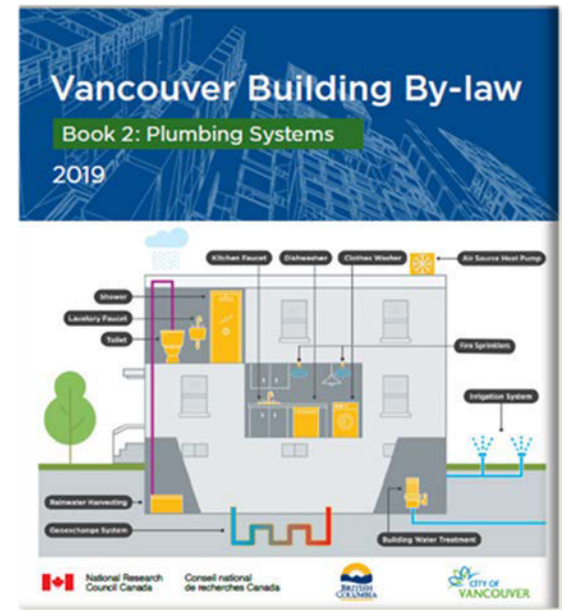
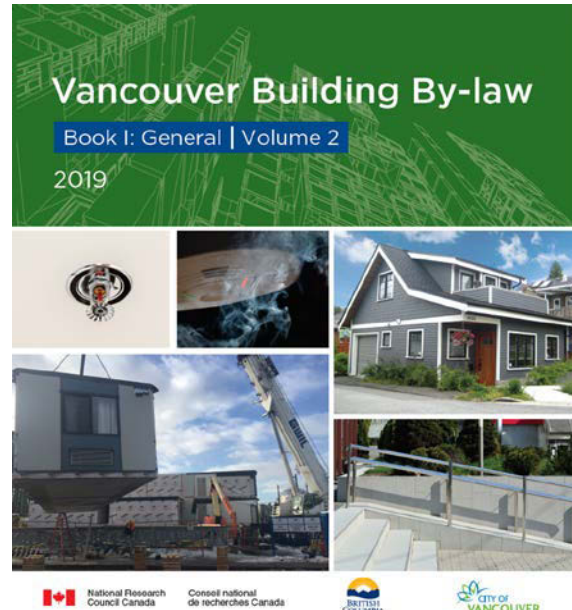
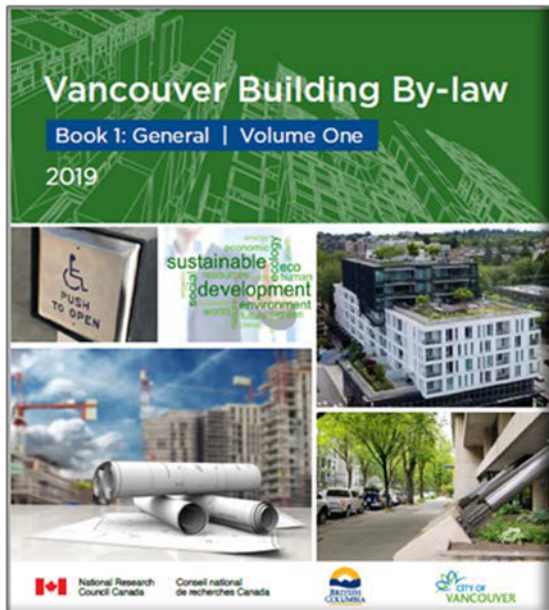


CP Seminar



Housekeeping Items

The City of Vancouver acknowledges that it is situated on the unceded traditional territories of the Musqueam, Squamish, and Tsleil-Waututh peoples.

- Exits
- Washrooms
- Parking
- Break Time (10:15 am)
- Q & A



Agenda

1. CP Program Update by Teresa Coady
2. AIBC Update Maura Gatensby
3. City of Vancouver Update by Pat Ryan
4. VBBL 2019 Presentation by Kevin Lau
5. Process Update Presentation Part 1 by Kelly Anderson
6. Building Inspections Presentation by Saul Schwebs
7. Process Updates Presentation Part 2 by Matthew Lam
8. Energy Updates Presentation by Matthew Lam
9. Engineering Updates by Chalys Joseph
10. BREAK TIME!
11. Fire Update by Rick Cheung
12. Encapsulated Mass Timber Update by Andrew Harmsworth

CP Program Update

Teresa Coady, Architect AIBC FRAIC AAIA LEED Fellow
CP Program Manager

Maura Gatensby, Architect AIBC CP
Lead Practice Advisor and Regulatory Liaison

City of Vancouver Update

Pat Ryan, M.Sc., P.Eng.
Chief Building Official



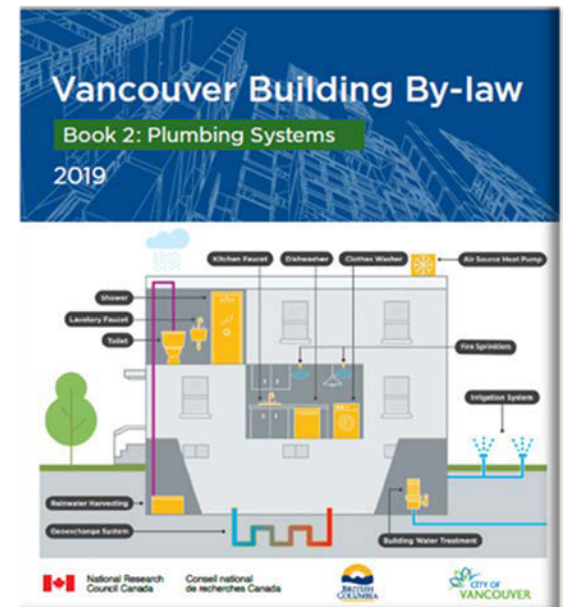
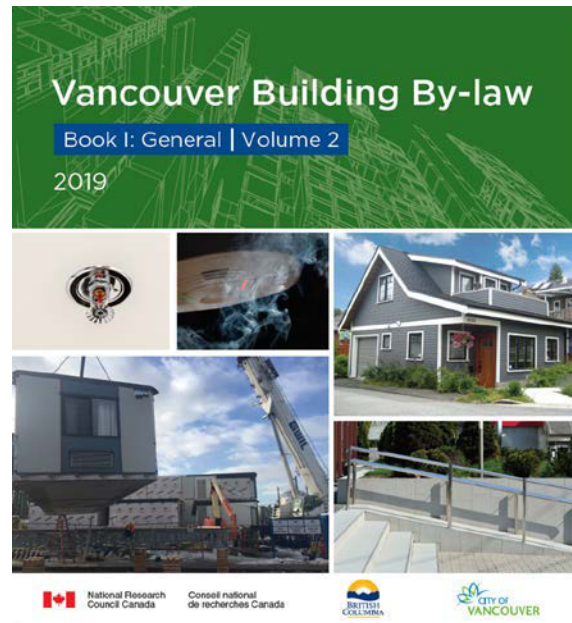
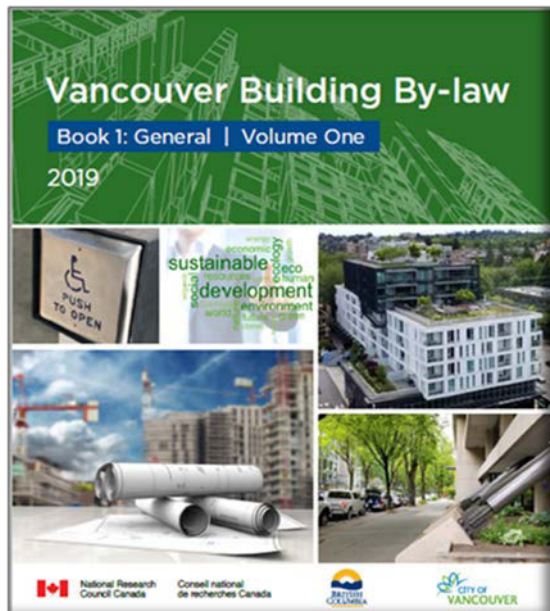


2019 Vancouver Building By-law

Pat Ryan, M.Sc., P.Eng.

2019 Vancouver Building By-law

Effective November 1, 2019



About this Presentation

This session is intended to:

1. Provide general information related to the 2019 VBBL
2. Highlight several significant changes in the 2019 Building By-law
3. Provide an opportunity to ask questions pertaining to the 2019 VBBL

Brief questions seeking clarity on the slides are welcome, but please consider holding detailed questions so they can be discussed in more detail in the Q & A following.

Building By-law Availability

- What formats will be available
 - Electronic format (a version will be available that is free of charge)
 - Print version
- How do you get it
 - An **electronic version** with table of content/index and links to Sections will be provided soon by Queen's Printer. This will be supported with updates and amendments from time to time.
 - A **printed version** will also be available for purchase from Queen's Printer in the near future as well (target is November 2019).
- In the interim
 - An initial version is now available online (this will not be updated)
<http://vancouver.ca/your-government/vancouver-building-bylaw.aspx>

Existing Permits & Applications

- **Q: What happens to my permit when the new Building By-law is implemented?**

A: Nothing at all. Current building permits will continue under the 2014 VBBL unless they are inactive for more than 6 months.

- **Q: What happens to my current building permit application?**

A: Applications prior to November 1, 2019 that have met the minimum submission requirements and have been accepted as part of the regular permit intake process will be processed under the 2014 VBBL. Application after that need to comply with the 2019 VBBL.

Existing Permits & Applications

- **Q: Can I apply requirements of the 2019 VBBL before November 1, 2019?**

A: Provided your permit has not yet been issued, you may submit a generic alternative to apply certain provision of the 2019 VBBL. However, revisions to an already issued permit will not be accepted.

(see [Bulletin 2018-005-BU](#) for more information)

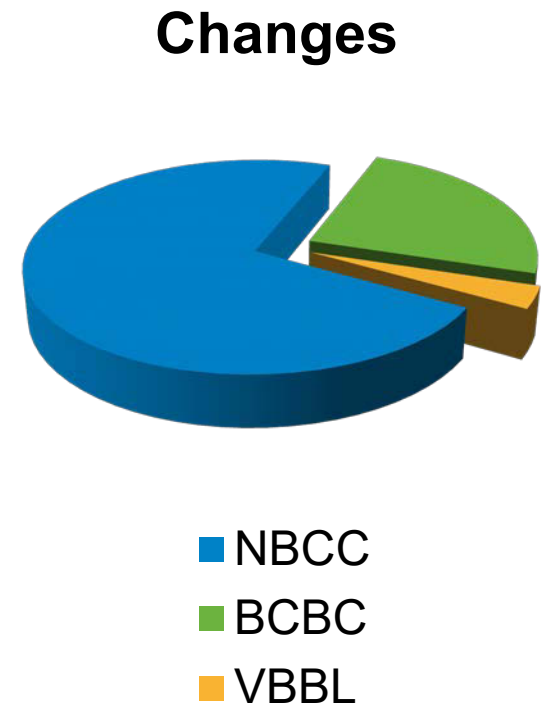
Change Objectives of 2019 VBBL

- Harmonization with BCBC
 - Reduce variation
 - No change to core concepts
 - Build to one standard
- Simplification of Language
 - Simplifications to reduce confusion
 - Easier to building & verify
- Codify Standard Policy
 - Reduce need for Alternative Solutions
 - Fewer surprises



Substantive Changes in the VBBL 2019

- BCBC was adopted with few significant changes
 - 28 key Unique to Vancouver changes were identified in the report to Council as being deemed to be substantive.
 - These are the major items where policy has shifted
- This count does not include:
 - Additional supporting changes, or
 - Changes responding to changes in the BC Building Code
 - Housekeeping changes



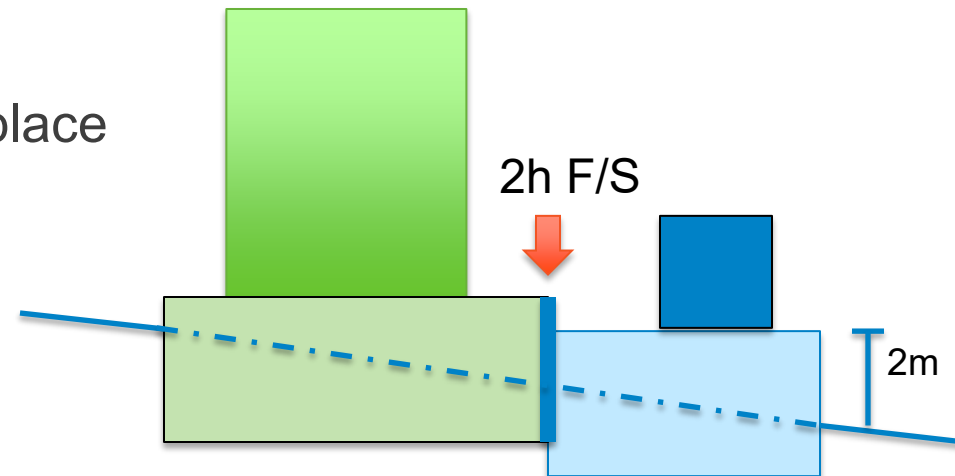


VBBL 2019 Overview: Selected Technical Changes for New Buildings

Kevin Lau, P.Eng., CP

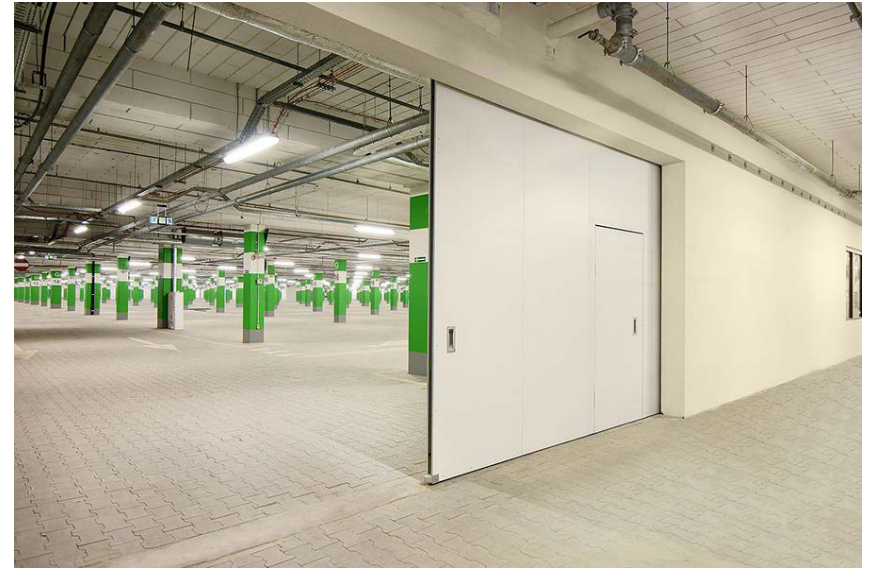
Div A, 1.3.3.4. Building Height

- VBBL: Added permission for the independent assessment of building height for physically separated portions
 - Allows requirements dependent upon building height to be applied individually
 - Specific construction requirements need to be in place to apply this option
 - Still **one** building



3.1.8.5. Installation of Closures

- VBBL: Supporting change to 1.3.3.4.(3) to addresses openings in connected construction
 - Does not address closures between buildings
 - However, this establishes an expected level of performance for alternative solutions



3.1.4.3. & 3.6.4.3. Cables & Wiring in Plenum

- BCBC: Exposed Optical fiber cables, electrical wires and cables with combustible insulation, jacket or sheathes installed in a plenum will require FT-6 rating
- VBBL: deleted the exception for exposed FT-4 wire drops from plenum spaces
 - Intent: Reduce the risk of smoke migration throughout increasingly larger and more complex buildings.



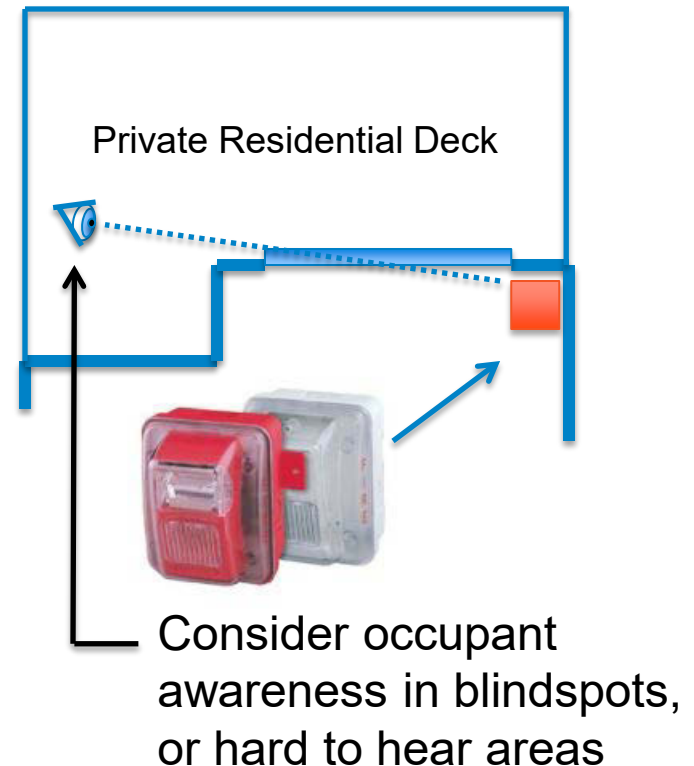
3.2.1.1. Roof Decks

- VBBL: Adding clarifying appendix text for private residential rooftop deck enclosures
 - Enclosure with no occupied floor area may be seen to be the vertical extension of the floor area below
 - Designs should consider occupant situational awareness



3.2.4.18. Alarm Audibility on Occupied Roofs

- VBBL: Audibility of alarms on occupied roof decks and balconies to be considered
 - A fire alarm signal device is to be located in the vicinity of the private deck access (could be on interior)
 - A fire alarm signal devices is to be located on all public and common use decks intended for occupancy



3.2.1.7. Fire Containment in Combustible Buildings

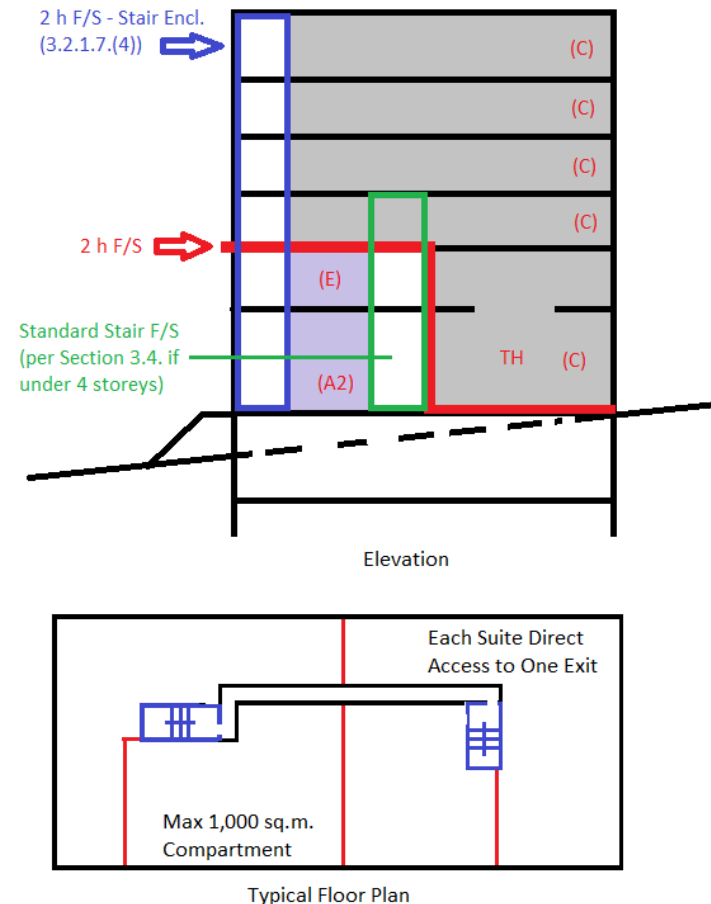
- VBBL: two key changes to Article 3.2.1.7.
 - Encapsulated mass timber added as an additional option in specific circumstances
 - Compartmentation for Mixed uses
- Intent:
 - Harmonizes with 2018 BCBC changes
 - Supports passive house integration
 - Provides more choice for designers



