



REFERRAL REPORT

Report Date: September 13, 2021
Contact: Andrea Law
Contact No.: 8-7160
RTS No.: 14574
VanRIMS No.: 08-2000-20
Meeting Date: September 21, 2021

TO: Vancouver City Council
FROM: City Manager
SUBJECT: Piloting Regulatory Changes to Support Commercial Renovations and Small Business

RECOMMENDATION

- A. THAT the General Manager of Planning, Urban Design and Sustainability be instructed to make an application to amend the Zoning and Development By-law, as generally set out in Appendix A, to:
- (i) Amend section 4.8 to permit specified uses to be converted into other specified uses without seeking a development permit; and
 - (ii) That the application be referred to a Public Hearing;
- FURTHER THAT the Director of Legal Services be instructed to prepare the necessary amending By-law, generally in accordance with Appendix A, for consideration at Public Hearing.
- B. THAT Council consider the approval of amendments to the Building By-law, as generally set out in Appendix "B":
- (i) Changing the classification of subdividing a suite as a major renovation under Part 11 of the Vancouver Building By-law, and treating it instead as a minor renovation to limit upgrade triggers, reduce the complexity of staff review and support business recovery efforts from the COVID-19 pandemic;
 - (ii) Changing the definition of "small suite" under Part 11 of the Building By-law to allow occupant loads of up to 100 persons from 60 persons;
 - (iii) Changing the requirements of section 11.2.1.2 of Part 11 of the Building By-law, thereby exempting certain change of major occupancies from the

automatic requirement complete building upgrades;

- C. THAT Council consider the approval of an amendment to section 4.2(d) and 5.2 of the Parking By-law, as generally set out in Appendix “C”:
- (i) To define the minimum parking standards for commercial or heritage zones of less than 300 m², rather than the existing 200 m²,
- D. THAT Recommendations B and C also be referred to public hearing at the same time as Recommendation A.

FURTHER THAT the Director of Legal Services be instructed to prepare the necessary amending By-laws, generally in accordance with Appendixes B and C, for consideration at Public Hearing

REPORT SUMMARY

This report recommends that Council refer for consideration at a Public Hearing a series of actions to reduce permitting and licensing backlogs and the processing times of in-progress applications administered by Development, Buildings and Licensing (“DBL”).

These recommendations have been prepared pursuant to direction provided by Council on March 31, 2021 to form an Internal Development Application and Permitting Modernization Task Force (“Task Force”). The Task Force was created to address current service levels and growing backlogs and has curated a significant list of opportunities which are being evaluated for assessment of impact, risk and benefit with priority given to smaller scale projects that are quick to implement and can target large blocks of the existing backlog.

In that same motion, Council directed staff to report back on a bi-monthly basis with recommendations and updates.

COUNCIL AUTHORITY/PREVIOUS DECISIONS

On July 20, 2021, Council approved the referral to Public Hearing, “Internal Development Application and Permitting Modernization Task Force – Zoning and Development By-law Amendments to Enable Issuance of a Building Permit for Excavation and Shoring Before a Development Permit,” with direction summarized as follows:

- Amend the Zoning and Development By-law to permit the Director of Planning to recommend that the City Building Inspector issue a building permit, limited to excavation and shoring, before the issuance of the development permit for select projects

On June 9, 2021, Council approved the motion, “Internal Development Application and Permitting Modernization Task Force – First Bi-Monthly Update,” with direction summarized as follows:

- Not enforce certain design guidelines that have been developed for one and two family dwellings seeking a development permit in specific neighbourhoods
- Not enforce specific sections of the Protection of Trees By-law

- Amend the Protection of Trees By-law to define a tree as having a diameter of 30 cm, rather than the existing 20 cm

On March 31, 2021, Council approved the motion, “Calling for a Plan to Clear Vancouver’s Permit and License Backlog and Revamp this Critical City Service”, with direction summarized as follows:

- City Manager to strike and head an Internal Development Application and Permitting Modernization Task Force (The “Task Force”) to consolidate and integrate all work related to Council motions and internal work regarding modernizing the city’s development application and permitting and licensing processes.
- Approve the allocation of up to \$1 million from Council contingency funds to kick start the Internal Development Application and Permitting Modernization Task Force work.
- Staff to identify and pursue funding opportunities to support this work, such as the recently announced Provincial Government program to help local governments improve their development services and approvals processes.
- Endeavour to substantially reduce the existing backlog of permits and licenses for smaller scale projects by end of Q2 2022.
- A moratorium on any new member motions put on notice that would otherwise result in new work for the staff involved in issuing development and building permits and business licenses until the end of 2021.

