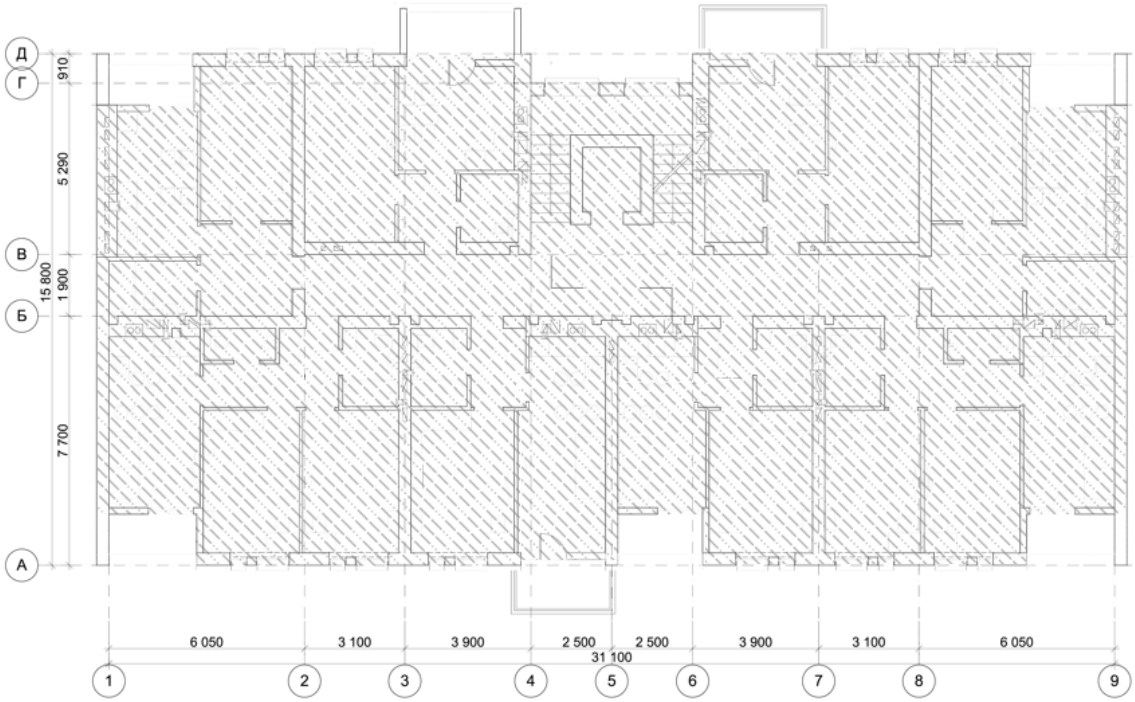
$GFA_{VU} = Gross\ Floor\ Area\ of\ DfD\ compliant\ volumetric\ unit, or$

$unit\ comprised\ of\ panelized\ floor, wall, and\ ceiling/roof\ surfaces$

$GFA = Gross\ Floor\ Area\ of\ the\ proposed\ building, excluding\ underground\ parking$

Example for Gross Area Calculation: 4 Story Apartment Building, Identical Floor Plans





Example Calculation, continued:

$GFA_{VU} = 67.5\ m^2$ per floor

$SGFA_{VU} = 67.5\ m^2\ \times 4\ \text{floors} = 270\ m^2$

$GFA = 377.9\ m^2\ \times 4\ \text{floors} = 1{,}512\ m^2$

$$ILCs = \frac{270\ m^2}{1{,}512\ m^2} \times 0.5 = 9\%$$

Check, is the calculated *ILCs* for this credit greater than the max 5% allowed? *Yes.*

Therefore, $ILCs = \mathbf{5}\%$

ii. Embodied Carbon Calculation Method

The Industry Leadership Credit is calculated based on the embodied carbon value of DfD compliant elements using the following formula:

$$ILCs = \frac{\Sigma\, EC_{RS\ DfD} + \Sigma\, EC_{OS\ DfD}}{EC_P + \Sigma\, EC_{OS\ DfD}} \times 0.5$$

Wherein:

$ILCs = Industry\ Leadership\ Credit\ for\ DfD$ (%)

$EC_{RS\ DfD} = Embodied\ Carbon\ of\ DfD\ compliant\ required\ scope\ elements$ (in $kgCO_2e$)

$EC_{OS\ DfD} = Embodied\ Carbon\ of\ DfD\ compliant\ optional\ scope\ elements$ (in $kgCO_2e$)

$EC_P = Embodied\ Carbon\ of\ the\ Proposed\ Design$ (in $kgCO_2e$)[7]

Example for Embodied Carbon Calculation: DfD Steel Beams and Interior Partitions

In this example, the project has DfD steel beams, and a portion of the interior partitions are DfD. The steel beams are required scope per section 3.3 of the National wbLCA Practitioner's Guide. The interior partitions are optional scope per section 3.3 of the National wbLCA Practitioner's Guide.

$EC_{Steel\ Beams} = 8{,}000\ kgCO_2e = \Sigma\, EC_{RS\ DfD}$

$EC_{Interior\ Partitions} = 12{,}000\ kgCO_2e = \Sigma\, EC_{OS\ DfD}$

$EC_p = 400{,}000\ kgCO_2e$

$$ILCs = \frac{8{,}000\ kgCO_2e + 12{,}000\ kgCO_2e}{400{,}000\ kgCO_2e + 12{,}000\ kgCO_2e} \times 0.5 = 0.02$$

Check, is the calculated *ILCs* for this credit greater than the max 5% allowed? *No.*

Therefore, $ILCs = \mathbf{2}\%$

C. Deconstruction Plan

The Deconstruction Plan shall be developed in accordance with the latest edition of ISO 20887 and must, at a minimum, contain the following:

- List of elements and assemblies that have been designed to be safely removed intact from the building.
- Removal methodologies and sequence (disassembly instructions), including drawings and details.
- Product and material composition, warranties, and supplier and manufacturer information for elements that are DfD.
- Size and strength of structural elements that are DfD.

[7] If optional elements are included in the scope of assessment when demonstrating compliance using the baseline approach per Section 3.3 of the National wbLCA Practitioner's Guide, do not add the $EC_{OS\ DfD}$ elements to EC_P.