Mass wood option for fire separation
(Supporting Appendix D changes
regarding fire-resistant design)

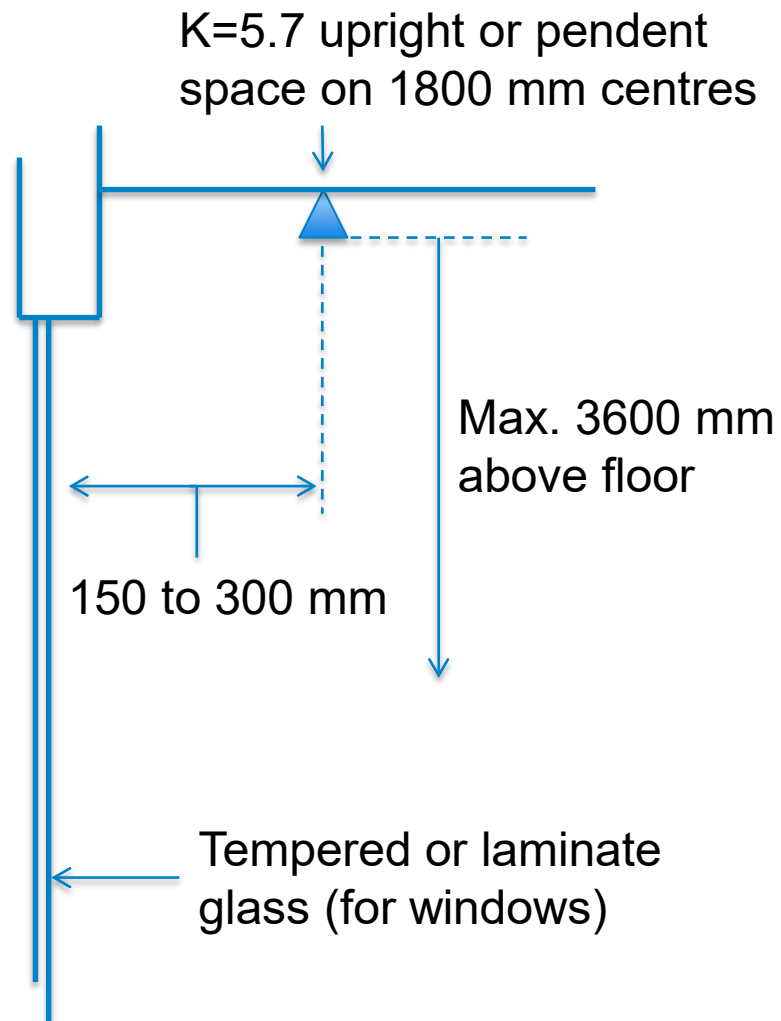
3.2.1.7. Fire Containment in Combustible Buildings

- VBBL: New limits on the application of 3.2.2.50. & 3.2.2.58. with A2, and E occupancies in excess of the requirements of the traditionally applicable construction requirements.
 - Increased compartmentation and direct access to exit
 - Intent: Address the impact of increased hazards and potential for abuse



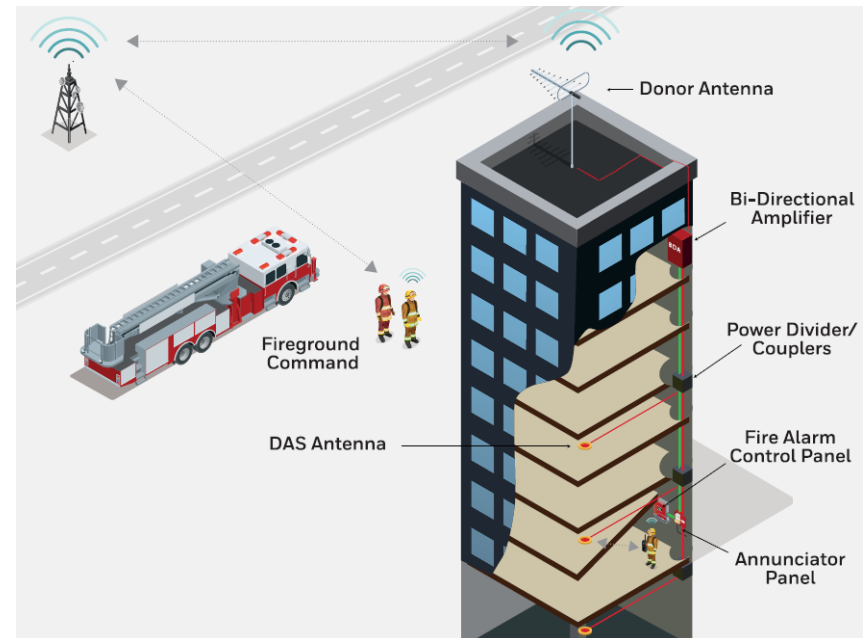
3.2.3.13. Exit Exposure

- VBBL: Sprinkler water curtain option for exit exposure expanded
 - removal of 10 person limitation
 - More comprehensive requirements
- Can still propose alternative solutions for unusual cases



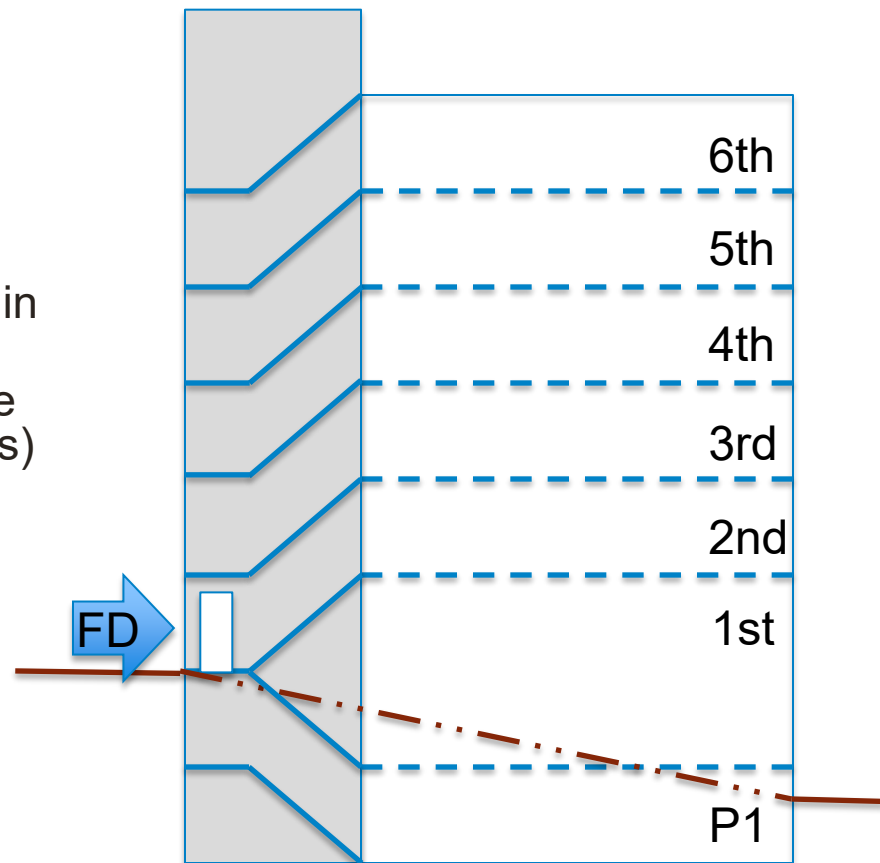
3.2.5.20. Emergency Radio Communications

- VBBL: Bi-direction Radio Antennas
 - Required in
 - New high buildings, and
 - Older high building triggering an 'F4' level of upgrade
 - Replaces the firefighter's telephones (but not voice paging)



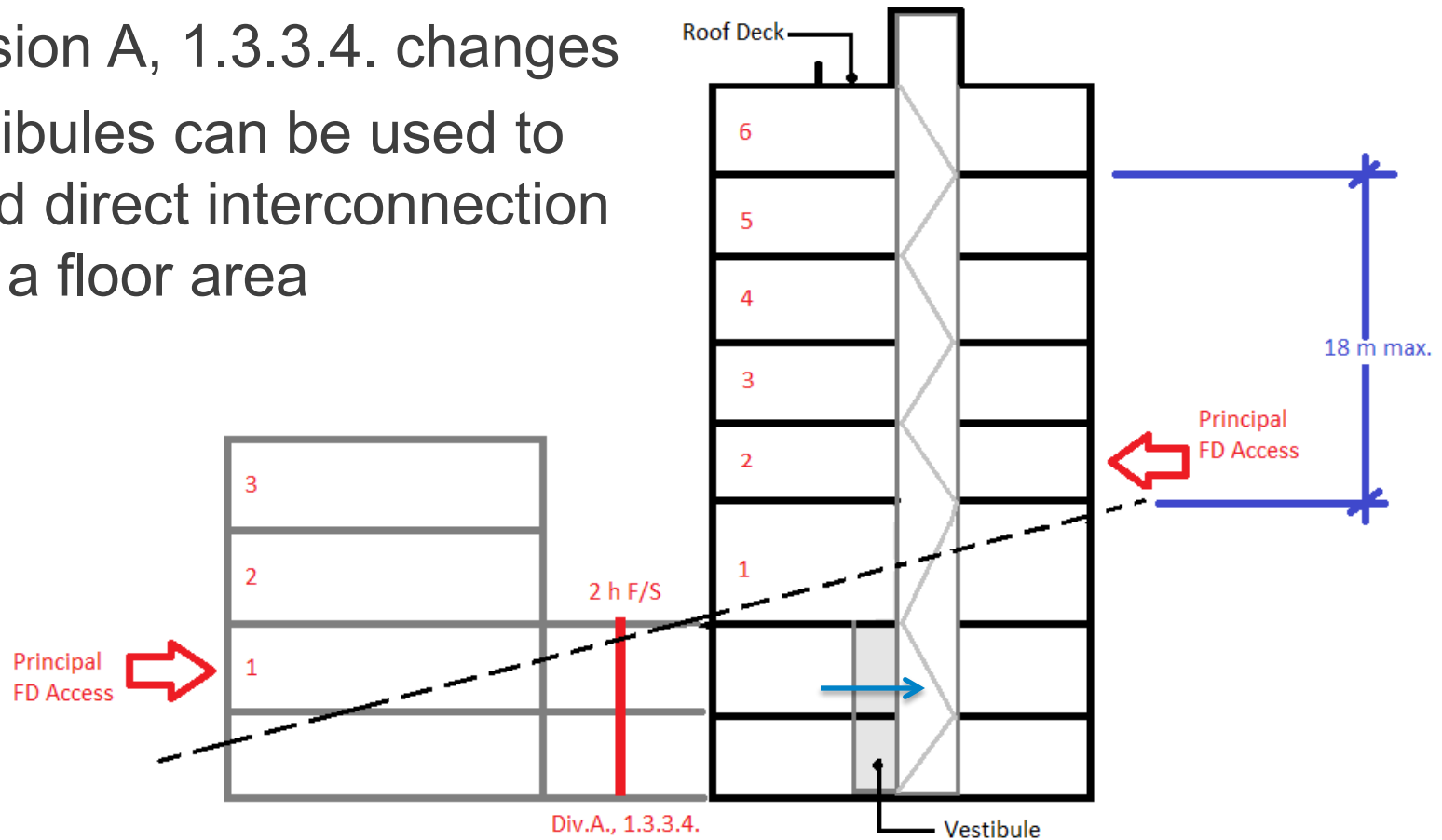
3.2.6.1. High Buildings Measures

- VBBL: New alternative to high building measures, where
 - Not exceed 6 storeys
 - No Group B, Division 2 or Group B, Division 3 over third storey
 - Firefighters principal response is within 18 m.
 - Stairs don't directly interconnect more than 6 storeys (can provide vestibules)
 - Exits stair enclosures to be 2 h fire separations
 - Sprinkler design to be enhanced.
- Intent: To provide alternate requirements to the high building measures for buildings on sloping sites that otherwise 6 storeys.



3.2.6.1. Additional Requirements for High Buildings

- Can be combined with Division A, 1.3.3.4. changes
- Vestibules can be used to avoid direct interconnection with a floor area




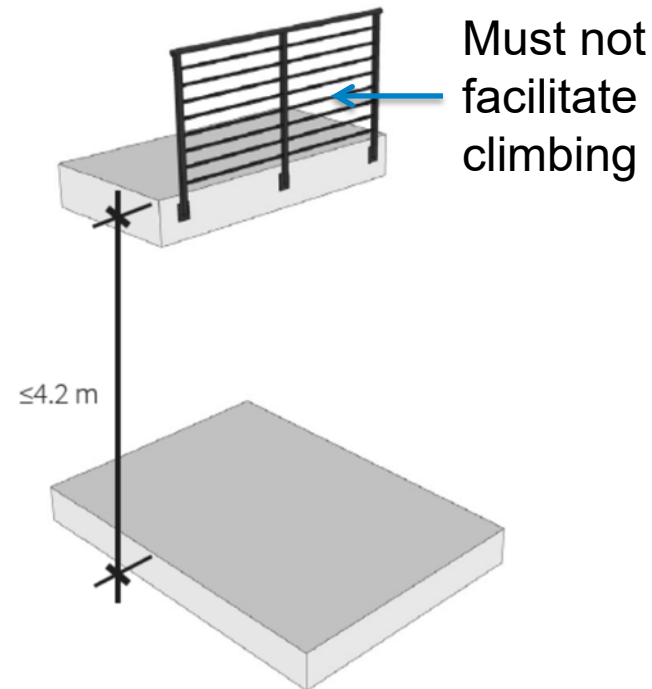
3.3.1.13. & 3.4.6. Electromagnetic Locks

- BCBC: Clarified intent to allow egress doors throughout a floor area to be equipped with electromagnetic locks
- VBBL: Adopted, but designers must demonstrate compliance.
 - Not intended for indiscriminate use
(maximum total delay is 15 s)
 - Approval of sequence of operation is required
(No Alternative Solution in most cases)



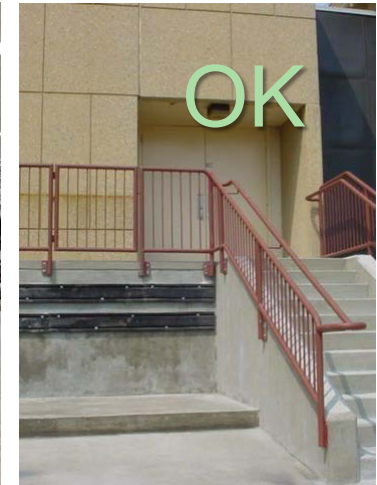
3.3.1.18., 3.4.6.6. & 9.8.8.6. Guard Climbability

- VBBL: Not adopting the BCBC/NBCC exception regarding climbability of guard serving one storey, or under 4.2 m
 - The current guard requirements will not be altered
 - Intent: Retain the existing safety standard for climbability
-  Errata for 3.4.6.6 & 9.8.8.6.: should mirror wording of 3.3.1.18.



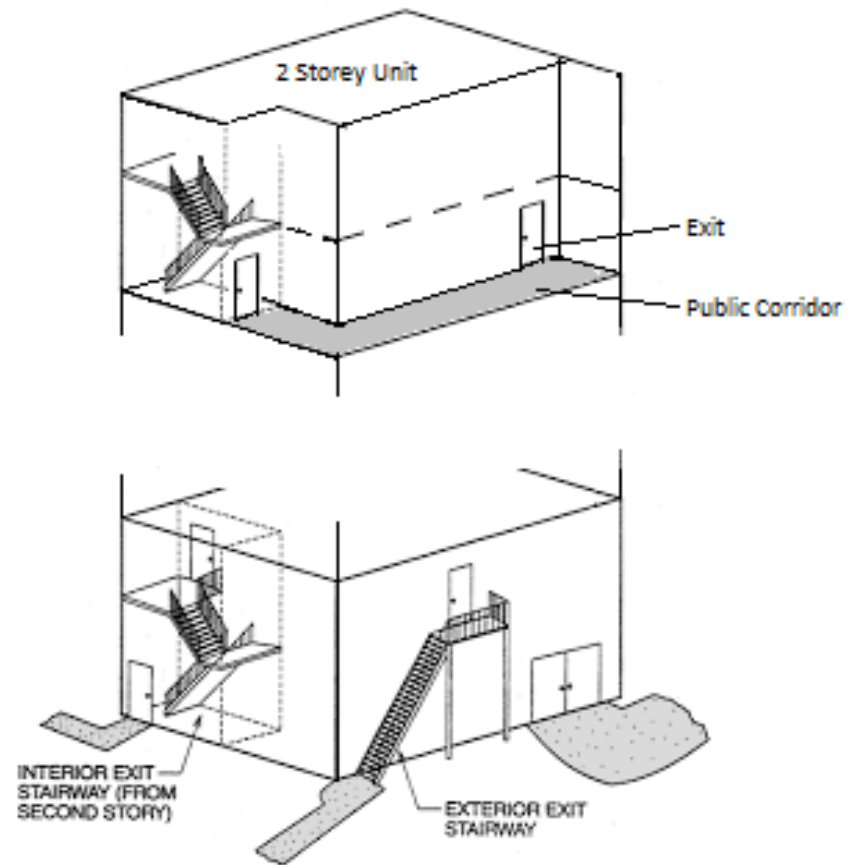
3.3.1.18. Guard Openings

- VBBL: No requirement for minimum 200 mm wide openings in guards in higher risk areas, assembly use, public access
 - Not inherently unsafe, but at risk of potentially unsafe outcomes if applied incorrectly



3.3.4.4. Egress from Dwelling Units

- VBBL: New egress option that allows a single means of egress for multi-level dwelling units
 - Intent: address challenges due to the egress within 1.5 m of *grade* limitation and two storey suites above grade
- Conditions of application: Travel distance must be 18 m or less within the suite, and either:
 - Maximum 1 storey up or down, **or**
 - Not more than 2 storey above the first storey



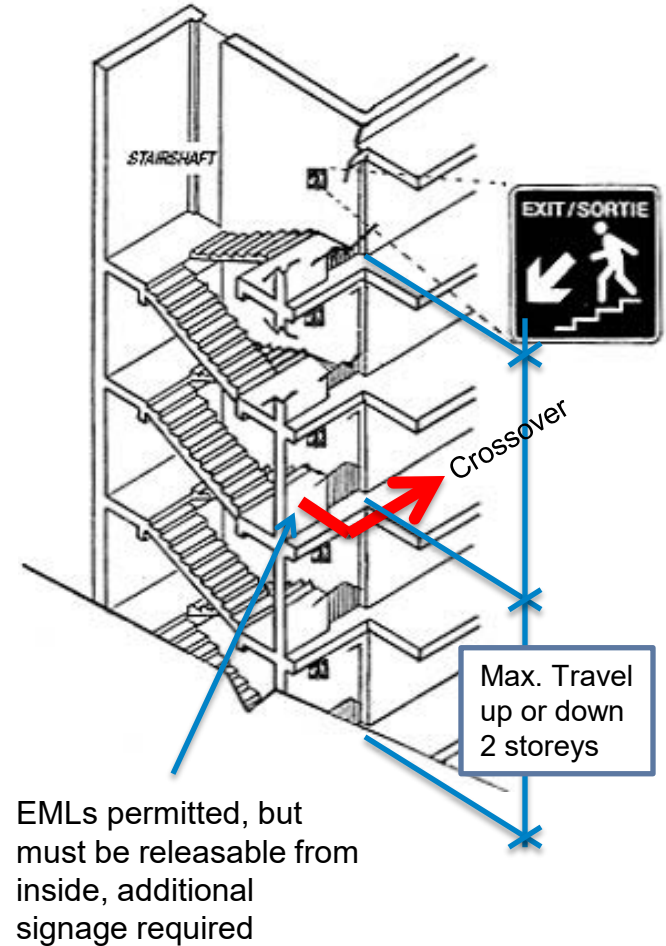
3.3.7.9. Mailbox Security

- New minimum construction requirements for mailboxes serving buildings with 20+ suites
 - Design to comply with recommendation from Canada Post
 - Intent: to reduce the risk of mail and identity theft



3.4.6.18. Cross-over Floor Access

- BCBC: Revised requirements
 - Applies to every building and is applicable to both above-grade and below-grade floor levels.
 - Electromagnetic locks on crossover doors from exit stairs into floor areas are permitted
- VBBL: Maglocks on emergency crossover access is adopted, but is restricted to where a public corridor is provided.