On February 10, 2021, Council approved the motion, “Daylighting Building Permit Wait Times”.

CITY MANAGER'S/GENERAL MANAGER'S COMMENTS

The City Manager recommends approval of the foregoing.

REPORT

In March 2021, in response to growing permit application wait times and a backlog of unprocessed applications, Vancouver City Council directed staff to establish a Task Force led by the City Manager to identify potential regulatory and process changes that specifically target application processing times. Council further directed staff to report back on recommendations on a bi-monthly basis for Council’s consideration.

This is the second report in that bi-monthly series.

In June 2020, Council approved a set of recommendations that were largely focused on improving permitting processes for the residential sector. This report contains a series of recommendations and operational decisions primarily, but not exclusively, focused on supporting the commercial sector. Not only will the recommendations support improved permit processing and backlog reduction, but also the COVID-19 recovery. As such, these recommendations are proposed as a 24-month pilot and can be extended as appropriate to support further backlog reduction and business recovery.

The second batch of opportunities, as outlined in this report, consists of 5 strategies that have been considered for risk and impact. Based on discussions with staff most familiar with the processing impacts of these 5 strategies, it is estimated that successful implementation of all 5

could have a proposed impact that could total 3,785 processing weeks saved. All 5 strategies require by-law amendments and approval by Council.

Criteria that was factored in the selection of opportunities was:

- Largest impact to backlogs
- Fastest time to analyze for risk and impact, and implement
- Source of regular applicant feedback
- Focus on low risk to community
- Priority for smaller scale projects

The second set of strategies identified by the Task Force are as follows:

OPPORTUNITY	Estimated Impact
<p>A. Align project definitions in the VBBL with the scope of work being undertaken thereby aligning triggered upgrades with the work scope and reducing project complexity. Strategies:</p> <ol style="list-style-type: none"> 1. Treat subdividing a suite into two or more suites as a minor renovation, as opposed to a major renovation. 2. Relax small suite definition to allow for occupant limits of 100 persons from 60 persons. 	<p>45 applications per year</p> <p>Up to 17 weeks saved per application</p>
<p>B. Reduce the permitting and licensing times, application complexity and start-up costs for new business changing between specific uses and occupancies. Strategies:</p> <ol style="list-style-type: none"> 1. Exempt low risk changes of use from the requirement to submit a Development Permit as a means of reducing the permitting backlog and expediting the issuance of business licenses 2. Waive change of occupancy upgrade requirements when changing between low risk occupancy types as a means of reducing the permitting backlog and expediting the issuance of business licenses. 3. Increase the threshold for meeting parking minimums from 200 m² to 300 m². 	<p>135 applications per year</p> <p>Up to 20 weeks saved per application</p> <p>40 applications per year</p> <p>8 weeks saved per application</p> <p>Enabling change to support B.1 and B.2</p>

Strategic Analysis

A. Align project definitions in the VBBL with the scope of work being undertaken thereby aligning triggered upgrades with the work scope and reducing project complexity.

Under the Vancouver Building By-law (“VBBL”), a rehabilitation project are classified into one of five categories: voluntary upgrade, repair / small suite, minor renovation, major renovation, reconstruction. The classification between categories dictates the level of building upgrade required to support the renovation, with larger renovation categories requiring significant building upgrades that in some cases go well beyond the scope of the project, increasing complexity.

Currently, the subdivision of a suite into two or more suites is treated as a major renovation, as opposed to a minor renovation, under the Vancouver Building By-law. In consultation sessions held between staff and the local property management and development industries, a common theme in their feedback was that the addition of a demising wall should not trigger significant upgrades considering the small scope of work.

Another common area of feedback concerned the classification of a small suite, which is currently defined as having an occupant load of up to 60 persons. Subject matter experts have proposed that the definition could be revised to increase the occupant load, while not meaningfully increasing hazard risk associated with rehabilitation projects and change of occupancies.

Working with staff within the CBOs office, the Task Force, has identified 2 ways to better align scopes of work with the VBBL project definitions:

Strategy 1: Treat subdividing a suite into two or more suites as a minor renovation, as opposed to a major renovation. Staff are asking Council to enable a relaxation to limit the upgrade requirements and reduce the level of review for applications involving subdividing a suite to that of a minor renovation. This would not apply to the creation of common or public spaces due to differing egress and separation requirements, and would continue to require the upgrades associated with a major renovation.