3.8. Accessibility - Overview

- BCBC: Substantial revisions
 - Alternative Standard for acceptance
 - Exemptions are slightly different
 - Lots of consolidation and reorganization
 - Many detailed changes
- VBBL: Generally consistent with province, except
 - Enhanced accessibility provisions carried forwards
 - Adaptability requirements carried forwards and harmonized with BCBC provisions where suitable



3.8.1.1. & 9.5.2. Accessibility – Compliance

- BCBC: Two paths of compliance.
 - 3.8. requirements, or
 - Alternative standards for accessibility (CSA-B651) and adaptability may be acceptable
 - **Recommendation: The method of compliance should be clearly stated on the BP set cover page.**
- VBBL: Same broad approach, except certain unique requirements are layered on top for:
 - Enhanced accessibility
 - Adaptability
 - Existing buildings are to be provided with accessibility as per Part 11.

Part 9 Application

- Section 3.8 applies to all buildings under Part 9 [9.5.2.]



3.8.2.1. Accessibility - Exemptions

- Exemptions largely the same but with a few changes
 - BCBC: Exemption for storey next above or below the accessible storey removed; VBBL: retained and modified this.
 - BCBC: Buildings that are not intended to be occupied on a daily or full-time basis are exempted
 - BCBC: Removed the exemption for Group E < 50m²

Excerpt from BC Access Handbook (2014):

“Clauses (a) and (b) are intended to exempt such small second storeys or basements from access requirements when they are self-contained or contain the same facilities as on the first storey [...]

This exemption applies to buildings not more than two storeys high containing not more than three floors (2 storeys and basement). A three storey building must be accessible.

Although this access exemption is not seen as being in conflict with the B.C. Human Rights Act it is conceivable that such lack of access may be seen by the Human Rights Council or the courts as an unreasonable barrier to employment in, or use of, a building. **An owner may be ordered to make reasonable provisions for persons with disabilities even though the Code exempted the building in the first instance.”**

3.8.2.1. Application

- BCBC: Revisions to apartment and condominium buildings still exempts residential suites from accessibility, but:
 - In a building with elevators: The access is required on paths of travel throughout all common areas (including parking areas, public corridors, etc.)
 - In a building without elevators: Access is to be provided on the level with accessible suites (meaning those suites where the difference in floor elevation ≤ 600 mm).
- VBBL: enhanced accessibility requirements still apply to residential suites served by an elevator and public corridor

3.8.2.1. & 3.8.3.1. Enhanced Accessibility

- VBBL: Enhanced Accessibility measures for dwelling units in apartments
 - Relocated to fit the new BCBC context
 - Overlays the provincial requirements regardless of the compliance path
 - No changes to the enhance accessibility requirements over the VBBL 2014
- 6) Notwithstanding the exceptions of Sentence (1), the Enhanced Accessibility requirements of Sentence 3.8.3.1.(2) shall apply to all apartments and condominiums which contains three or more primary *dwelling units* served by an elevator and a *public corridor*.

3.8.2.5. Accessible Parking Stalls

- BCBC: Removed the requirements for minimum number of Parking stalls.
 - This is left to the individual municipality to decide by local By-law.
- VBBL: No change. This is already regulated by the Parking By-law (#6059).
 - BCBC and VBBL now harmonized

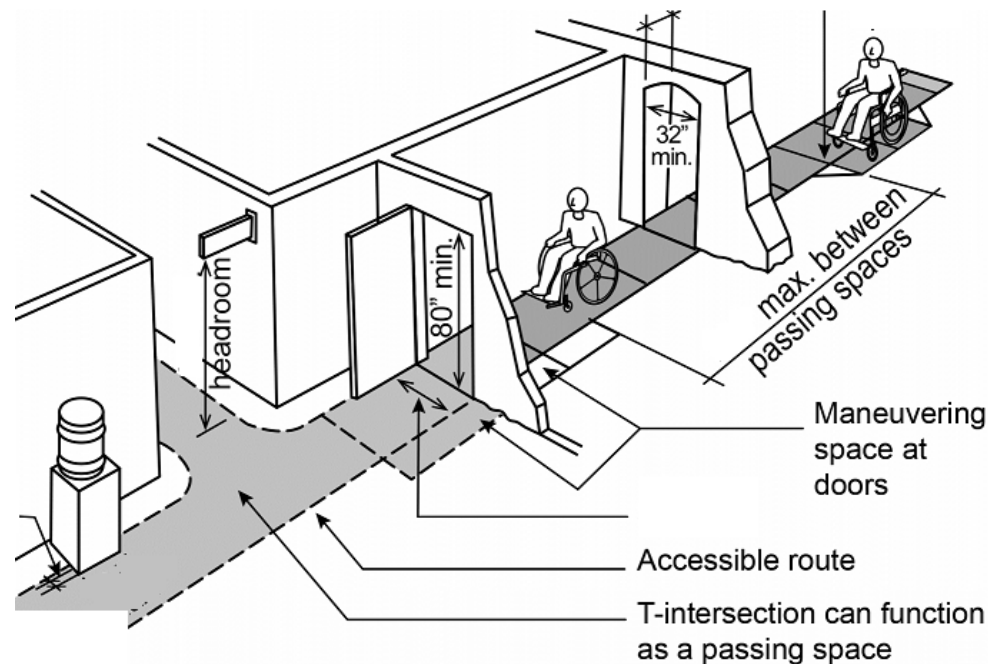
4.8.4 Required Accessible Parking Spaces

For each:

- (a) multiple dwelling or live-work use, there must be at least one accessible parking space for each building that contains at least seven residential units and an additional 0.034 space for each additional dwelling unit; and
- (b) non-residential uses, there must be at least one accessible parking space for each building that contains at least 500 m² of gross floor area and an additional 0.4 parking space for each 1000 m² of gross floor area; except that, in the case of a relaxation of parking spaces for cultural and recreational uses, churches, chapels, places of worship or similar places of assembly, calculation of the required number of parking spaces is to be in accordance with section 4.2 or 4.3, as the case may be.

3.8.3.2. Accessible Path of Travel

- BCBC: Application expanded from the exterior path to the main entry to all doorways, interior and exterior walking surfaces, along the accessible path of travel.
 - Significant design implications due to increase requirements for interior corridor widths.



3.8.3.2. Mechanical Lifts for Accessibility

- VBBL: Sentence (6) now permits exterior mechanical lifts
 - in very specific circumstances
 - Must be weather protected.
 - Intent: Mechanical lifts are not a desirable means to make a floor area accessible
 - Except that there are circumstances where it is the only feasible means.
 - Lifts must be protected against inclement weather.
- 6) An exterior mechanical lift and its controls provided in accordance with Sentence (3), shall be provided
- a) where existing exterior site constraints make use of a ramp or elevator infeasible, and
 - b) sufficiently protected from inclement weather by
 - i) weather and moisture resistant construction, and
 - ii) sufficient cover or enclosure so as to ensure its continued safe operation.

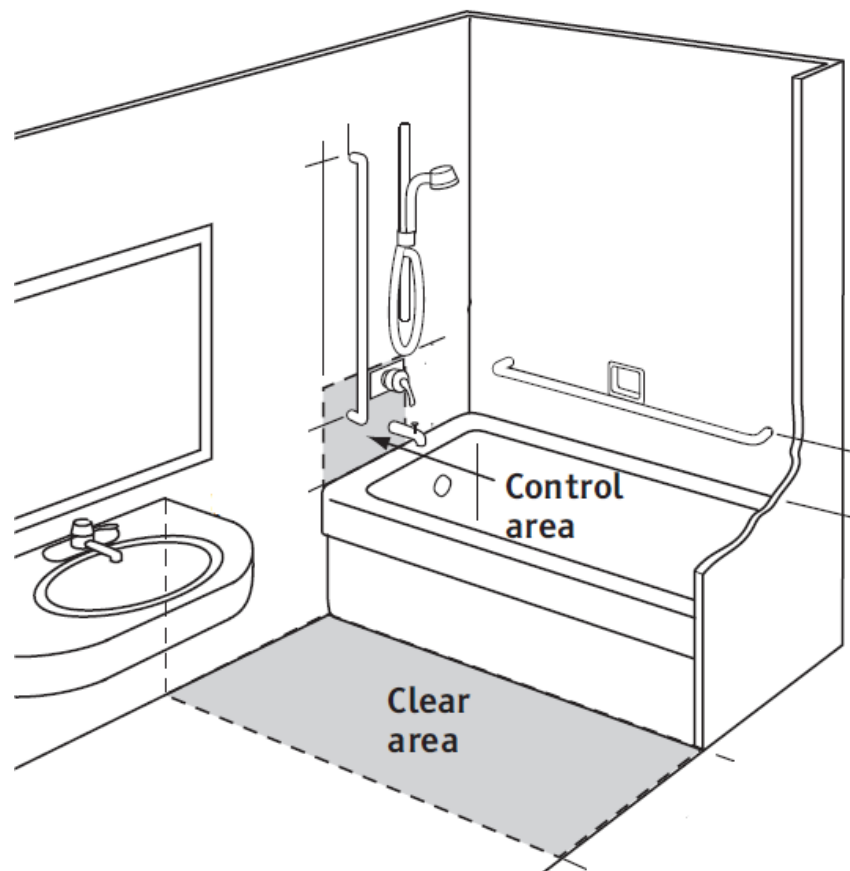
3.8.5. Adaptability

- BCBC: Still voluntary
- VBBL: Mandatory
 - Requirements have been harmonized to some degree with BCBC 2018.
 - No significant change from the prior Building By-law



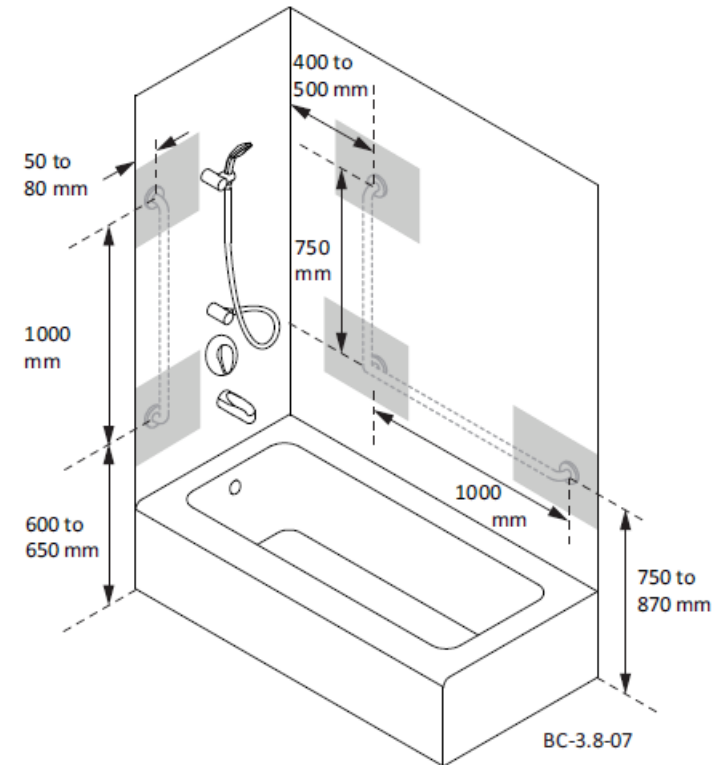
3.8.5 Adaptability - Showers

- BCBC/VBBL: Greater clarity on 'offsets'
 - Anywhere between traditional $\frac{1}{2}$ waypoint to near edge.
 - Recommended $\frac{1}{4}$ mark from leading edge.
 - Intent: is that a wheel chair occupant should be able to reach this from the wheelchair without being forced to transfer to the bathtub, shower, or adjacent fixtures.



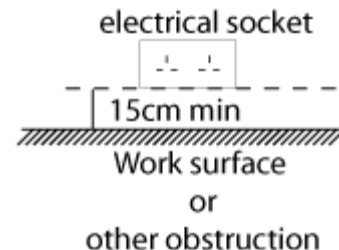
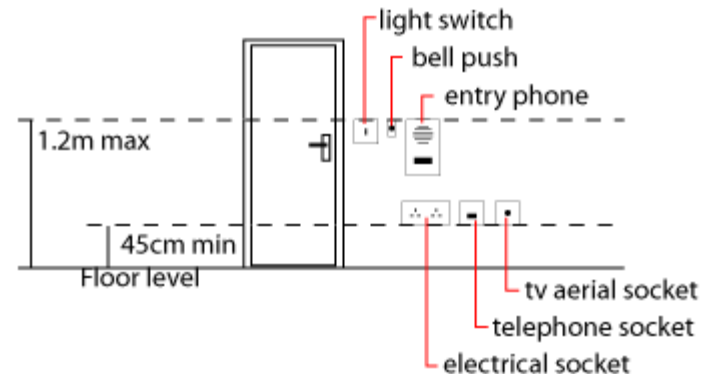
3.8.5.5. Accessibility – Grab bars

- BCBC/VBBL: Greater clarity on grab bar locations
 - Must be considered in conjunction with Clause 3.8.3.11.(1)(e) and Clause 3.8.3.16.(1)(f) or 3.8.3.17.(1)(f).
 - Must be consistent since it will not be clear where it is post construction.
 - Intent: to ensure there is adequate backing for the installation of grab bars in the future.



3.8.5.7. Controls, Switches and Outlets

- VBBL: Sentence (1) revised
 - The term “regular occupant use” added, to recognize that certain outlets are used for specific purpose and should be located where appropriate for that purpose
 - Errata: clauses numbered incorrectly
- VBBL: Sentence (3)
 - New requirement to require an electrical receptacle which could be used or retrofit to provide power for a stairlift device



9.7. Swing Door - Security

- BCBC: Expanded the application of security provisions to all entrance doors (i.e.: not just main entry and dwelling units)
- VBBL: Expanded resistance to forced entry of swing doors requirements to include the entry door of ancillary garages.
- Added exception: multi-point latching systems in lieu of the reinforced door jamb.



9.37. Ancillary Residential Unit

- VBBL: Generalized the requirements for Secondary suites, Lock-off units, and other subsidiary dwelling units to 1 or 2 Family dwelling
 - Adopt the Provincial secondary suite requirements as a base
 - Follow a prescriptive approach with simplified language
- Intent:
 - Easier for the lay person to understand and construct,
 - Easier to achieve for existing construction,
 - Easier for inspectors to verify in the field,
 - To treat all such units in a uniform and predictable manner

9.37. Ancillary Residential Units

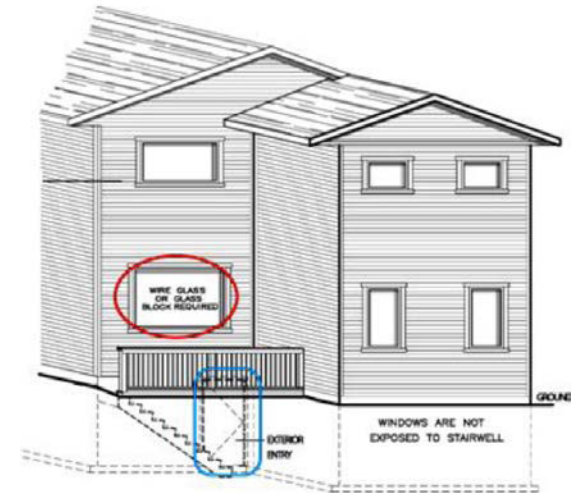
- Key Features:

Not required:

- Formal fire separation and fire-resistance rating
- Formal sound transmission rating

Required:

- Interior exits shall be separated from adjacent floor areas by an unrated fire separation and provided with a fire-resistance if unsprinklered.
- Exit exposure from adjacent fire compartments to be addressed



Evaporative Coolers and Condensers

- New requirements governing
 - Evaporative coolers and condensers in HVAC systems
 - Equipment based on air cooling or purification by humidification or atomization
- VBBL: **As of January 1, 2020**, all new and existing cooling towers and evaporative condensers **must be registered** – see Book II and vancouver.ca/operating-permit
- Intent: to reduce the risk of public exposure to opportunistic pathogens (*Legionella*)



Water Features & Water Atomizers

- VBBL: As of **July 1, 2020**, all new and existing indoor and outdoor decorative water features **must be registered** – see Book II (includes information on exemptions) and vancouver.ca/operating-permit
- Intent: to reduce the risk of public exposure to opportunistic pathogens (*Legionella*)



Book II - Water Efficiency

Quick summary of
new water efficiency
requirements:
[vancouver.ca/
operating-permit](http://vancouver.ca/operating-permit)



EFFECTIVE JUNE 3, 2019

 SINGLE-PASS SYSTEMS, INCLUDING ONCE-THROUGH COOLING Prohibited	 ALTERNATE WATER SYSTEMS, INCLUDING RAINWATER HARVESTING Operating permit required for new and existing systems.
 TOILETS 4.8 L/flush Full flush on a dual-flush toilet shall not exceed 4.8 L	 DISHWASHERS  REQUIRED
 URINALS 1.9 L/flush	 CLOTHES WASHERS  REQUIRED
 SHOWER HEADS 7.6 L/min	 ICE MAKERS  REQUIRED
 LAVATORY FAUCETS Private use 5.7 L/min Public use 1.9 L/min +  self-closing	 COMMERCIAL STEAM COOKERS  REQUIRED
 KITCHEN FAUCETS Residential use 6.8 L/min Non-residential use 8.3 L/min	 COMBINATION OVENS  REQUIRED
 PRE-RINSE SPRAY VALVES 4.8 L/min	 GEOEXCHANGE SYSTEMS Methanol use prohibited. Open-loop systems shall not discharge to sewer.
 RESIDENTIAL LANDSCAPE IRRIGATION SYSTEMS Pressure reducing valve may be required. Fertigation and chemigation prohibited.	 VEHICLE WASH FACILITIES Conveyor or in-bay vehicle wash: at least 60% of water shall be recycled. Self-service vehicle wash: 11.4 L/min for foam brushes and spray wands.
 BUILDING WATER TREATMENT SYSTEMS Operating permit required for new and existing systems.	

For more information visit:
vancouver.ca/operating-permit
vancouver.ca/building-bylaw

* Summary does not include all applicable Vancouver Building By-law and Water Works By-law plumbing requirements.

Book II - 2.2.10.17. Water Treatment Systems

- Water Treatment systems are required to be registered (no exemptions)
 - Alternative Solutions no longer required.
 - Operating permit required in most cases.
Exception: residential buildings containing not more than 4 principal dwelling units.



Book II - 2.7. Non-Potable Water Systems

- VBBL: Non-potable water requirements to Book II (Plumbing Systems)
 - More extensive than older purple pipe requirements
 - Considers the operational requirements of the system
- See more at:
vancouver.ca/operating-permit

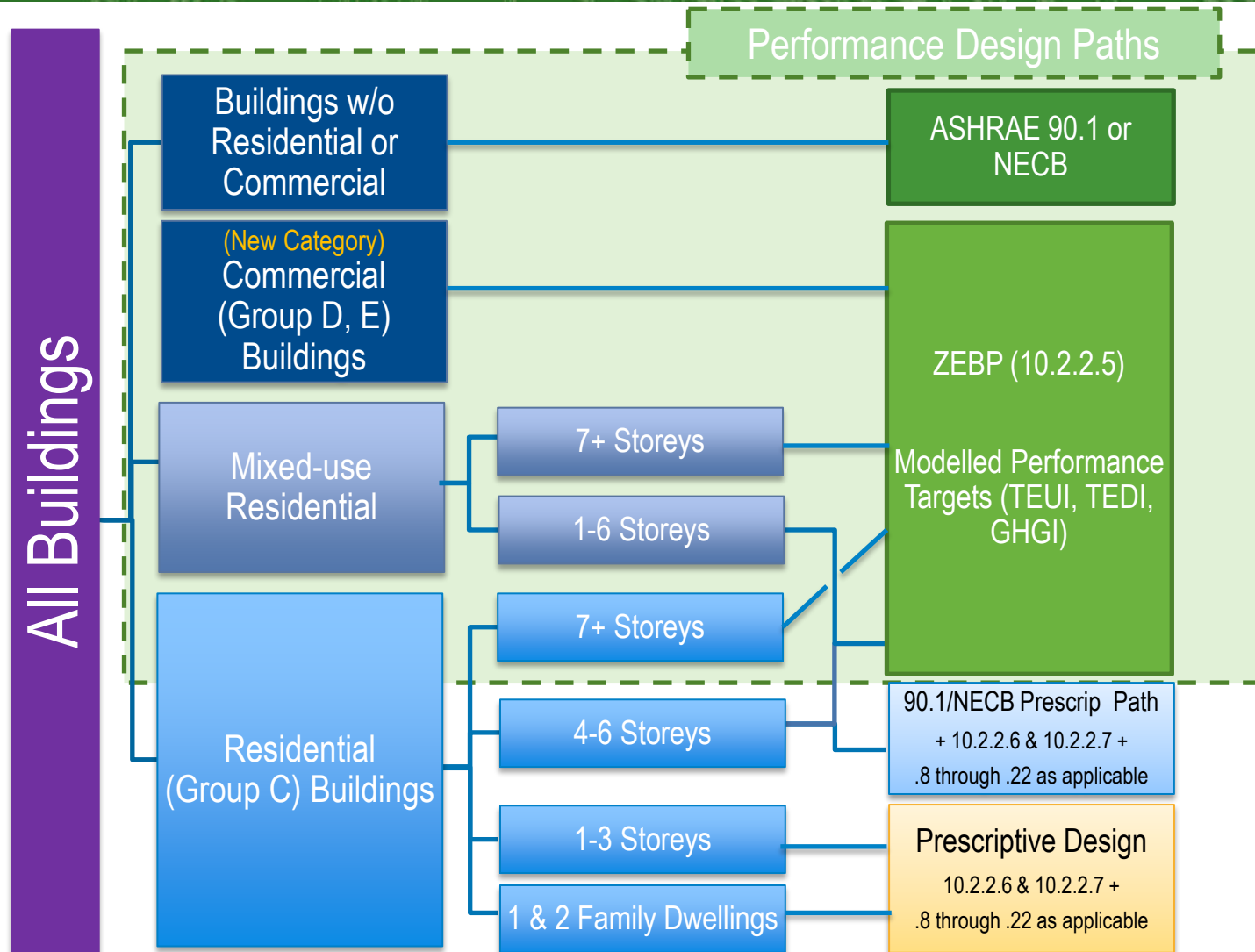


Energy Efficiency - Zero Emissions Building Plan

- Key change is implementing the Zero Emissions Building Plan as directed by Council at the end of the 2014 VBBL cycle.
 - Introduces “Performance Limits” approach for commercial buildings, and residential buildings of 7 storeys or more
 - Performance targets will be based on the occupancy and fuel source
 - Is consistent with the BC Step Code

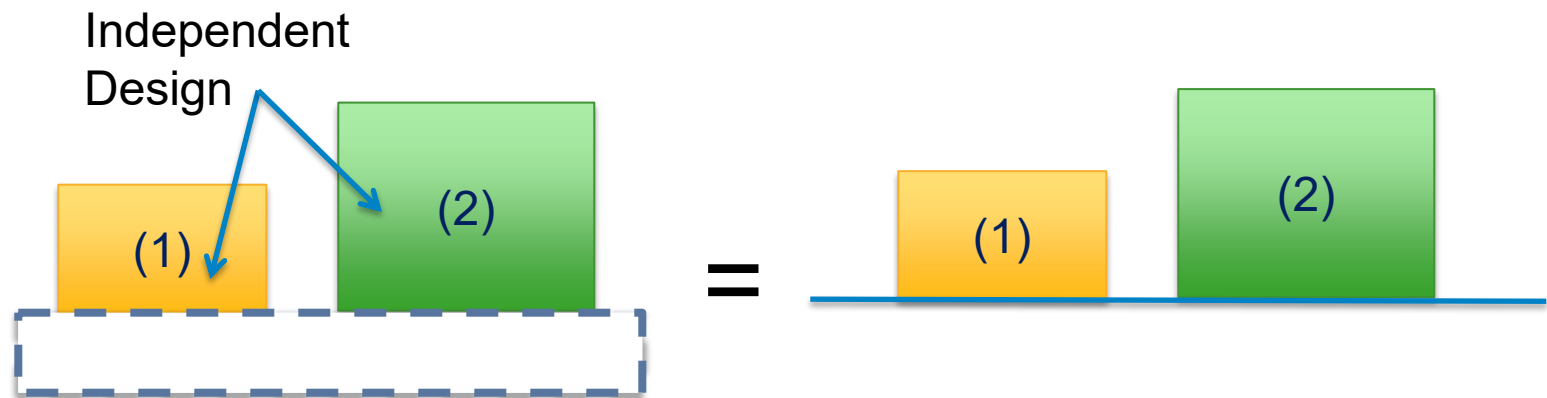


Energy Efficiency - Building Classification



Energy Efficiency - Design Classification

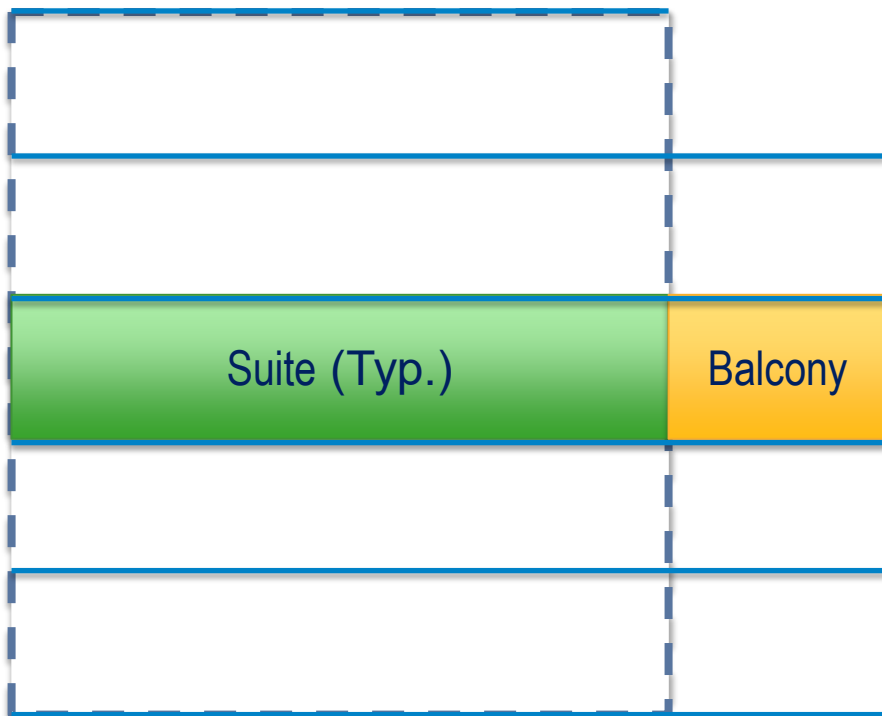
- Part 10 now provides explicit permission for the independent design of separated components
- Intent:
 - To facilitate energy efficient design and provide equity in design outcomes



Energy Efficiency - Design Classification

- Part 10 now clarifies the design requirements for balconies

- Intent:
 - reduce energy waste
 - limit the risk of damage and degradation



Design as Unconditioned Space (Unheated)

Energy & Environment - Exterior Gas Connections

- Exterior gas connection may be provided on houses to serve an unenclosed balcony
- Intent:
 - Limit hazard from inappropriate uses which could lead to cladding or soffit fires
 - Reduced GHG production



Energy & Environment - Exterior Lighting

- Exterior lighting requirements revised
 - Simpler to design & enforce
 - Expanded application
- Intent is to:
 - Prevent overlighting
 - Reduce nuisance lighting complaints
 - Enhance environmentally friendly outcomes
- **Applies to:** permanent ancillary exterior lighting of a building of residential occupancy or the residential portion of a multi-use building, or those parts of a building facing a lane
- **Requirements:**
 - fixtures to be no more than 4 m above the surface they illuminate
 - Dimmer and timer controls to be provided
 - for luminaires over 600 lumens, or installed along the side or back yard: full cut-off optics or are fully shielded
 - for luminaires 600 lumens or less: partially shielded and utilize a diffusing cover



Energy & Environment - Exterior Space Heating

- The VBBL now addresses the heating of exterior spaces
 - Optional allowance, but with restrictions to eliminate emissions and prevent unnecessary operation;
 - Food and Beverage establishments only
 - Design Criteria
 - 18W/ft² (no fossil fuel system)
 - In-slab/In-seat/Radiant electric or non-fossil fuel
 - Highly controlled: Zone/Unit based system
 - Shutoffs: Ambient and space sensors (18C?)
 - Ceiling fans





VBBL 2019 Overview: Selected Technical Changes for Existing Buildings

Kevin Lau

11.2.1.2. Major Occupancy Changes

- New exception to the major occupancy change requiring full upgrade requirement over a 5 year period provided for small spaces
 - the total concurrent scope work is not more than 5% of the building area, or
 - 100 m² in area.
- Intent: create a case where small amounts of work can be carried out without stifling or limiting business growth since a small tenant does not have the authority to undertake, or have the capacity to bear the cost of renovations to the whole building.



11.2.1.2. Upgrade Triggers – Category of Work

- Minor Renovation

- Simple relocation of a demising wall is no longer necessarily a major renovation
- Improve clarity (no change of outcome)

MINOR RENOVATION – Minor renovation means a project whose scope of work includes construction limited to the improvement, renovation, reconfiguration, or refurbishment of a single suite contained within a single tenant space and those demising walls shared with the adjoining suites, but not including the public or common floor areas of the building.

Minor renovations may include the following:

- Reconfiguration of the interior space of the suite which may occupy multiple levels in a building,
- Retention of existing interconnected floor spaces that do not create new connections to previously unconnected floor areas,
- Retention of existing mezzanines that do not add floor area,
- Limited renovation in adjacent suites to the extent necessary to support the relocation of shared demising walls, and
- Exterior renovations pertaining to the subject suite.

Where the renovation includes a new interconnected floor space, this work would not be considered to be a minor renovation. New mezzanines are considered to be additions.

11.2.1.2. Upgrade Triggers – Category of Work

- Major Renovation
 - Defined now any renovation work not otherwise falling under the minor renovation category

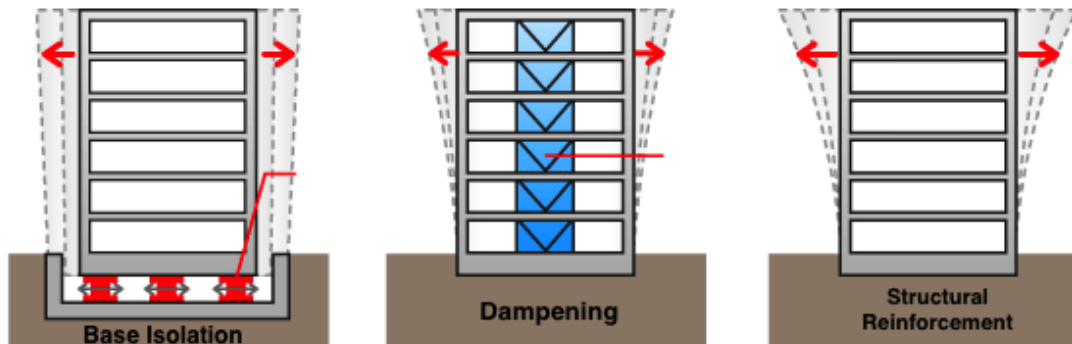
MAJOR RENOVATION – Major renovations means work within multiple tenant spaces that is not otherwise considered a minor renovation. Major renovations may include (singly or in combination):

- Interior re-configuration of multiple tenant spaces,
- creation of interconnected floor spaces, exterior alterations, or
- alterations that create a new tenant space.

However, where such renovation includes a change of major occupancy classification or a new mezzanine, this work would not be considered solely as a major renovation. New mezzanines are considered to be additions.

11.2.1.2. Structural Upgrade Level

- S3 level of upgrade changed to
 - 50% of current Code lateral forces, or
 - Demonstrate 30% of current Code seismic resistance.
 - Intent: provide flexibility in demonstrating either compliance or upgrades
 - Prior 'Bolts+' upgrade requirement was inflexible
 - Depending on the structure, represented little or no improvement



11.2.1.2. Acceptable Upgrades Levels

- ‘S3’ updated
 - To make clear that the restraint of major components that could impact adjacent properties and public ways is part of a structural upgrade and not part of the non-structural work
- ‘N3’ and ‘N4’ updated
 - clarity changes to further differentiate the non-structural scope of upgrades from the structural scope of upgrades
 - Language change to make ‘N3’ and ‘N4’ more consistent
- ‘F4’ category of work now also includes radio antenna systems.

11.2.1.2. Energy Upgrade Level

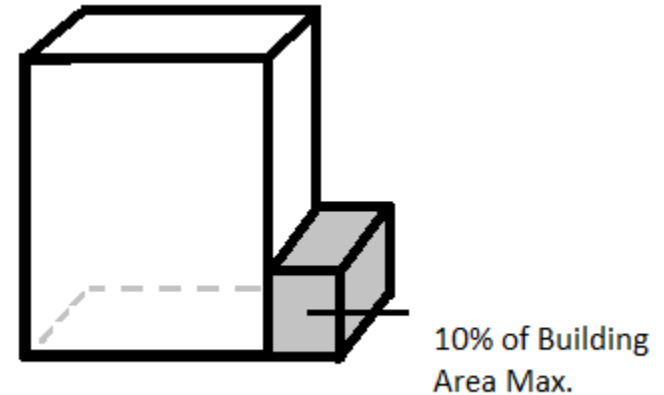
- Simplification of the 'E' level upgrades
 - Collapsed the 'L' series of upgrades collapsed into a single Table A-11.2.1.2.-C
- Updated 'E' level upgrades to include
 - Exterior or Patio Heating upgrades as part of a 'E2', 'E3', or 'E4' level of upgrade.
 - Note clarifying that ASHRAE 90.1 references when applied to Part 9 projects are simply providing guidance to as to appropriate upgrades, and not mandating the application of ASHRAE 90.1 specifically.
 - Supporting Note containing Alterations language to support the applicatino of the NECB 2015.

11.2.1.4. Existing 1 & 2 Family Dwellings

- Consolidated requirements applicable to existing houses
 - Clarify and simplify language
 - Use of tables to identify most upgrade requirements
 - Reduce references to upgrade trigger mechanism
- No increase in requirements or outcomes intended
- Single family building energy efficiency upgrades may be applied to three storey multi-family residential dwellings

11.2.1.5. Self-contained Separated Spaces

- Revised to eliminate vertically self-contained spaces (impractical to achieve)
- New limit to the size of a self-contained separated space
- Intent:
 - To encourage application of the provision in the manner in which it was intended
 - Size limit is tied to building area, so that taller buildings do not achieve a disproportionate advantage



11.3. Alternate Compliance Measures

- Name change to reduce confusion:
Alternate Acceptable Solutions → Alternate Compliance Measures
- Section 11.3 requirements generally unchanged
 - A few new options to expand usability
 - Many cross-references have been eliminated to reduce confusion and simplify application





VBBL 2019 Overview: Administrative Changes

Kevin Lau

End of Trip Facilities

- Reminder:
 - In Section 6.5 of the Parking By-law
 - Also see [The Bicycle Parking Design Supplement PDF file \(29 KB\)](#) for details



Building
By-law
#10980



Parking
By-law
#6059

Electric Vehicle Charging

- Requirements other than electrical safety requirements have been removed from the Building By-law
 - Meet Canadian Electrical Code
 - Minimum Performance standard
- Now in the Parking By-law Article 4.14.1.



Water Efficiency

- BCBC: Water efficiency requirements moved to Book II
 - Makes all plumbing related information available in the same place.
 - Updated efficiency targets



Letters of Assurance

- VBBL: Revised Letters of Assurance
 - Emails to be included
 - No explicit field for the date. Professional Seals must be dated.
 - Schedule B:
 - Revised wording for energy efficiency items
 - New Radio Antenna system item
 - Schedule D & C-D (Enhanced Envelope)
 - Renamed (was D-1 & D-2)

SCHEDULE B - continued

Building Permit No. _____
(for Building Official's use)

Project Address _____

Discipline _____

SUMMARY OF DESIGN AND FIELD REVIEW REQUIREMENTS
(Initial applicable discipline below and cross out and initial only those items not applicable to the project.)

ARCHITECTURAL

- 1.1 Fire resisting assemblies
- 1.2 Fire separations and their continuity
- 1.3 Closures, including tightness and operation
- 1.4 Egress systems, including access to exit within suites and floor areas
- 1.5 Performance and physical safety features (guardrails, handrails, etc.)
- 1.6 Structural capacity of architectural components, including anchorage and seismic restraint
- 1.7 Sound control
- 1.8 Landscaping, screening and site grading
- 1.9 Provisions for firefighting access
- 1.10 Access requirements for persons with disabilities
- 1.11 Elevating devices
- 1.12 Functional testing of architecturally related fire emergency systems and devices
- 1.13 Development Permit and conditions therein
- 1.14 Interior signage, including acceptable materials, dimensions and locations
- 1.15 Review of all applicable shop drawings
- 1.16 Interior and exterior finishes
- 1.17 Dampproofing and/or waterproofing of walls and slabs below grade
- 1.18 Roofing and flashings
- 1.19 Wall cladding systems
- 1.20 Condensation control and cavity ventilation
- 1.21 Exterior glazing
- 1.22 Integration of building envelope components
- 1.23 Environmental separation requirements (Part 5)
- 1.24 Building envelope, Part 10 requirements (ASHRAE, NECB, ZEBP, etc)

STRUCTURAL

- 2.1 Structural capacity of structural components of the building, including anchorage and seismic restraint
- 2.2 Structural aspects of deep foundations
- 2.3 Review of all applicable shop drawings
- 2.4 Structural aspects of unbonded post-tensioned concrete design and construction

MECHANICAL

- 3.1 HVAC systems and devices, including high building requirements where applicable
- 3.2 Fire dampers at required fire separations
- 3.3 Continuity of fire separations at HVAC penetrations
- 3.4 Functional testing of mechanically related fire emergency systems and devices
- 3.5 Maintenance manuals for mechanical systems
- 3.6 Structural capacity of mechanical components, including anchorage and seismic restraint
- 3.7 Review of all applicable shop drawings
- 3.8 Mechanical systems, Part 10 requirements (ASHRAE, NECB, ZEBP, etc)

Professional's Seal and Signature _____

CRP's Initial _____

Letter of Owner Commitment

- Letters outline the owners commitments and obligations
 - Schedule E-1
 - Commitment from Owner (owner carrying out the work)
 - Schedule E-2
 - Commitment from Owner & Tenant (tenant carrying out the work)
- Simplified usage from prior incarnations
 - Only one Schedule E is required, and each section to be completed

The image displays two forms from the City of Vancouver, titled "BUILDING BY-LAW 2019 - CITY OF VANCOUVER".

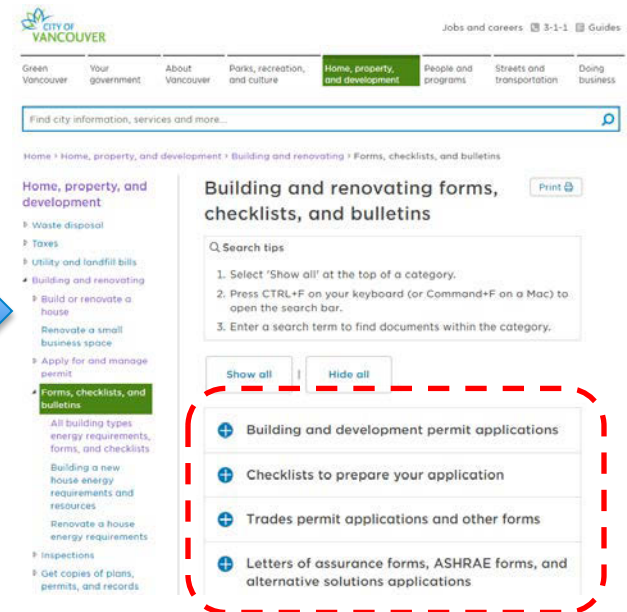
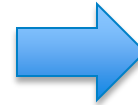
SCHEDULE E-1: OWNER'S UNDERTAKING
This form is for the owner carrying out the work. It includes fields for "Building Permit No." and "Project Address". The "To: The Chief Building Official" section includes fields for "Re: Name of Project (Print)" and "Address of Property (Print)". The main body contains a declaration of ownership and a commitment to comply with the Building By-law.