Strategy 2: Relax small suite definition to allow for occupant limits of 100 persons from 60 persons. Staff are asking Council to enable a relaxation to allow for the occupant limit defining small suites to be increased from 60 to 100 persons. This would apply to change of occupancies and rehabilitation applications.

These strategies have the potential to eliminate up to 17 weeks of processing time for about 45 permits per year with acceptable impacts to the condition of the overall building stock. Furthermore, there is potential elimination of internal review steps at intake that add to processing time and serve as a source of frustration to applicants. Finally, Strategy 1 would support COVID-19 recovery efforts by making it simpler and less costly for new businesses to lease spaces.

The relaxations are proposed as temporary measures in the form of a 24-month pilot project so staff can assess the benefits and risks of these proposed changes.

Recommendation B seeks revisions to the VBBL to enable faster processing of renovation applications by reducing the upgrade and review requirements applied to permit applications.

B. Reduce the permitting and licensing times, application complexity and start-up costs for new business changing between specific uses and occupancies.

Currently, under the Zoning and Development By-law, a new business is required to submit a development permit application when changing between the following uses in zones where the use is deemed conditional:

- General Office
- Retail Store
- Health Care Office
- Barber Shop or Beauty Salon
- Beauty and Wellness Centre

Uses in the above categories comprise over 40% of all zoning and development uses within the City of Vancouver. Under the VBBL, a change in major occupancy, particularly between a retail store (classified as a mercantile occupancy) and any of the aforementioned uses (classified as business and personal services occupancies), may trigger building upgrades resulting in a requirement to submit a building permit application, even if the applicant is not carrying out a renovation.

As we enter the pandemic recovery, staff expect a growing backlog of permit and license applications attributable to use and occupancy changes between these categories. Over the past 18 months there has been an increase in vacancy rates from 9% to 12%. As these vacant spaces are leased, some will change in use while other new business may be deterred from leasing a space that doesn't currently meet their use requirements. In addition to adding new applications to the permit stream, the time needed to process such applications delays the issuance of business licenses.

Working with staff with subject matter expertise, the Task Force has identified 3 strategies for expediting business license issuances and reducing the permitting backlog associated with changes in use and occupancy:

Strategy 1: Provide exemption from a development permit when changing between certain uses. Staff are recommending that Council approve a relaxation of the current requirement for a development permit when changing between the following uses in conditional zones: General Office, Retail, Health Care Office, Barber Shop or Beauty Salon, Beauty and Wellness Centre. The relaxation does involve some manageable risks, including potential increased office use at street level, potential loading challenges on busy streets, and missed opportunity to upgrade bicycle parking. However, staff estimate that this change will save up to

135 new businesses up to 20 weeks of processing time annually (the impact will vary based on the number of new business opened and current wait times).

Strategy 2: Waive change of occupancy upgrade requirements when changing between business and personal services and mercantile occupancies. Staff are recommending Council approve a relaxation to the upgrade requirements when changing between personal services and mercantile occupancies and within the 5 use categories noted above, where the new business is not undertaking a renovation. Although this could limit opportunities to upgrade the building stock, staff estimate that this change will save up to 40 new businesses 8 weeks of processing time annually.

Strategy 3: increase the threshold for meeting parking minimums from 200 m² to 300 m². To enable these changes such that they will apply to suites up to 300 m² a minor amendment to the Parking By-law is required to define the minimum parking standards for commercial or heritage zones of less than 300 m², rather than the existing 200 m².

All three strategies are expected to significantly reduce permit and license processing times. In particular, business license applications that meet the criteria for the above exemptions would be streamlined for issuance, resulting in less time spent in queues awaiting review. Beyond the specified potential savings, these relaxations would also facilitate leasing of vacant suites, accelerating business recovery from the COVID-19 pandemic. The relaxations are proposed as temporary measures in the form of a 24-month pilot project so staff can assess the benefits and risks of these proposed changes.

Recommendation A seeks an amendment to the Zoning and Development By-law for certain use changes, recommendation B seeks revisions to the VBBL and recommendation C seeks an amendment to the Parking By-law. Adoption of these amendments will allow new businesses to start up faster with less up front cost.

Recommendation B seeks revisions to the VBBL to exempt specified occupancy changes from the requirement to complete building upgrades as a result of the occupancy change.

Recommendation C seeks revisions to Parking By-Law so these exemptions will apply to suites of 300 m².

Implications/Related Issues/Risk (if applicable)

The recommendations contained within this report have a limited risk profile and are connected with non life-safety objectives. The approach being proposed is a 24 month pilot to support the revitalization of the local economy and to enable a more expedient turnaround time on the issuance of permits and licenses. Staff will report back on the proposed amendments, if enacted, in two years assessing whether they should be continued, or not.