SCHEDULE E-2: OWNER'S AND TENANT'S UNDERTAKINGS
This form is for use when a tenant is carrying out the project. It includes fields for "Building Permit No." and "Project Address". The "To: The Chief Building Official" section includes fields for "Re: Name of Project (Print)" and "Address of Property (Print)". The main body contains declarations from both the owner and the tenant, followed by a commitment to comply with the Building By-law.

Both forms include a footer with the text "1 of 4".

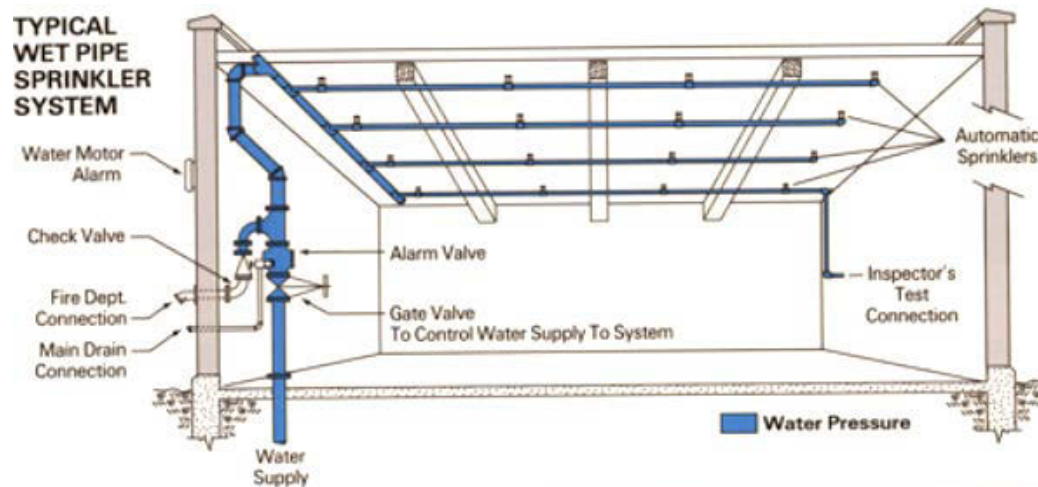
Letters of Assurance - Schedules A, B, C, D & E

- VBBL: Revised Schedules for the Owner, CRP, and RPs available at:
<https://vancouver.ca/home-property-development/application-forms-and-checklists.aspx>



Div C - 2.2.7.1. Sprinkler Design

- For sprinkler design over 20 heads
 - The designer is required to be Registered Professional Engineer (P. Eng.)
 - Engineer is responsible for the design work and field reviews related to their design.
 - Plans, supporting documents, and letters of assurance (Schedule B & C-B) to be sealed, dated, and signed.



Div C - 1.10.1.5. Building Addressing

- Street number addressing assignment revised.
 - A street number is assigned to each building or substantive portion of a building that is provided with a separate exterior principal access.
 - Substantive portions are those portions of a building that are intended to be operated in a manner that is largely independent, or as a distinct entity.
 - May be an exception for laneway houses based on the exception in Sentence (2)
- Sentence (2) provides an exception
 - If insufficient street addresses are available, then suite numbers will be assigned between the affected buildings in a logical manner
 - Clear signage, graphical map, and a principle site FD response point will be provided.
- Intent: Minimize potential for confusion and address an increasingly dense number of suites.

Final Observations

- VBBL updates are an iterative change to the prior Code
 - BCBC adopted with few significant changes.
 - Most existing Unique to Vancouver requirements carried forwards.
 - A number of clarity changes and simplifications.
 - Administrative changes are very limited.

Keeping Up To Date

This presentation is based upon the current state of the Building By-law. Errata or other updates occur from time to time, and Code users are encouraged to keep up to date.

Sign up for notifications of updates and other building related information

The screenshot shows the City of Vancouver website. The header includes the City of Vancouver logo and navigation links: Jobs and careers, 3-1-1, and Guides. The main navigation bar lists various city services: Green Vancouver, Your government (highlighted), About Vancouver, Parks, recreation, and culture, Home, property, and development, People and programs, Streets and transportation, and Doing business. A search bar is located below the navigation bar.

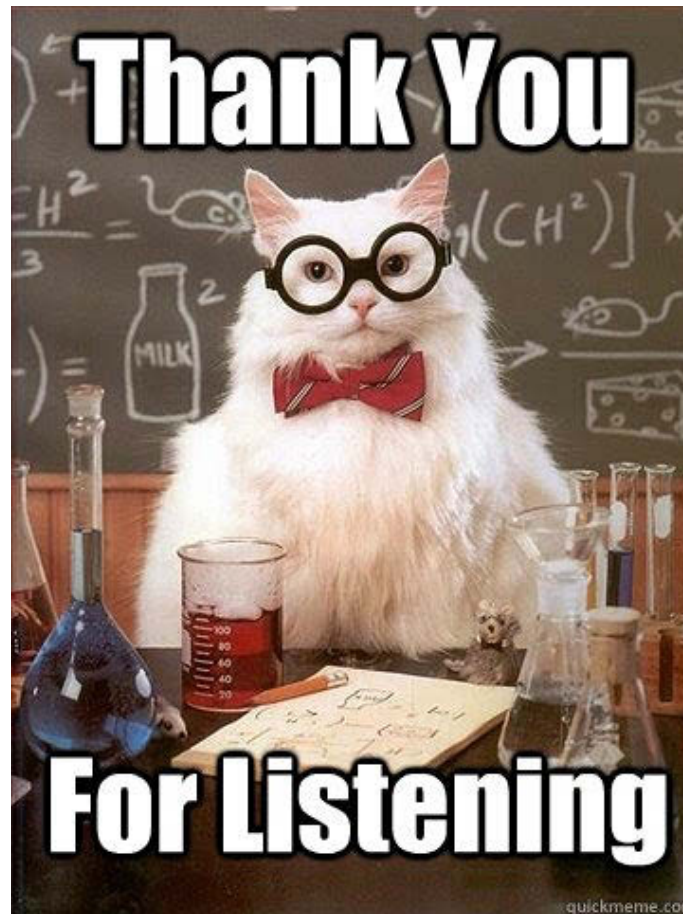
The page content is organized into sections. On the left, under 'Your government', there is a list of links: Vancouver City Council, Vancouver Park Board, Citizen involvement, Jobs and careers, Get government information (highlighted), Open data, VanMap, Budgets and finances, Investor relations, Freedom of information requests and released information, and Bylaws. Under 'Bylaws', there is a list of links: Vancouver's most referenced bylaws, Animal Control Bylaw, Fire Bylaw, Graffiti Bylaw, Health Bylaw, Heritage Bylaws, Licence Bylaw, Noise Control Bylaw, Official development plan by-laws, Park Board, Smoking Regulation Bylaw, Park Board Ticketing Bylaw, Parking Bylaw, and Parks Control Bylaw.

The main content area is titled 'Vancouver Building By-law' and includes a 'Print' button. The text states: 'The City of Vancouver is enabled under the Vancouver Charter to adopt by-laws to regulate the design and construction of buildings. The Vancouver Building By-law regulates the design and construction of buildings, as well as the administrative provisions related to permitting, inspections, and the enforcement of these requirements.' Below this text is a section titled 'Get the building by-law' which states: 'The complete building by-law is available in print or electronically through the Queen's Printer website.' A red arrow points to this section.

On the right side of the page, there is a 'Get updates' form. The form has fields for 'Email: *' and 'Name:'. Below the fields is a 'Subscribe' button and a link to 'View privacy policy'. A red box highlights this form. Below the form is a section titled 'Ask questions about the building by-law' with a link to 'infoVBBL@vancouver.ca'.

At the bottom of the page, there is a 'What's new' section. It lists '2019 Vancouver Building By-law 12511' and states: 'Vancouver's City Council recently enacted the 2019 Vancouver Building By-law which will take effect on November 1, 2019. Aspects of the 2019 VBBL can be incorporated in projects subject to the 2014 VBBL by following the details provided within the Vancouver Building By-law section below. New communication system for updates We're now incorporating an email newsletter to receive important information specific to the building by-law, in a timely manner. Sign up for updates in the above subscription box.'

Discussion & Support





Process Updates and Reminders

Kelly Anderson, P.Eng., CP

CP Submission Forms

- <http://vancouver.ca/home-property-development/certified-professional-program.aspx>
- New (VBBL 2019) Letters of Assurance and Owner's Undertaking forms are now available on the CP website
- All forms and checklists will be reviewed and updated over the next couple of months – always check the website for the latest versions
- Remember to refer back to past Newsletters for reminders, updates, and FAQs

The screenshot shows the City of Vancouver website's 'Home, property, and development' section. The 'Certified Professional Program' page is displayed, featuring a sidebar with various permit categories and a main content area with links to forms and resources. Two red arrows highlight the '2019 Vancouver Building By-law forms' link in the 'Forms, resources, and newsletters' section and the 'Newsletters' link in the 'Resources' section.

City of Vancouver

Home, property, and development

Find city information, services and more...

Home > Home, property, and development > Building and renovating > Apply for and manage permit > Building permit > Certified Professional Program

Home, property, and development

- Waste disposal
- Trees
- Utility and landfill bills
- Building and renovating
 - Build or renovate a house
 - Renovate a small business space
 - Apply for and manage permit
 - When you need a permit
 - Alternative solutions
 - Artisan walls and awnings
 - Building permit
 - Certified Professional Program
 - Field review
 - Demolition permit
 - Development permit
 - Electrical permit
 - Fire hydrant use permit
 - Fire sprinkler permit
 - Issue by-law exception permit
 - Occupancy permit
 - Operating permit
 - Plumbing and gas permits
 - Solar photovoltaic panels
 - Tree removal permit
 - Underground storage tank removal or abandonment permit
 - Wastewater
 - Ignition gas and contaminated sites
 - Water and sewer connection permit
- Perms, checklists, and bulletins
- Inspections
 - Get copies of plans, permits, and records
 - Concerns about construction work
- Urban planning, zoning, and development
 - Animals, trees, gardens, and lawns
- Property use, noise, and graffiti
- Water, sewer, and energy
- Public safety

Certified Professional Program

The City of Vancouver has an alternate permit process known as the Certified Professional (CP) Program.

The program facilitates the issuance of building permits for new or existing buildings by taking on a review and inspection role on behalf of the City.

Under the Certification of Professionals Bylaw, the City can issue a building permit on the certification of a recognized registered professional architect or engineer.

- Certification of Professionals B-law amendment 12613 (884 KB)
- Certification of Professionals B-law (120 KB)

How certified professionals expedite the permit process

Under the CP permit process, permit issuance can be staged, allowing construction to start earlier than otherwise - an advantage to building owners wanting to expedite their projects.

All required City approvals, such as the development permit, must be in place prior to issuance of a particular stage.

Certified professionals don't replace registered professionals normally involved in a construction project. CPs provide an additional level of Building Bylaw review traditionally carried out by City staff.

Forms, resources, and newsletters

2019 Vancouver Building By-law forms

Letters of Assurance

- Schedule A (504 KB)
- Schedule B (628 KB)
- Schedule C-A (484 KB)
- Schedule C-B (482 KB)
- Schedule C-D (488 KB)
- Schedule D (468 KB)
- Schedule E-1 (87 KB)
- Schedule E-2 (86 KB)

2014 Vancouver Building By-law forms

2007 Vancouver Building By-law forms

Resources

Newsletters

CITY OF VANCOUVER

Revisions vs Final Design Drawings

- **All** changes to designs, before or after permit issuance, must be brought to the attention of the CP
- The CP is responsible for consulting with the City on whether or not a change should be documented with a drawing resubmission or formal permit revision
- All revisions and resubmissions must be recirculated to the applicable City review groups (e.g. Engineering must review changes to soil anchors below streets/lanes)
- Revisions to trades permits cannot be captured via Final Design Drawings



Revisions vs Final Design Drawings

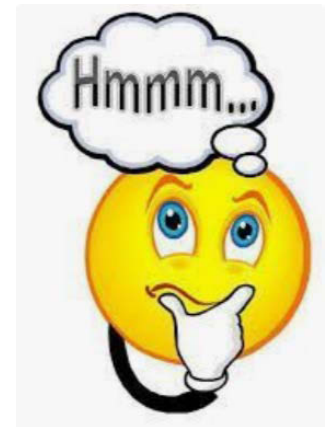
- Significant changes with implications under the VBBL or other City by-laws or processes must be submitted for revision prior to implementation and may not be deferred to Final Design Drawings
- Anything that needs coordination with other City teams (e.g. Engineering, Development Review, Addressing) or that impacts your Code Compliance Drawings and Report
- Examples include....
 - Changes to suite number, configuration, occupancy/use, or occupant load
 - Changes to shoring or soil anchor design
 - Changes to construction (e.g. combustibility, fire rated assemblies)
 - Changes that affect egress/exiting or firefighter access (e.g. corridor configuration, landscaping)



Revisions vs Final Design Drawings

- Minor items with no By-law or coordination implications can be captured in the Final Design Drawings
- Examples include....
 - Minor relocations of doors, walls, etc. that don't affect minimum/maximum suite sizes, egress/exit widths, travel distance, etc.
 - Minor changes to finishes, assemblies, layouts that don't affect fire resistance ratings, flammability, STC ratings, etc.
 - Minor changes to structural framing, electrical systems, etc.

**When in doubt contact your
Project Coordinator
and/or District Building Inspector**

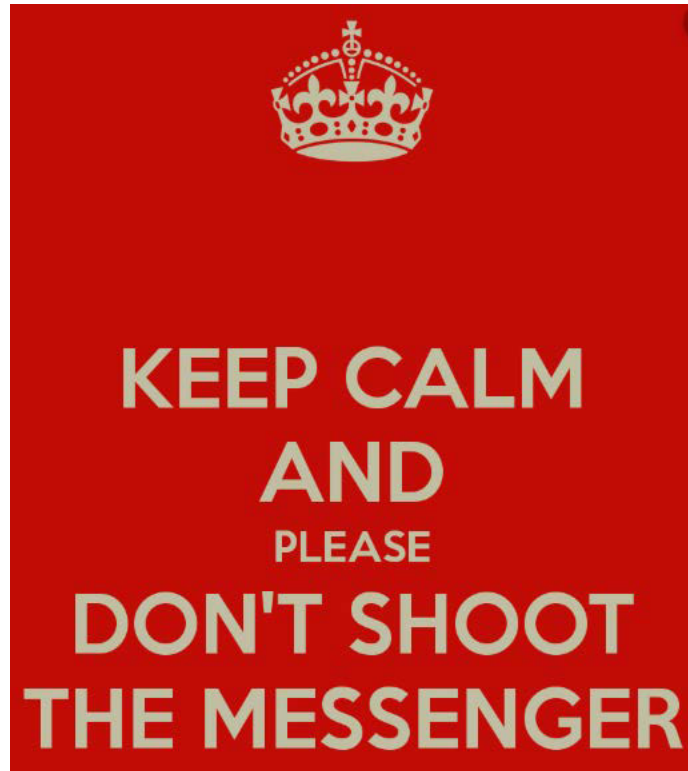


Coming Soon.....

- Committees have been struck to review the **Guide to the Letters of Assurance** (last updated 2010) and the **CP Practice and Procedure Manual** for both BC (last updated 2018) and Vancouver (last updated 2015)
- If you have suggestions for changes contact committee chair Barry Thorson directly at barry@tccp.ca or via CP.process@vancouver.ca – we will forward your message on
- Stay tuned!



Translink Development Cost Charge



Translink Development Cost Charge

- Translink has implemented a new Development Cost Charge Bylaw and tasked municipalities with collecting it
- Effective January 15, 2019 *but* rates are set at \$0 until January 15, 2020
- **All building permits not yet *issued* by January 15, 2020 will be subject to the new rates**
- Translink wants more specific area break-downs than Metro Vancouver so the combined form is more detailed than the previous version
- DCC clerks will use the area calculations to determine the fees payable to the two agencies
- The process for CP projects hasn't changed – fill out the new form and submit with CP stamp to DCLCoordinator@vancouver.ca

Translink Development Cost Charge



Development Cost Charge Calculations

Address: _____

Prepared by: _____

BP Application: _____

Date: _____

Additional dwelling units and/or additional floor area (definitions below taken from the GVS&DD & TransLink By-laws and may differ from VBBL)

of **townhouse** or **duplex** units (units which will have a principal entrance which provides direct outdoor access at or from ground level - may include courtyards)

of **apartment** units

of **single family** units (in buildings with less than 4 units)

sf of **Retail/Service** (sale or rental of goods or services, personal services, or the servicing and repair of goods, including entertainment & recreational facilities, commercial schools, service stations, tourist accommodations, adult/child day care centres, sleeping units, community care & congregate housing & care, commercial uses)

sf of **Office Use** (excludes ancillary use to industrial, institutional or retail/service use)

sf of **Industrial Use** (for the manufacture, processing, fabrication, assembly, storage, transportation, distribution, wholesale, testing, service, repair, wrecking, recycling or salvaging of goods, materials or things for direct use or resale to business customers, and not for general public but does not include Office Use, except ancillary to Industrial Use)

sf of **Institutional Use** (schools, colleges, universities, hospitable, community centre, courts, police stations & jail, libraries & museum, building/structure associated with public parks, public playgrounds, cemeteries & works yards)

Total non-residential floor area (Retail/Service + Office + Industrial + Institutional)

sf **shared service** area for mixed residential & non-residential buildings only (mechanical, electrical, elevator, sprinkler rooms, etc.) shared service area is charged as floor area X percentage X non-residential DCC rate

percent on non-residential area of mixed use building (to prorate service area)

Translink Development Cost Charge

➤ Use definitions do not match VBBL major occupancy classifications



- “Retail/Service” means “sale or rental of goods or services, **personal services**, or the **servicing and repair of goods**, including **entertainment & recreational facilities**, commercial schools, **service stations**, tourist accommodations, adult/child day care centres, **sleeping units**, **community care & congregate housing & care**, commercial uses”
- “Institutional Use” means “**schools, colleges, universities**, hospital, **community centre, courts**, police stations & jail, **libraries & museum**, building/structure associated with public parks, public playgrounds, **cemeteries & works yards**”
- No category for Assembly Use

Translink Development Cost Charge

- No mechanism for deferring Translink DCC (unlike Metro Vancouver)
- Remember:
 - All building permits not yet *issued* by January 15, 2020 will be subject to the new rates**
- The new form will be available on the CP website shortly – please check back to be sure you're using the most current version
- For more information visit www.translink.ca/About-Us/Governance-and-Board/Bylaws.aspx

Discussion & Support





Building Inspections

Saul Schwebs, Intern Architect AIBC, LEED AP

Monthly Progress Reports

Certified Professionals will prepare and submit **monthly** summary reports of project construction progress

- Monthly summary reports are to be submitted **each month**
- Monthly summary reports are expected from permit issuance and continuing until the permit is completed

Suspended Projects and Abandoned Sites

The City is aware that many projects under construction are suspending operations due to shifting market conditions and other factors.

- Certified Professionals are asked to...
- Notify the City if work on a project under construction is to be halted for an extended period of time.
- Provide the City with a list of measures being taken to ensure the site is being kept safe and secure while work is halted
- Provide an estimate of when work will recommence.

Suspended Projects and Abandoned Sites

- If work on a project under construction is to be halted for a period of time of longer than 6 months, CPs are asked to apply for an extension of the permit and pay the requisite extension fee as per Article 1.6.7.2. of Division C.
- All requests for permit extensions must be made in writing to the Chief Building Official with copies sent to the applicable Building Code Specialist and the District Building Inspector. The request should detail the reason for the extension request and a detailed timeline for continuation.
- District Building Inspectors will no longer accept a verbal request to extend an open permit about to expire with no activity.

Electrical Annual Permit (Operating Permit)

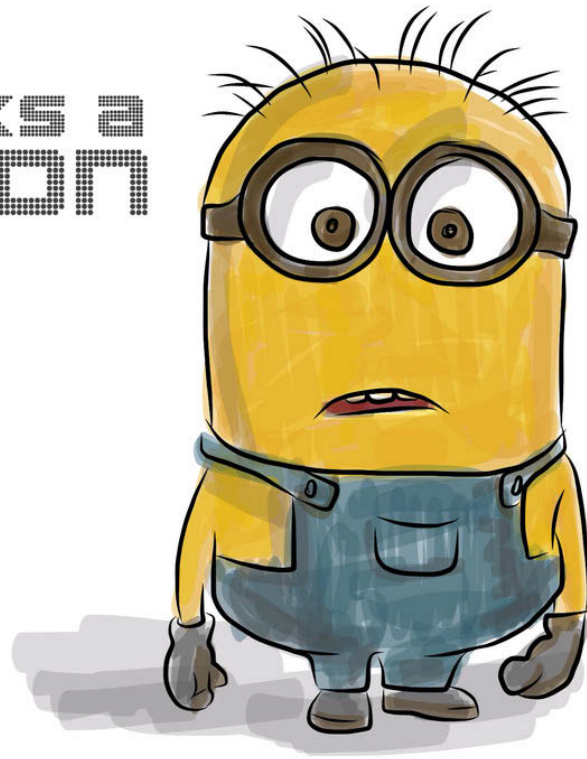
Section 5.14 of the VEBL mandates that an annual permit shall be required for the following:

- maintenance of existing operating electrical equipment;
- a service supply or power supply to a building or premises, where either or both supply ratings in combination exceed 500 kVA;
- any service supply or power supply to the electrical equipment that is greater than 750 volts; or
- any existing electrical equipment maintained for emergency service.

District Electrical Inspectors will not be permitting occupancy until an Electrical Annual Permit has been applied for

Discussion & Support

THANKS a
MINION





Process Updates and Reminders

Matthew Lam, P.Eng., CP

Refund of Permit Fees

- Expanded language in 2019 VBBL under Division C, Article 1.6.4.5. provides more details for the review and processing for the refund of a portion of the building permit fees.
- Refund is based on the reduced City's administrative cost associated with processing the application/permit.
- An application to request the refund shall be submitted **within 90 days** following the issuance of the **FINAL** occupancy permit.
- Includes a one-time processing of completed permits with final occupancy **from November 1, 2019.**
- **Get your refund request in!**

NOTE: see also August 2019 CP Newsletter

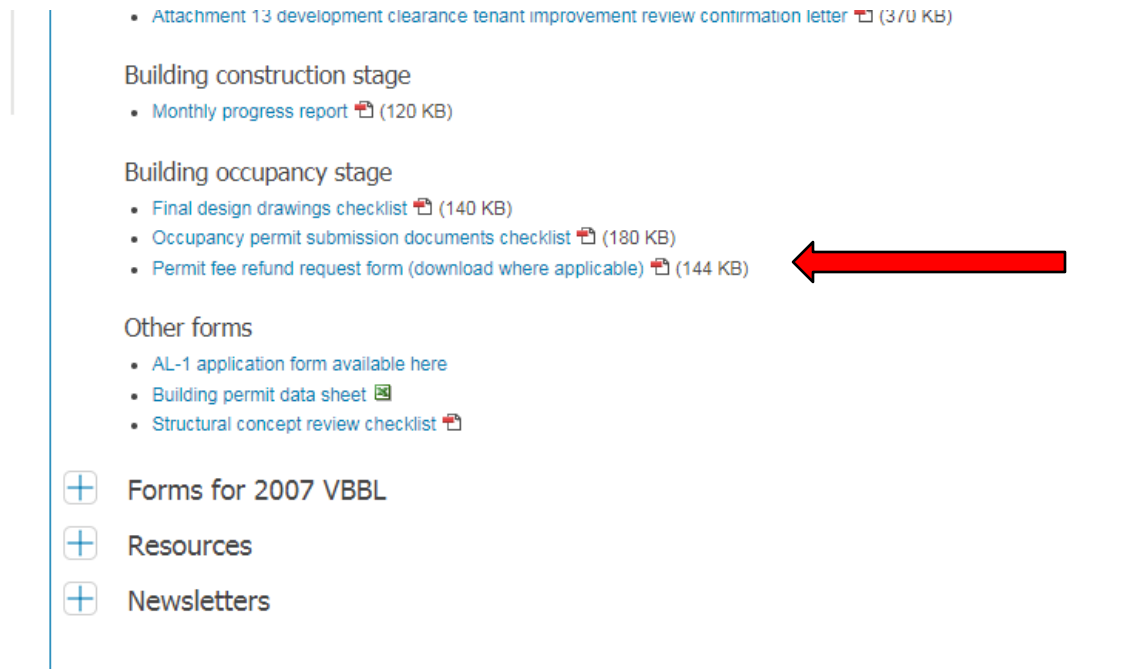


Refund of Permit Fees

- What are the criteria for a FINAL occupancy permit?
 - No subsequent OC are necessary under the building permit(s)
 - All spaces within the building are resolved as either tenant or shell spaces
 - Shell spaces shall still meet the intent of the applicable development permit(s) and/or minor amendment(s)



- At the conclusion of a project, use the Permit Fee Refund Request Form
- Fillable PDF, available under Building Occupancy Stage
(<https://vancouver.ca/home-property-development/certified-professional-program.aspx>)



• [Attachment 13 development clearance tenant improvement review confirmation letter](#) (3/0 KB)

Building construction stage

- [Monthly progress report](#) (120 KB)

Building occupancy stage

- [Final design drawings checklist](#) (140 KB)
- [Occupancy permit submission documents checklist](#) (180 KB)
- [Permit fee refund request form \(download where applicable\)](#) (144 KB)

Other forms

- [AL-1 application form available here](#)
- [Building permit data sheet](#)
- [Structural concept review checklist](#)

+ Forms for 2007 VBBL

+ Resources

+ Newsletters

Refunds

- Add company letterhead, CP stamp
- Send to occupancy@vancouver.ca
- From the CP Manual: “There will be no refund for alterations to existing buildings due to the increased complexity and staff time required.”

However, fully upgraded existing buildings and first CP Tis are eligible, as mentioned in August 2016 CP Newsletter.

City of Vancouver
515 West 10th Avenue
Vancouver, BC

Attention: Occupancy Clerk - CP REFUNDS
email: occupancy@vancouver.ca

Reference information: **CP REFUND REQUEST**

Project Address:

Permit Number(s):

Final Full Occupancy Permit Number:

The above CP project has received its final occupancy permit. As such, please process any CP refund remaining from the permit fees to:

Thank you,

New Owner's/Tenant's Undertaking Letter

Schedule E2

➤ Single package to eliminate confusion with 2 schedules (ie: E2 & E3)

➤ 3 page package now under E2:

➤ Owner's Section

➤ Tenant's Section

BUILDING BY LAW 2019 CITY OF VANCOUVER	
<div><div>SCHEDULE E-2 <small>Forming Part of Subsection 1.4.1, Division C of the Building By-law</small></div><div>Building Permit No. <small>(for Building Official's use)</small></div></div>	
OWNER'S AND TENANT'S UNDERTAKING [to be used when a tenant is carrying out the project]	
<p>Notes:</p> <ul style="list-style-type: none">i) This letter must be submitted with the application for a <i>building permit</i>.ii) In this letter the words in italics have the same meaning as in the Building By-law.	
<p>To: The <i>Chief Building Official</i></p> <p>Re: <small>Name of Project (Print)</small></p> <p> <small>Address of Property (Print)</small></p>	
<p>In consideration of the <i>City</i> accepting and processing an application for a <i>building permit</i> for the <i>project</i> identified above, and as required by the Building By-law, the following representations, warranties and indemnities are given to the <i>City</i> by the <i>owner</i> and by the <i>tenant</i>.</p> <p>1. [If an individual is the owner]</p> <p><input type="checkbox"/> I am the <i>owner</i> of the above property.</p> <p>or</p> <p>[If a corporation is the owner]</p> <p><input type="checkbox"/> is the <i>owner</i> of the above property.</p> <p style="text-align: center;"><small>(Name of Corporation)</small></p> <p>[If an individual is the tenant]</p> <p><input type="checkbox"/> I am the <i>tenant</i> of the above property.</p> <p>or</p> <p>[If a corporation is the tenant]</p> <p><input type="checkbox"/> is the <i>tenant</i> of the above property.</p>	

New Owner's/Tenant's Undertaking Letter

Schedule E2

Page 1 of 3:

Owner's Section

Tenant's Section

BUILDING BY LAW 2019 CITY OF VANCOUVER

SCHEDULE E-2 Building Permit No. _____
Forming Part of Subsection 1.4.1, Division C of the Building By-law (for Building Official's use)

OWNER'S AND TENANT'S UNDERTAKING
[to be used when a tenant is carrying out the project]

Notes:

- i) This letter must be submitted with the application for a building permit.
- ii) In this letter the words in italics have the same meaning as in the Building By-law.

To: *The Chief Building Official*

Re: _____
Name of Project (Print)

Address of Property (Print)

In consideration of the City accepting and processing an application for a building permit for the project identified above, and as required by the Building By-law, the following representations, warranties and indemnities are given to the City by the owner and by the tenant.

[If an individual is the owner]
☐ I am the owner of the above property.
or
[If a corporation is the owner]
☐ _____ is the owner of the above property.
(Name of Corporation)

[If an individual is the tenant]
☐ I am the tenant of the above property.
or
[If a corporation is the tenant]
☐ _____ is the tenant of the above property.
(Name of Corporation)

2. The owner and the tenant will comply with and cause those employed for this project to comply with all applicable By-laws of the City and other statutes and regulations in force in the City relating to the development, work, undertaking or ~~permission in respect of which this letter is submitted.~~

3. The owner and the tenant fully understands the requirements herein, and acknowledges responsibility for carrying out the work, or gives assurance that the work will be carried out, in accordance with all by-laws governing the construction of the building. The owner understands and acknowledges that the issuance of any permit, including an occupancy permit, or the inspection or approval or passage of work by the City, is not a representation or warranty that any By-law has been complied with and the owner remains responsible at all times for compliance. The owner has read and understands Article 1.3.2.1. and Article 1.4.1.5. of Division C Book I and Book II of the Building By-law, which are set out below.

1 of 3

New Owner's/Tenant's Undertaking Letter

Schedule E2

Page 2 of 3:

Owner's Section

➤ 2019 Schedules:

<https://vancouver.ca/home-property-development/certified-professional-program.aspx>

BUILDING BY LAW 2019 CITY OF VANCOUVER

Schedule E-2 Continued Building Permit No. _____
(for Building Official's use)

Project address _____

4. The owner and the tenant hereby agree to indemnify and save harmless the City and its employees from all claims, liability, judgments, costs and expenses of every kind including negligence which may result from the failure to comply fully with all By-laws, statutes and regulations relating to any work or undertaking in respect of which this letter is submitted.

5. Where the words "work" or "undertaking" are used herein, the owner and the tenant understand this to include all trade work, including but not limited to: electrical, plumbing, mechanical, gas and other works necessary to complete the contemplated construction.

6. The owner and the tenant are authorized to give these representations, warranties, assurances and indemnities to the City.

Owner's signature

[Where the owner is an individual]

Signed, sealed and delivered in the presence of:

Owner's Signature _____ Witness Signature _____
Owner's Name (Print) _____ Witness's Name (Print) _____
Date _____ Date _____
Phone No. and Email address _____ Witness's address _____

[Where the owner is a corporation]

Signed, sealed and delivered in the presence of:

Name of Corporation _____ Witness Signature _____
Per: Authorized Signatory _____ Witness's Name (Print) _____
Name (Print) _____ Witness's address _____
Date _____ Date _____
Phone No. and Email address _____

2 of 3

New Owner's/Tenant's Undertaking Letter

Schedule E2

Page 3 of 3:

Tenant's Section

BUILDING BY LAW 2019 CITY OF VANCOUVER	
Schedule E-2 <i>Continued</i>	
Project address	Building Permit No. _____ (for Building Official's use)
Tenant's Signature	
[Where the owner is an individual]	
Owner's Signature	Signed, sealed and delivered in the presence of:
Owner's Name (Print)	Witness Signature
Date	Witness's Name (Print)
Phone No. and Email address	Date
	Witness's address
[Where the owner is a corporation]	
Name of Corporation	Signed, sealed and delivered in the presence of:
Per: Authorized Signatory	Witness Signature
Name (Print)	Witness's Name (Print)
Date	Witness's address
	Date
Referenced Articles <i>below</i>	
Building By-law, Division C, Article 1.3.2.1 Intent	
1) This By-Law sets standards in the general public interest. It is enacted and retained on the understanding and specifically expressed condition that it creates no duty whatsoever on the City, the Chief Building Official or any employee of the City to enforce its provisions, and on the further condition that a failure to administer or enforce its provisions, or the incomplete or inadequate administration or enforcement of its provisions, shall not give rise to a cause of action in favour of any person whatsoever. The issuance of any permit, including an occupancy permit, is not a representation, warranty or statement that this By-Law or any other enactment has been complied with, and the issuance thereof in error shall not give rise to a cause of action. Accordingly, words in this By-law defining the responsibilities and authority of the Chief Building Official shall be construed as internal administrative directions which do not create a duty.	
Building By-law, Division C, Article 1.4.1.5. Compliance with By-law and other enactments	
1) The owner shall comply with this By-law and all other applicable enactments.	
2) The owner shall ensure that all work, construction, or occupancy is carried out in accordance with this By-law and all other applicable enactments.	
3) The owner shall ensure that the occupancy of a building or part of a building complies with the occupancy permit.	
4) The issuance of a permit, the acceptance of plans and supporting documents submitted for a permit, or the making of inspections by the Chief Building Official shall not relieve the owner of a building from the full responsibility for carrying out the work or having the work carried out in accordance with this By-law and all other applicable enactments.	
5) The owner shall ensure that all underground storage tanks on the subject property that are intended for the storage of heating oil but have not been used for over 2 years are removed and any associated contamination is remediated to the applicable standards as prescribed in the Contaminated Sites Regulation. All work must be completed in accordance with the requirements of the Vancouver Fire By-law.	



Energy & Emissions in the VBBL

Matthew Lam, P.Eng., CP

Why are Energy & Emissions a Civic Priority?

Why is Energy in the VBBL?

Why are Energy & Emissions a Civic Priority?

Why is Energy in the VBBL?

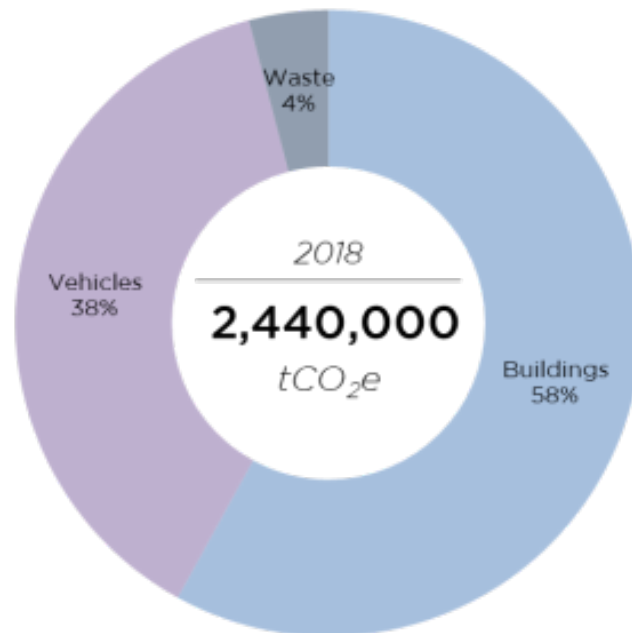
Isn't code supposed to only be
about Life Safety?

Why are Energy & Emissions a Civic Priority?

- Almost all energy use results in Greenhouse Gas emissions which negatively affect the environment and the well-being of Vancouver's citizens

Why are Energy & Emissions a Civic Priority?

- Almost all energy use results in Greenhouse Gas emissions which negatively affect the environment and the well-being of Vancouver's citizens
- **58% of all of CoV's GHG emissions come from buildings**



Why are Energy & Emissions a Civic Priority?

- Almost all energy use results in Greenhouse Gas emissions which negatively affect the environment and the well-being of Vancouver's citizens
- Greenhouse Gas emissions affect people's health, both
 - directly through the increase of smog in the ambient air from 300ppm to approx 415ppm at present, and

Why are Energy & Emissions a Civic Priority?

- Almost all energy use results in Greenhouse Gas emissions which negatively affect the environment and the well-being of Vancouver's citizens
- Greenhouse Gas emissions affect people's health, both
 - directly through the increase of smog in the ambient air from 300ppm to approx 415ppm at present, and
 - indirectly by capturing and storing the heat from the sun that would otherwise reflect off the upper atmosphere or dissipate into space, resulting in a...

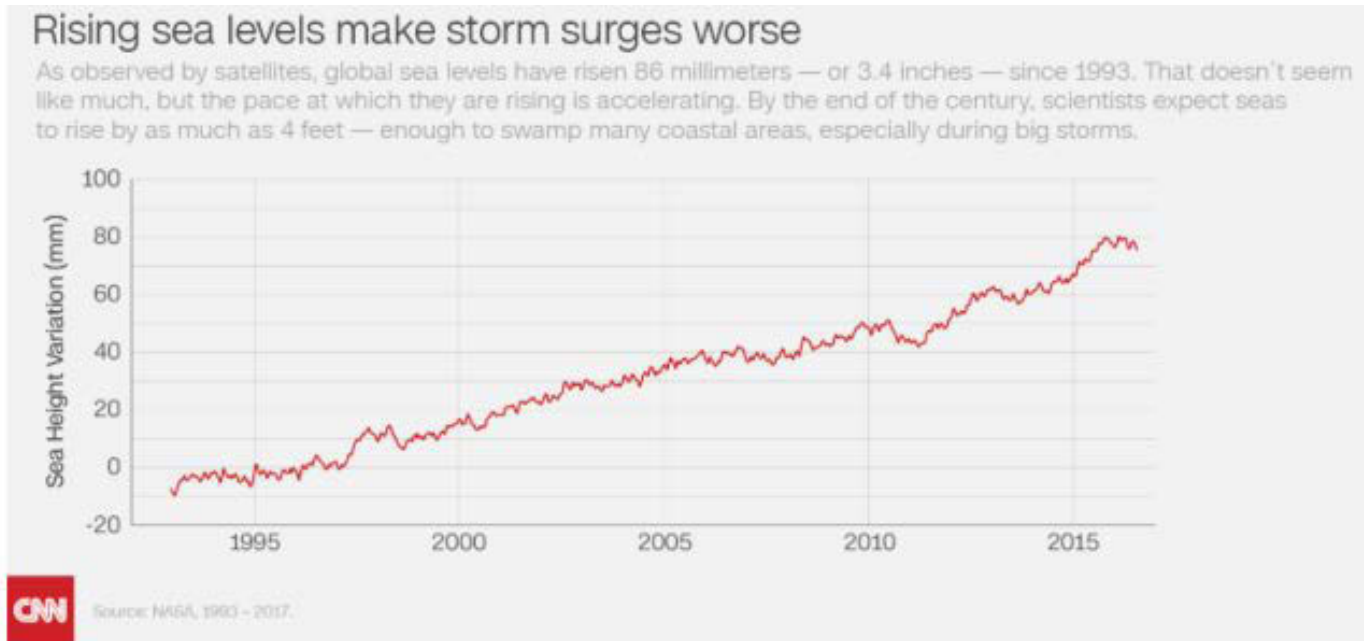
warmer world...

Why are Energy & Emissions a Civic Priority?

- a warmer world means... warmer oceans and air resulting in...

Why are Energy & Emissions a Civic Priority?

- a warmer world means... warmer oceans and air resulting in...
 - expansion of water (oceans) => **4' sea level rise by 2100**



Why are Energy & Emissions a Civic Priority?

- a warmer world means... warmer oceans and air resulting in...
 - increased evaporation => increased precipitation
=> flooding, structural damage, landslides...