Financial

The proposed changes will reduce the staff time and cost required to process permit and license applications.

Human Resources/Labour Relations

The recommendations outlined and proposed in this report are designed to reduce the existing pressures on staff experiencing significant morale and burnout challenges. There is no increase of salary proposed but the measures as laid out could bring considerable relief to staff across the departments that support the development permit and building permit approval process.

Environmental

Renovation work in existing buildings can trigger requirements for unrelated safety and energy upgrades. While the changes recommended in this report will result in fewer energy upgrades, this will not have a substantive impact on the City's Climate Emergency target to reduce carbon pollution from existing buildings by 50% by 2030. The recommended measures are temporary in nature, limited in scope, and do not typically result in substantive changes to the building's overall carbon emissions. Further, Council has directed staff to advance recommendations to replace these energy upgrade requirements that are triggered by buildings renovations with carbon pollution limits. The proposed limits will be designed to catalyse building owners to plan and implement systematic changes to their building that will substantively reduce emissions over time.

Legal

The proposed by-law amendments are authorized by the Vancouver Charter.

CONCLUSION *

The City of Vancouver's processes for granting development and building approvals are experiencing unprecedented pressure resulting in a trend towards increasing backlogs, decreasing service levels, and significant workforce challenges.

The Task Force established at Council's direction has developed a second set of recommendations laid out in this report that, if approved, will enable staff to process permits more efficiently. Proposed measures are recommended by staff as a 24-month pilot and staff will report back at the conclusion of this pilot period with an update on benefits and gains achieved via the interventions approved by Council to address the operational backlogs.

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Appendix B:

DRAFT

Note: A By-law will be prepared generally in accordance with the provisions listed below, subject to change and refinement prior to posting.

BY-LAW NO.

A By-law to amend Building By-law No. 12511
Regarding Reduction in Upgrade Triggers for Certain Uses and Major Occupancies

THE COUNCIL OF THE CITY OF VANCOUVER, in public meeting, enacts as follows:

This By-law amends the indicated provisions of Building By-law 12511.

In Book I, Division B, Article 11.2.1.2., Council:

In Sentence (8), strikes out the words, “Where there is a change of major occupancy” and substitutes “Except as permitted by Sentence (10), where there is a change of major occupancy”,

In Sentence (9), strikes out all references to Table 11.2.1.2., and substitutes Table 11.2.1.2.-A,

In the header to Table 11.2.1.2., strikes out the words “Table 11.2.1.2.” and substitutes “Table 11.2.1.2.-A”, and

At the end of the Article, inserts the following new Sentence:

10) Where there is a change of major occupancy in a building, the upgrade requirements of Flow Chart #2 of the Upgrade Mechanism Model in Division B AppendixA need not be provided where

- a) the change in major occupancy is to a single suite,
- b) the aggregate suite area does not exceed the lesser of 50% of the building area or 300 m²,
- c) the major occupancy of the suite is Group D or Group E, and
- d) the use and aggregate suite area complies with Table 11.2.1.2.-B.

Table 11.2.1.2.-B
Maximum Aggregate Suite Area
Forming part of sentence 11.2.1.2.(10)

Major Occupancy	Suite Use	Aggregate Suite Area	
		≤200 m ²	201 to 300 m ²
Group D	Administrative & Business Offices	Y	Y
	Barber and Hairdressing Shop Beauty Salon	Y	Y
	Health Care Offices (non-surgical, non-sedation)	Y	Y(1)

Group E	General Retail (Non-hazardous materials)	Y(1)	N(2)
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Notes to Table 11.2.1.2.-B.:
 (1) Provided the Hazard Index of the space is not increased (see Table A-11.2.1.2.D)
 (2) Except as acceptable to the Chief Building Official

In Book I, Division B, in the notes to Part 11, Council strikes out the note A-11.2.1.2. and substitutes the following:

“

**NOTES TO PART 11
EXISTING BUILDINGS**

A-11.2.1.2. EXISTING BUILDING UPGRADE MECHANISM

BACKGROUND AND INTENT. When work is carried out to an existing building, the Building By-law requires that the building be upgraded to an “acceptable” level. On April 20, 2004 Council approved a new model for determining the “acceptable” level of Building By-law upgrade for existing buildings undergoing alterations under the City’s building permit process.

Prior to April 20, 2004, the Upgrade Mechanism Model was based primarily on construction values. The new Upgrade Mechanism Model determines the required “acceptable” level of upgrade for an existing building using the concept of “Project Types and Categories of Work”.