Why are Energy & Emissions a Civic Priority?

- a warmer world means... warmer oceans and air resulting in...
 - bigger storms



Council Cares

- In 2006, Council targeted Vancouver to become the greenest city in the world by 2020.
- Every Council since, regardless of party, has supported this target because of the strong public mandate.
- In 2011, Council approved the **2020 Greenest City Action Plan** with its 10 goals and 15 targets – recognizing the importance of buildings.

Council Cares

- In 2012, Vancouver began enforcing the energy requirements within the VBBL for new buildings,
- In 2014, the City Manager directed staff to expand energy enforcement to building renovations and include it in the 2014 VBBL.

Council Cares

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- In 2014, the City Manager directed staff to expand energy enforcement to building renovations and include it in the 2014 VBBL.
- On January 15, 2019, Vancouver City Council unanimously voted to join other cities in declaring a Climate Emergency, while asking staff for recommendations on how to do more to combat climate change.

Council Cares

Council Cares & So Do Vancouverites



Council Cares & So Do Vancouverites

With buildings being responsible for 58% of Vancouver's GHGs, the VBBL and Rezoning Conditions are our best tools to mitigate this threat, and compliance enforcement of energy and emissions is the best way to apply these tools.

Energy & GHG Emissions – Where to Start

What's on this page

- [Vancouver Building Bylaw](#)
- [Project types and requirements](#)
- [Planning policies and rezoning](#)
- [VBBL Part 10: Requirements and classifications](#)
- [VBBL Part 10: Energy standards and conditions](#)
- [VBBL Part 11 \(Existing Buildings\)](#)
- [Tools and reference materials](#)

All building energy requirements and associated documents are laid out on the City's "Energy Webpage" and supported by the Energy Policy Specialist and Sustainability staff.

Get updates

Email: *

Name:

* Indicates required fields

Subscribe

The Energy Webpage now has a subscription box where subscribers receive only the most important energy updates, directly via email, usually weeks ahead of traditional notification.

Energy & GHG Emissions – Applicability



Energy and GHG emissions documentation supports compliance with energy requirements within the VBBL, and Rezoning Conditions, specifically;

- NC (Part 10)
 - 10.2.2.2. (ASHRAE 90.1-2016)
 - 10.2.2.3. (NECB 2015)
 - 10.2.2.5. (ZEBP – Step Code Level 2 “equiv”)
- Upgrade Mechanism (Section 11.2)
- Renovations (**new** Section 11.7)
 - Based on Part 10
- Rezoning Conditions (GBPR)

All energy and emissions submissions consist of documents that are digital (excel or fillable PDF), and comprise of...

- First TI (for space never previously occupied)
- Alteration to Existing Buildings (prev occupied)

- Modelling (Performance path)



CITY OF
VANCOUVER

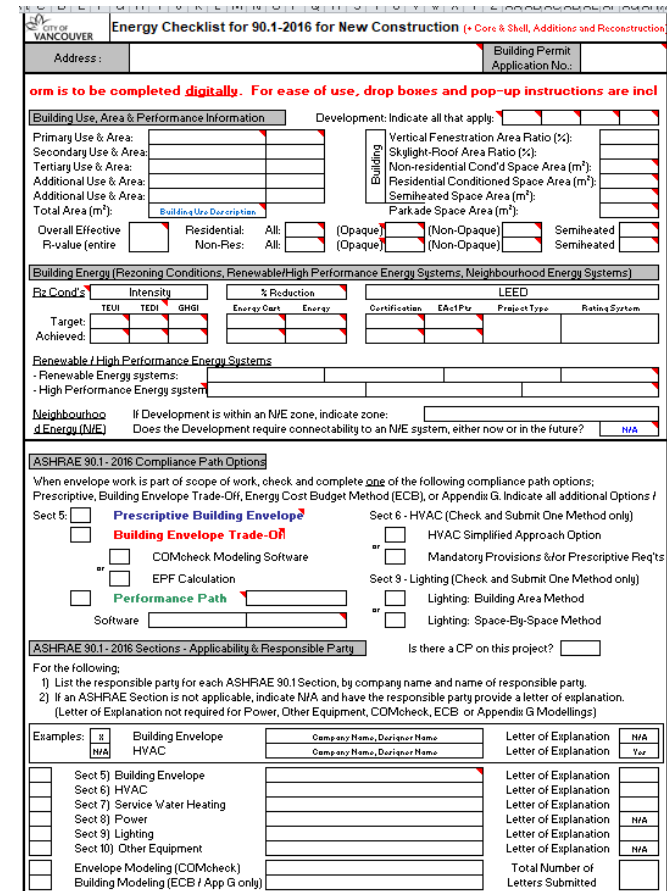
Energy & GHG Emissions - Documents

All energy and emissions submissions need to achieve the “CCC” status...

- **Complete:**
 - No blanks. If “N/A” then indicate “N/A”
- **Consistent:**
 - If choosing Prescriptive path then don't submit docs for Trade-off or Performance path.
- **Correct:**
 - If requirement is to be $A > B$, then don't submit $A < B$.

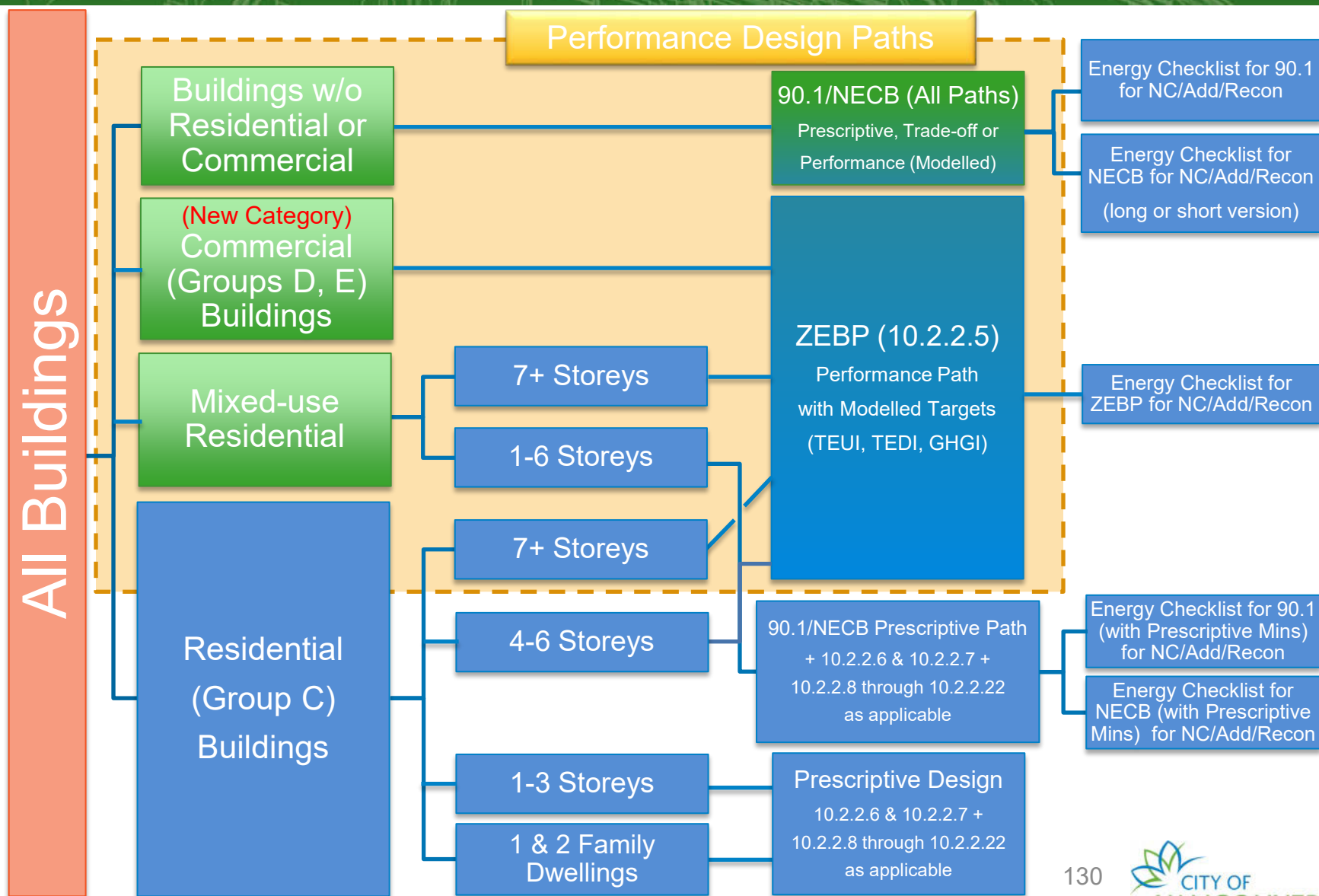
No “CCC” = No Permit

- Revise and Resubmit (please)



The image shows a screenshot of the "Energy Checklist for 90.1-2016 for New Construction" form, which is a document used for energy and GHG emissions submissions. The form is titled "Energy Checklist for 90.1-2016 for New Construction (+ Core & Shell, Additions and Reconstruction)" and includes a section for "Building Use, Area & Performance Information". It contains various fields for inputting data, including "Primary Use & Area", "Secondary Use & Area", "Tertiary Use & Area", "Additional Use & Area", "Total Area (m²)", "Overall Effective R-value (entire)", "Residential: All", "Non-Res: All", "Vertical Fenestration Area Ratio (%)", "Skiight-Roof Area Ratio (%)", "Non-residential Cond'd Space Area (m²)", "Residential Conditioned Space Area (m²)", "Semiheated Space Area (m²)", "Parkade Space Area (m²)", "Building Energy (Reasoning Conditions, Renewable/High Performance Energy Systems, Neighbourhood Energy Systems)", "ASHRAE 90.1-2016 Compliance Path Options", and "ASHRAE 90.1-2016 Sections - Applicability & Responsible Party". The form also includes a section for "Examples" and a table for "Letter of Explanation" submissions.

Energy & GHG Emissions – Part10 Bldg Class/Reqs/Docs



(NEW) Heating within Exterior Spaces (10.2.2.22)

- New Article addressing the heating of exterior spaces
 - **Optional allowance**, but with restrictions to eliminate emissions and prevent unnecessary operation;
 - Food and Beverage establishments only
 - Design Criteria
 - 18W/ft² (no fossil fuel system)
 - In-slab/In-seat/Radiant electric or non-fossil fuel
 - Highly controlled: Zone/Unit based system
 - Shutoffs: Ambient and space sensors (18C?)
 - Ceiling fans



Energy and GHG Emissions – CoV Assistance

- Contact for building energy policy, requirements, tools and processes
 - (excluding 1 & 2 FD, and low-rise residential)

Greg McCall – Building Policy Engineer
(Energy Policy Specialist)

Tel: 604-873-7531

Email: Gregory.McCall@vancouver.ca

Discussion & Support





Engineering Updates

Chalys Joseph, P.Eng.

1. Groundwater Management update

2. Geotechnical Requirements update

3. Impacts to surrounding assets

Groundwater Management (GWM)

“Hydrogeological study” - A written review of the occurrence, distribution and effect of groundwater on a proposed development site.

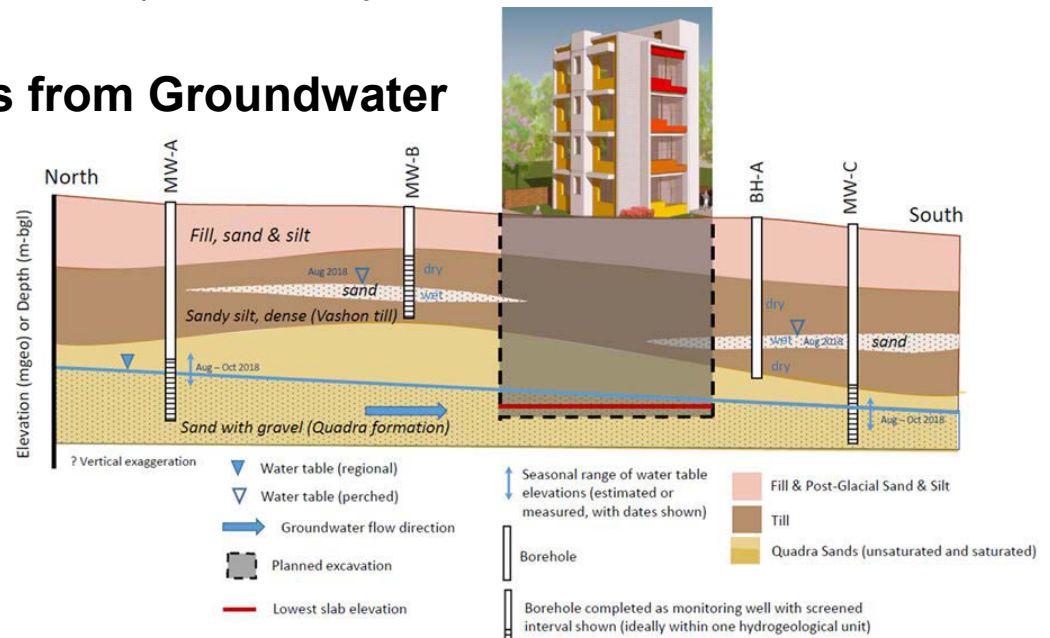
Hydrogeological Study must meet the following 2 conditions:

1. No Groundwater Discharge to Sewer

Plans for dewatering and/or drainage of the site must avoid discharge of groundwater (including perched aquifers) to the City's sewer.

2. No Significant Negative Impacts from Groundwater Extraction or Diversion

If groundwater extraction or diversion is required, it should be demonstrated that there are no significant risks or negative impacts to human health, property, infrastructure, the environment, or static water levels.



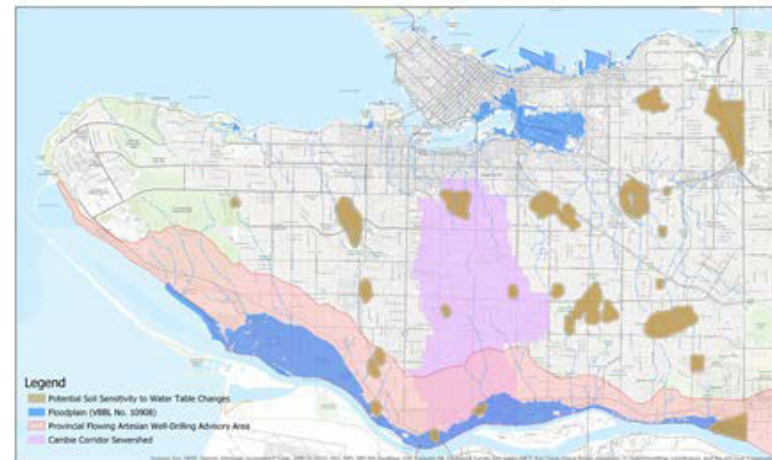
Groundwater Management (GWM)

“Hydrogeological study” - A written review of the occurrence, distribution and effect of groundwater on a proposed development site.



Triggers for a Hydrogeological Study:

1. Cambie Corridor Sewershed Area
2. Cambie Corridor Plan Area
3. Floodplain Area
4. Open-loop Geoexchange System
5. Sustainable Large Developments
6. Potential Soil Sensitivity Area
7. Provincial Well-Drilling Advisory Area



Groundwater Management (GWM)

What's Required in the Hydrogeological Study at Each Stage of Development?

At Time of Rezoning Application (Preliminary Study)	Prior to Rezoning Enactment (Revised Study)	Prior to Development Permit Issuance (Final Study)	Prior to Building Permit or Occupancy Permit
<ul style="list-style-type: none"> • Project details (e.g. excavation depth) • Initial subsurface tests (e.g. static water levels, site geology) • Description of any proposed works • Preliminary plans for short-term and long-term GW management • Preliminary impact assessment 	<ul style="list-style-type: none"> • Items in column at left • Any changes to development plan • Any new field work • Revised plans for short- & long-term GW management • Revised impact assessment • Any other info needed to address City comments 	<ul style="list-style-type: none"> • Items in two columns at left • Site map showing property boundary, buildings, wells, etc. • Diagram (cross-section) showing water level(s), geology, excavation depth, parkades, etc. • Final plans for GW management, incl. est. sewer discharge rates • Final impact assessment • Final plan for monitoring and reporting GW sewer discharges • Info to address City comments 	<ul style="list-style-type: none"> • Monitoring to assess performance of GW management plans may be required to ensure that the plans and discharge rates are meeting the requirements of the <i>Groundwater Management Bulletin</i>. • Any outstanding issues (left columns)
<p><i>Note: For applications made directly at DP stage (i.e. under current zoning) within Cambie Corridor Plan area, the Study should include all items in left 3 columns.</i></p>			

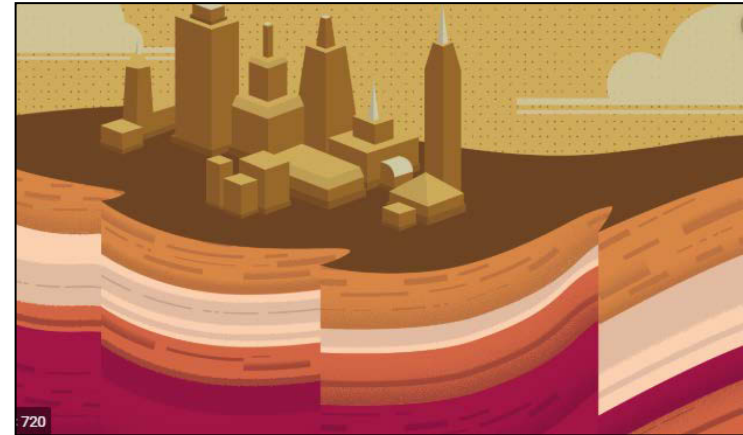
See *Groundwater Management Bulletin* for a detailed submission checklist:

www.vancouver.ca

Geotechnical Requirements

A Geotechnical Study must assess the engineering properties of soil and rock on the proposed development site and surroundings, and provide recommendations on the following:

1. Feasibility of development based on subsurface conditions
2. Shoring, Excavation, and Foundation requirements
3. Public safety and surrounding infrastructure considerations



EGBC Guidelines (Geotechnical Engineering Services for Building Projects) outline tasks to be performed by GER (Geotechnical Engineer of Record).

City's BP Application Requirements: Geotechnical report is required for new buildings, additions, poor soil conditions, slope stability, impacts to foundations, seismic upgrade, etc.

Geotechnical Requirements

To ensure surroundings are not impacted by the development construction, the City may require the following:

1. Monitoring Plan

If construction methodology has the potential to impact areas outside of the development footprint, a monitoring plan may be required. Monitoring may include:

- I. Survey points
- II. Piezometers or standpipes
- III. Inclinometers, tiltmeters, etc.

2. Design Adjustments

City Staff may request design adjustment to ensure public and asset safety.

Design changes may be requested to:

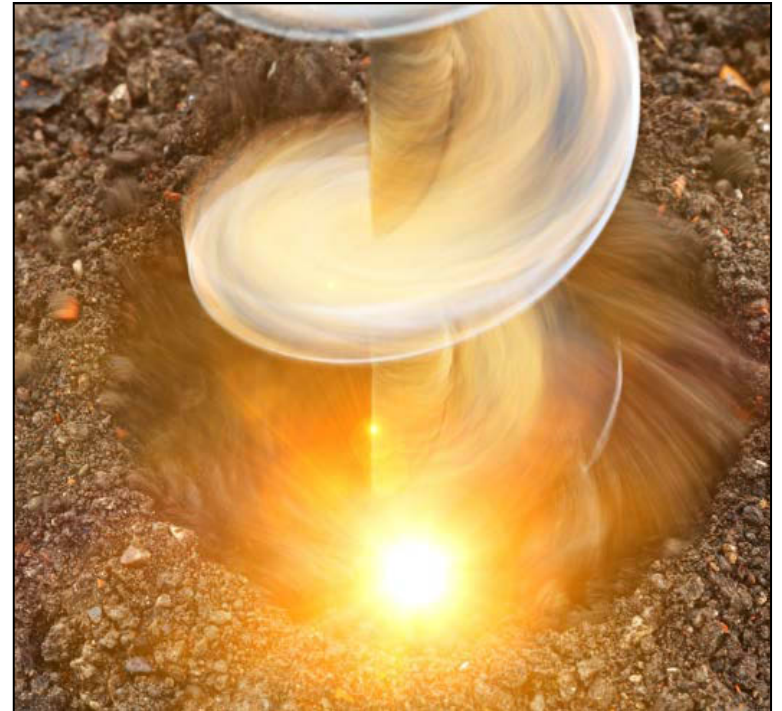
- I. Decrease groundwater extraction or diversion
- II. Avoid potential future settlement
- III. Avoid sloughing or decrease if slope stability, etc.