The intent of the Upgrade Mechanism Model is to provide a road map for building owners and designers to determine the required level of Building By-law upgrade for the existing portion of a building as a function of the project types and the related categories of work.

The Upgrade Mechanism Model is not generally intended for existing residential buildings containing not more than two principal dwelling units. The general upgrade requirement for these types of buildings is defined in Article 11.2.1.4.of Division B.

VOLUNTARY BUILDING BY-LAW UPGRADES. Where a voluntary upgrade for fire alarm systems, sprinkler systems, exits, accessibility, seismic work, building envelope repair, energy efficiency, or water efficiency is performed, it is not the intent of this By-law to require the owner to further upgrade the building provided no other work is included in the project. If other work is included in the project, the upgrade requirement will only be based on the non-voluntary work proposed.

PROCEDURE FOR USING THE UPGRADE MECHANISM MODEL

The following steps outline a recommended procedure for using the Upgrade Mechanism Model.

STEP 1 – Determine Any Other Requirements that may be Applicable. Other Building By-law requirements may be applicable to the existing building project. Review the

Overall Conditions for the Upgrade Mechanism Model to determine if other requirements are applicable.

STEP 2 – Determine the appropriate Project Type(s) and Related Category or Categories of Work as a function of the scope of work for the alteration.

If the renovation includes more than one category of work or project type, then the most restrictive upgrade levels from each project type would be applied.

Table A-11.2.1.2.-A Project Types and Related Categories of Work			
Project Type	Rehabilitation (See Flow Chart No. 1)	Change of Major Occupancy (See Flow Chart No. 2)	Addition (See Flow Chart No. 3)
Categories of Work	Voluntary Upgrade Repair/Small Suite Minor Renovation Major Renovation Reconstruction	Change of Major Occupancy Classification Change of Major Occupancy Classification to a Small Suite	Major Horizontal Addition Minor Horizontal Addition Major Vertical Addition Minor Vertical Addition

STEP 3 – Determine the Required Design Upgrade Level Based on the Category of Work for the Project

The required upgrade levels for fire, life & health safety; structural safety; non-structural safety; accessibility for persons with disabilities; and energy efficiency are to be determined using each of the applicable project type flow charts and the related category of work

For Rehabilitation Type Projects use Flow Chart No. 1.

For Change of Major Occupancy Type Projects use Flow Chart No. 2.

For Addition Type Projects use Flow Chart No. 3.

NOTE: Where a project involves more than one category of work, the most restrictive upgrade level, as determined from each category of work, shall determine the upgrade design level.

STEP 4 – Determine the objective and acceptable solution for the most restrictive upgrade level for fire, life and health safety; structural safety; non-structural safety; accessibility for persons with disabilities; and energy efficiency. The most restrictive upgrade levels are the design upgrade levels that are to be applied to the existing building.

The model is based on incremental upgrade levels for each of the fire, life and health safety (F), structural safety (S); non-structural safety (N); accessibility (A); and energy (E) objectives. For each of the upgrade levels, the model states the objective of the upgrade level as well as the corresponding acceptable solution that is deemed to meet

the intended objective of the applicable upgrade level. The objective statement and acceptable solution for each F, S, N and A upgrade level is defined in Table A-11.2.1.2.-B. The objective statement and acceptable solution for each E upgrade level is defined in Table A-11.2.1.2.-C.

The alternative acceptable solution for energy efficiency requires that the determined E design upgrade level from Flow Chart No 1 is used to enter Table A-11.2.1.2.-C to determine the Objective Statement and review the list of options of alternative acceptable solutions. Within Table A-11.2.1.2.-C and the appropriate E Level section, the user selects one alternative acceptable solution from within the Building System chosen by the user to be upgraded. Only one (1) of the solutions in the Alternative acceptable solutions Options column in Table A-11.2.1.2.-C is required to meet the objective. It is up to the user to determine which system in the Building System column and corresponding upgrade solution in the Alternative acceptable solution Option column shall be chosen to satisfy the objective. Within any 5 year period, when an alternative acceptable solution has been used previously within the project area, then that option is not permitted to be used as an alternative acceptable solution.

PROJECT TYPES AND THEIR RELATED CATEGORIES OF WORK

The Upgrade Mechanism Model is based on the following defined three Project Types and related Categories of Work as illustrated in Table A-11.2.1.2.-A. If the renovation includes more than one category of work or project type, then the most restrictive upgrade levels from all the applicable project types would be applied.

Table A-11.2.1.2.-A Project Types and Related Categories of Work			
Project Type	Rehabilitation (See Flow Chart No. 1)	Change of Major Occupancy (See Flow Chart No. 2)	Addition (See Flow Chart No. 3)
Categories of Work	Voluntary Upgrade Repair/Small Suite Minor Renovation Major Renovation Reconstruction	Change of Major Occupancy Classification Change of Major Occupancy Classification to a Small Suite	Major Horizontal Addition Minor Horizontal Addition Major Vertical Addition Minor Vertical Addition

REHABILITATION PROJECT TYPE (Flow Chart No. 1)

Voluntary Building By-law Upgrades – Voluntary Building By-law upgrades are limited to alterations that directly contribute to the improvement of the fire alarm, sprinkler, exit, accessibility, seismic, building envelope, and energy or water efficiency systems in an existing building.

REPAIR – Repair pertains to a limited scope of interior or exterior renovation work to replace existing building components with functionally equivalent components. Repair work may not include work that increases the usable floor area of a building, creates an interconnected floor space, supports an addition or change of use, or the consolidation of more than one existing suite into a single tenant space. For Repairs, an E1 level of energy upgrade shall be applied.

SMALL SUITE – The upgrade trigger for a Small Suite pertains to limited renovation work within a suite separated from adjacent spaces in a building by a fire separation incorporating at least two layers of gypsum wallboard on the suite side, which is a small suite as defined in Division A, Article 1.4.1.2., or a suite of Group A, Division 2, D, or E major occupancy with an occupancy up to 100 persons as determined by Division B, Article 3.1.17.1.(1)(c) and egress directly to the adjoining ground level.

Small Suite work may include reconfiguration of the interior space of the suite, but may not include work on more than level (storey or mezzanine), interconnected floor spaces, exterior renovations, or the consolidation of more than one existing suite into a single new tenant space. For Small Suite renovations, an E2 level of energy upgrade shall be applied.

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 which does not include the public or common floor areas of the building. Minor renovation may also include the subdivision of a single suite of not more than one storey into smaller constituent suites.

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,
- Subdivision of an existing suite of not more than one storey into one or more suites which do not include floor area outside of the subdivided suite,
- Renovation in adjacent suites to the extent necessary to support the relocation of shared demising walls, and
- Exterior renovations pertaining to the subject suite.

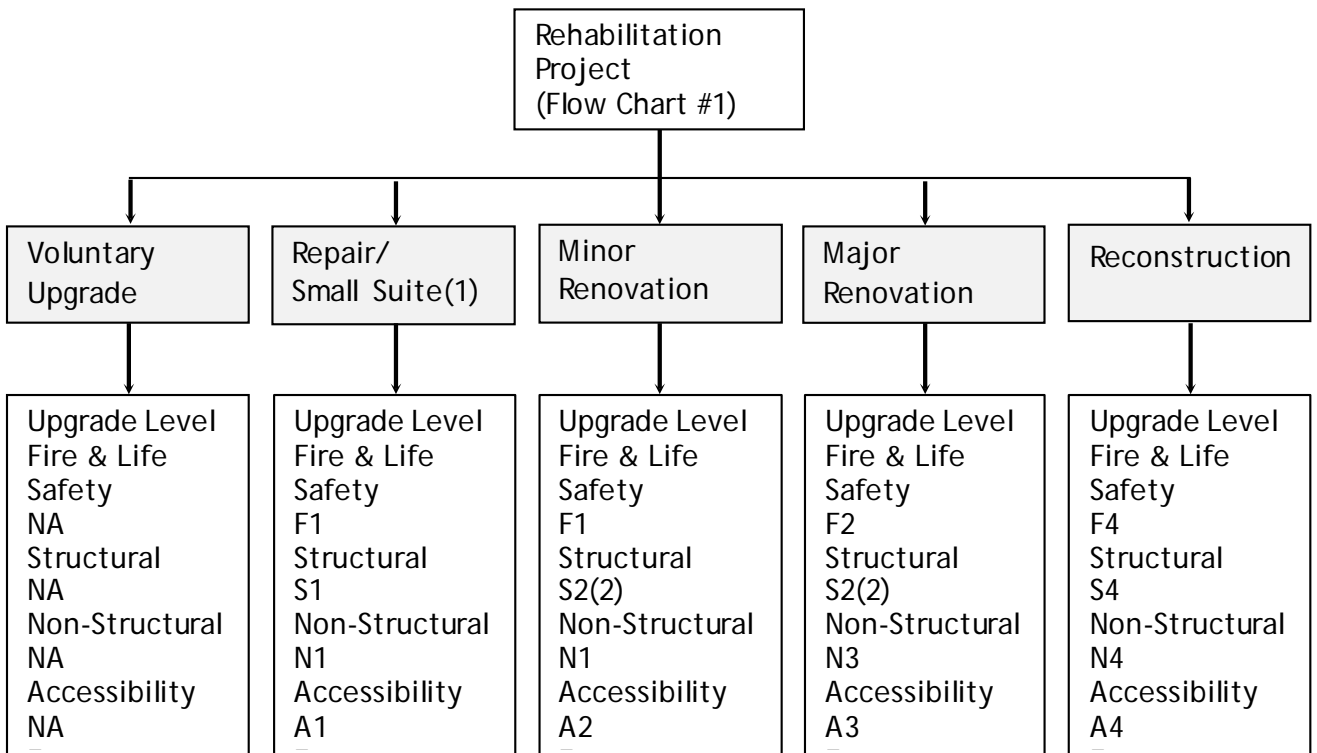
Where the renovation includes a new interconnected floor space, this work would not be considered to be a minor renovation. New mezzanines are considered to be additions.