Geotechnical Requirements

Recommendations for information provided in Geotechnical Reports to improve review process:

1. Include section in report addressing public safety and surrounding infrastructure
 - This should include supporting data (i.e. lab testing, previous reports and as-builts, calculations/model, etc.)
2. Provide a Detailed Inspection Plan
 - This should include frequency and descriptions of key items requiring review
3. Ensure drilling goes beyond proposed foundation depth
4. Ensure borehole logs are as per ASTM guidelines (rock vs soil)
5. Propose a Monitoring Plan (including frequency, duration, and trigger levels).

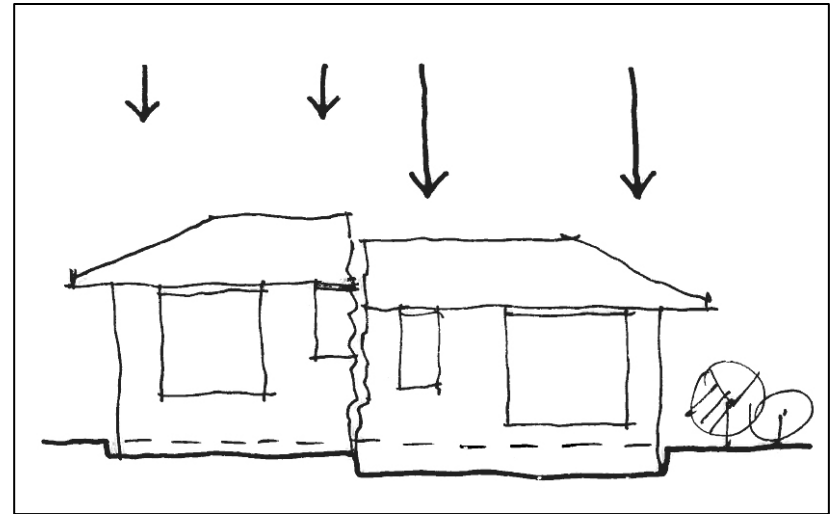


Asset Implications

What are the signs and impacts of groundwater to surrounding City infrastructure?

Signs

- Uniform or differential settlement will occur on nearby sidewalks, curbs, or streets.
 - Heaved or cracked concrete sidewalk panels
 - Cracks or separation on asphalt streets
 - Obvious dips or grooves along the curb and gutter
 - Areas around utility covers crack or



Source: <http://www.seismicresilience.org.nz>

Impacts show grade separation

1. Risk of not meeting proper tie-in grades to City assets
2. Costly underground utilities repairs caused by settlement
3. Costly public realm and streets repairs caused by settlement, as well as neighbouring property owners
4. Delays to the project

Asset Implications

What to do and who to contact when you notice signs of groundwater management or geotechnical issues

1. Contact the CoV Engineering Services, Development and Major Projects staff assigned to the project immediately:
 - Major Projects Engineer
 - Development Project Coordinator
 - Building Site Inspector
2. Contact the Geotechnical Engineering Consultant to:
 - Conduct a site investigation, and testing as required
 - Prepare a report identifying extent of impacts and recommended remediation
 - Share those report(s) with COV Engineering
3. CoV Engineering asset owners will review impacts and accept or provide further recommendations for remediation



Note – issues related to grade changes as the building ties in to Building Grades must be communicated earlier

Break Time





Fire Updates

Rick Cheung, P.Eng., CP

Radio Antenna Systems

- Enables emergency radio communication between first responders inside and outside of buildings
- Required for new buildings that
 - are 7 storeys in height or higher,
 - have basement area greater than 1200 m², or
 - have more than 1 basement level.

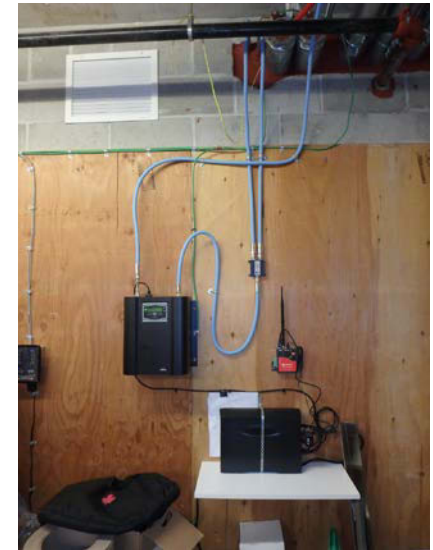
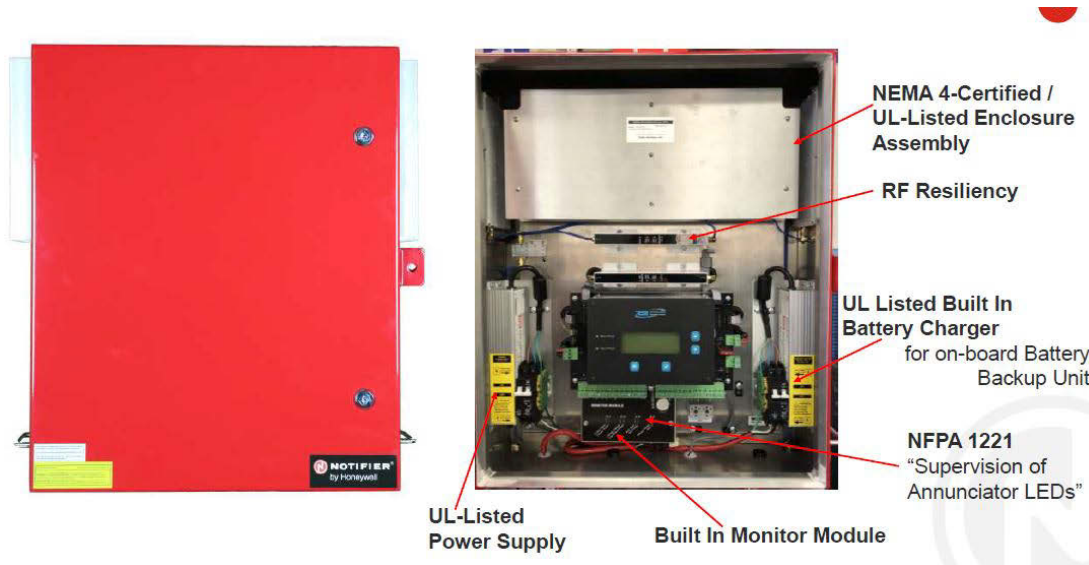


Radio Antenna System

- Completed electrical plans sealed by engineer is required for building permit
- Schedule B includes specifically
____ **ELECTRICAL**
6.1 Electrical systems and devices, including high *building* requirements where applicable

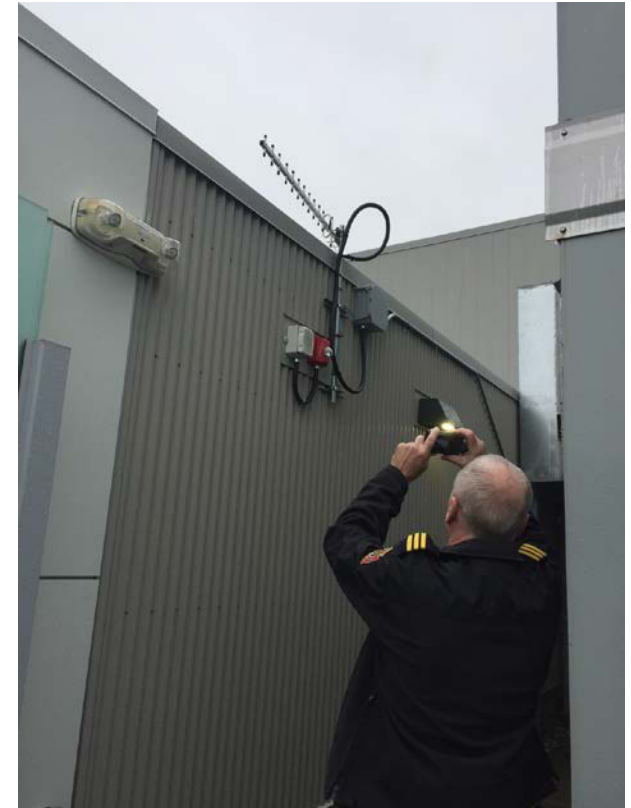
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6.11 Radio Antenna Systems



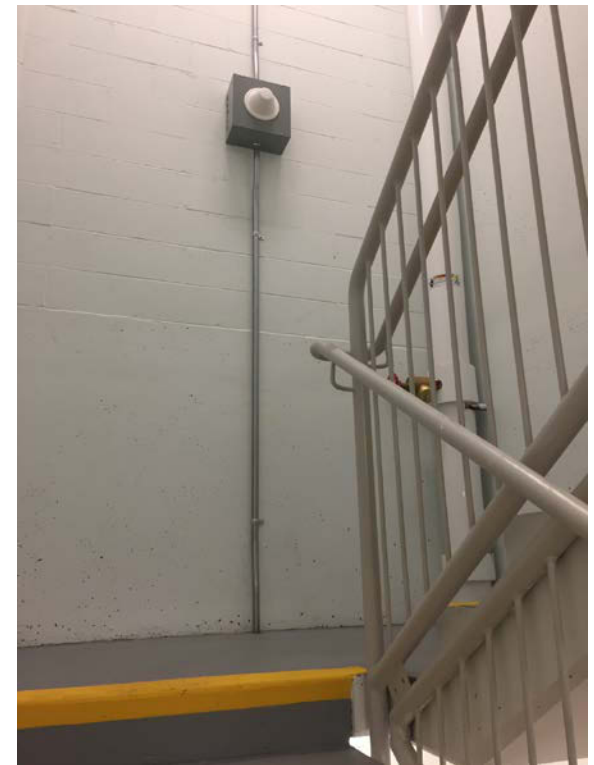
Radio Antenna System

- Required for all existing buildings under F4 upgrade category
- **F4**
 - Entire building to substantially meet the intent of health, fire and life safety requirements of the VBBL as well as provide protection to adjacent property.
 - **Entire Building** — Alarms & detectors, emergency lighting, access to exit, exits, exit signs, exit lights, flame spread ratings, firefighting access & water supply, floor assemblies & support, spatial separation, occupancy separation, standpipes & sprinklers, washrooms, high building requirements, lighting levels, sound transmission classifications, ventilation, building envelope review, **and radio antenna systems.**



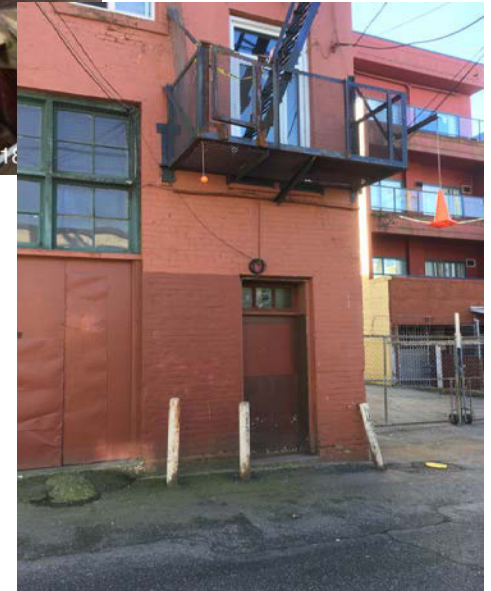
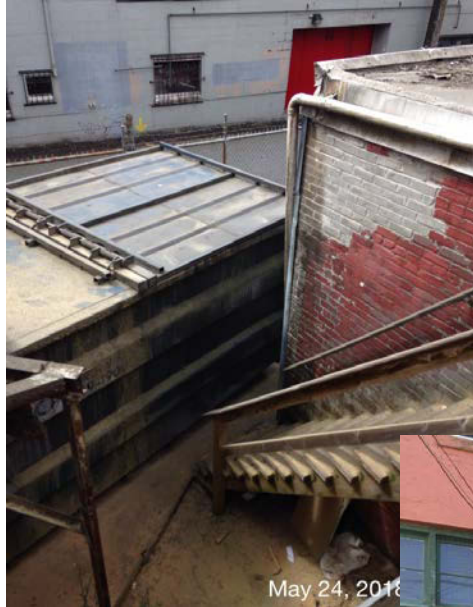
Radio Antenna System

- A radio antenna system shall provide not less than 98% coverage at in each of the following critical locations in the *building*
 - a) *exit* stair shafts,
 - b) *exit* corridors,
 - c) *public corridors*,
 - d) corridors used by the public,
 - e) corridors serving classrooms or patients' sleeping rooms,
 - f) within 5 m of the fire alarm control unit,
 - g) within 5 m of the central alarm and control facility,
 - h) within 5 m of the fire alarm annunciator,
 - i) fire pump room,
 - j) emergency generator room,
 - k) electrical service and transformer room,
 - l) elevator machine room,
 - m) elevator lobbies,
 - n) elevator hoistways,
 - o) corridors in the basement and not within a *suite*, and
 - p) *storage garages* and associated vehicle ramps.



New Fire Code Provision

- 2.7.1.8. Free of Obstructions [new]
 - (1) Where an exterior exit door can be obstructed by a parked car or storage, a sign or barrier shall be installed



New Fire Code Provision

- 2.8.2.5. Retention of Fire Safety Plans

- 3) The fire safety plan for a building or facility within the scope of Sections 3.1., 4.1., and 5.1. shall be kept at the principal entrance to the building or facility. [new]

3.1 indoor and outdoor storage

4.1 flammable and combustible liquids

5.1 hazardous processes and operations



New Fire Code Provision - Hazardous Processes and Operations

- 5.5.3.4. Laboratories – Electrical Equipment
 - (1) Electrical equipment in hazardous locations shall conform to the Electrical Code (see Appendix)
 - [new] A-5.5.3.4.(1) “**Electrical equipment**” refers to anything – any apparatus, appliance, device, instrument, fitting, fixture, luminaire, machinery, material, etc. – used in or for, or capable of being used in or for, the generation, transformation, transmission, distribution, supply, or utilization of electricity.

- 5.5.4.3. Laboratories – Enclosure Exhaust Ventilation
 - (2) [new] The ventilation system shall not be interlocked with a fire detection, fire alarm or makeup air system

New Fire Code Provision - Construction Sites

- 5.6.3. Additional Requirements for 6 Storey Wood Frame Buildings Only
 - 5.6.3.2. Smoking Restrictions
 - 5.6.3.3. Site Identification
 - 5.6.3.4. Disposal of Combustible Refuse
 - 5.6.3.5. Water Supply
 - 5.6.3.6. Hydrant Access
 - 5.6.3.7. Construction Access
 - 5.6.3.8. Site Security



FIRE AND RESCUE SERVICES
Fire Prevention Division

April 12, 2017

Bulletin 2017-003-BU/FI

Construction Fire Safety Plans

Buildings are most vulnerable to serious fire damage at the construction stage. Once built, their fire protection systems provide a minimum acceptable level of fire and life safety to the occupants of the building, and to nearby buildings. At the construction stage, however, fire-resistive walls and floors, sprinklers and fire alarm systems may not yet be in place or are incomplete.

Locally and around the world, several large fires have occurred at buildings under construction which have caused major damage to the building itself and to adjacent buildings. The focus on risk to workers on the construction site, to first responders, and to neighbouring buildings is greater now than ever. Consequently, a comprehensive Construction Fire Safety Plan is required to mitigate the risk.



Background

Contractors are required by the Vancouver Building and Fire By-laws to have both a Construction Safety Plan (CSP) and a Construction Fire Safety Plan (CFSP) prior to the start of construction.

CSP's are described in the Building By-law Division B Subsection 8.1.3. and cover overall safety requirements for the site which may include site access, traffic control, scaffolding and swing stages, protection at excavations, hoisting equipment, waste material disposal, barricades, fire protection facilities, and so on. CSP's are usually prepared by the general contractor.

CFSP's are described in the Fire By-law Division B Section 5.6. and cover specifically the fire protection facilities required by the CSP. CFSP's may be prepared by the general contractor, a fire safety planner, or any person familiar with the requirements of the Fire By-law. However, where an assessment of fire risk to adjacent buildings is required, the assessment and resulting proposed design to mitigate the risk may be required to be provided by a registered professional.

Sprinkler and Standpipe System

If the building is required to be provided with a fire sprinkler system, the sprinklers must be installed and activated as soon as practicable. If the building is required to be equipped with a standpipe system,

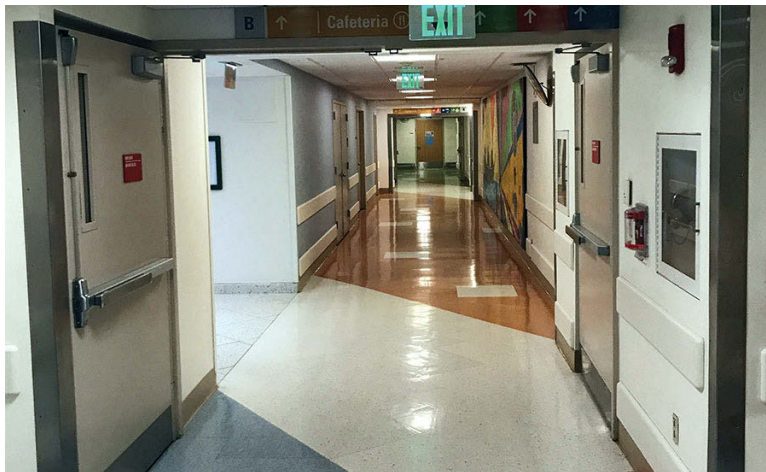
City of Vancouver, Fire and Rescue Services
Fire Prevention Division
#306, 456 West Broadway
Vancouver, British Columbia V5Y 1R3 Canada
tel: 3-1-1, outside Vancouver 604.873.7000 | website: vancouver.ca/fire

DOC/2017/085770

Page 1 of 4

Fire Protection Equipment

- 3.2.9.1 Integrated Fire Protection and Life Safety Systems Testing
 - new standard ULC-S1001 to test all the fire protection and life safety systems as individual system and as part of an overall system
 - Fire Safety Plan for the building must include the integrated testing methodology and documentation



- No occupancy will be approved by VFRS without a completed and approved Fire Safety Plan located in the building

New Fire By-law Provision

- Blasting Permits new fee structure
 - \$200 per day, per project
 - Fee amount currently under review



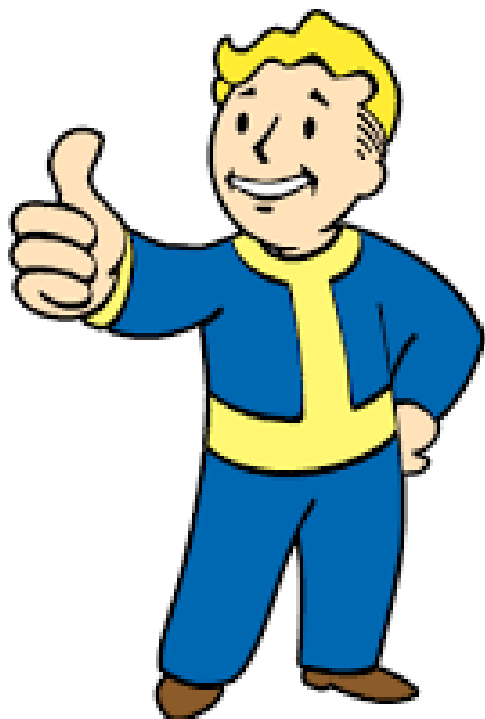




Encapsulated Mass Timber Code Changes at the City of Vancouver

Andrew Harmsworth, M.Eng., P.Eng., PE, CP

Ready to Go on November 1, 2019



This slideshow will be posted on the CP Website in the next couple days

All updated Schedules are now available on the CP Website

Questions:

cp.process@vancouver.ca

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