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.

RECONSTRUCTION - Reconstruction means the extensive removal of the majority of construction to expose the building's primary structure on interior and exterior walls, floors and roof with only the primary structural elements remaining in place (building skeleton). Reconstruction also includes substantial reconfiguration of the interior floor space. Where work, which might otherwise be considered as reconstruction, is undertaken solely to facilitate the repair or the abatement of a health hazard of a building, then such work need not be considered a reconstruction and would be considered a repair, minor renovation or a major renovation as defined in this By-law.

Reconstruction project typically include:
 extensive renovations throughout the entire building and the building is gutted.
 the removal of the majority of drywall and plaster from the interior walls.
 the removal of the majority of drywall, plaster, insulation and exterior cladding from the exterior walls,
 the removal of floor and roof membranes and coverings.

FLOW CHART NO. 1



Notes to Flow Chart No. 1:

- (1) For small suites, the small suite must be separated on the suite side of the suite separation with at least two layers of gypsum wall board (GWB). Where only one layer exists, then an additional layer of GWB must be added to the suite side only. The additional layer of GWB may be any type of GWB with a minimum thickness of 13 mm.
- (2) Notwithstanding the upgrade levels in Flow Chart #1, where a minor or major renovation involves an entire building and the renovation includes the removal of the majority interior wall cladding then the structural seismic upgrade level shall be S3.
- (3) For Small suite renovations, an E2 level of energy upgrade shall be applied.

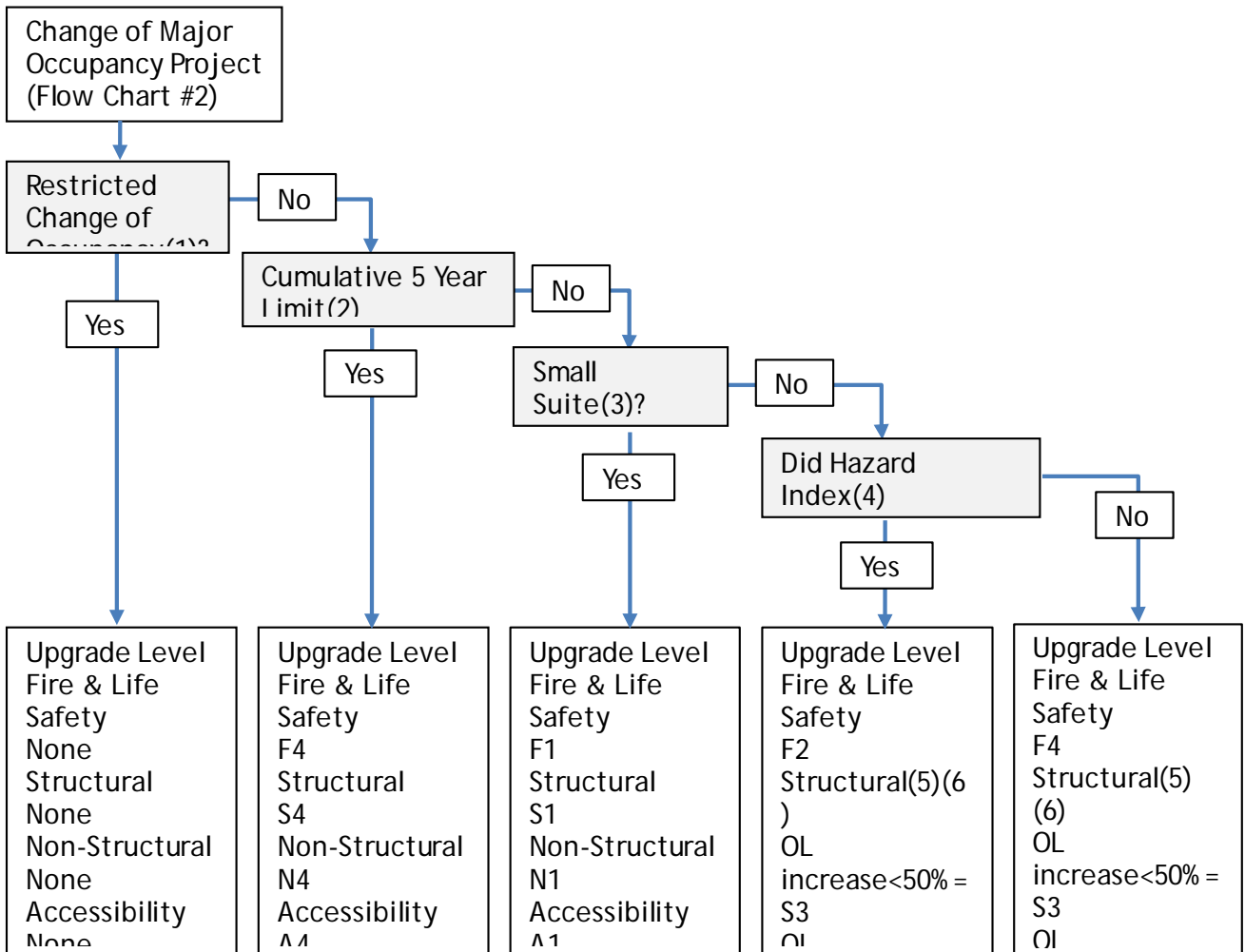
CHANGE OF MAJOR OCCUPANCY CLASSIFICATION PROJECTS (Flow Chart No. 2)

Restricted Change of Occupancy. The term “restricted change of occupancy” refers to a change in major occupancy restricted to a specific set of uses as set out in Article 11.2.1.2.(10) that are limited both in scope and risk such that it does not increase the overall hazard.

Change of Major Occupancy Classification – Change of major occupancy classification means a change of use within a building, a suite, or its constituent floor areas where the proposed use is outside of the currently defined uses of the existing major occupancy classification permitted for the building, the suite, or its constituent floor areas.

Small Suite Change of Major Occupancy Classification – Small suite change of major occupancy classification means a change of use within a small suite, or the constituent floor areas of a small suite, where the occupant load for the entire suite does not exceed 60 persons and the small suite is limited to a Group A, Division 2, Group D, Group E, Group F, Division 2 (wholesale showroom), or Group F, Division 3 major occupancy.

FLOW CHART NO. 2



Notes to Flow Chart No. 2:

(1) Restricted Change of Occupancy (see Article 11.2.1.2.(10) and note A-11.2.1.2.(10))

(2) The cumulative 5 year limit is triggered when there is a change of major occupancy in an existing building and the aggregate area of the change in major occupancy including the current work within any 5 year period is greater than 50% of the building area (as defined in Article 1.4.1.2. of Division A) in a building of not more than one storey, or the aggregate area of the change in major occupancy within any 5 year period is greater than 100% of the building area (as defined in Article 1.4.1.2. of Division A) in a building of more than one storey.

(3) For small suites, the small suite must be separated on the suite side of the suite separation with at least two layers of gypsum wall board (GWB). Where only one layer exists, then an additional layer of GWB must be added to the suite side only. The additional layer of GWB may be any type of GWB with a minimum thickness of 13 mm.

(4) The Hazard Index may be determined by the Hazard Index Table A-11.2.1.2.-D. or other methodology as deemed acceptable to the Chief Building Official.

(5) Occupant load (OL) increase is based on the proposed occupant load for the entire building versus the current occupant load for the entire building. The OL change may be assessed in a comparative manner by considering only those areas undergoing a

change of major occupancy, where the occupant load of the remainder of the building cannot otherwise reasonably be assessed. Occupant loads are to be determined by the acceptable solutions in Subsection 3.1.17. of Division B.

(6) Where there is a change of major occupancy and the structural load paths or structural design criteria are altered then it must be demonstrated that the existing building has the structural capacity to carry the increase in load or the building shall be structurally upgraded to carry the increase in live load.

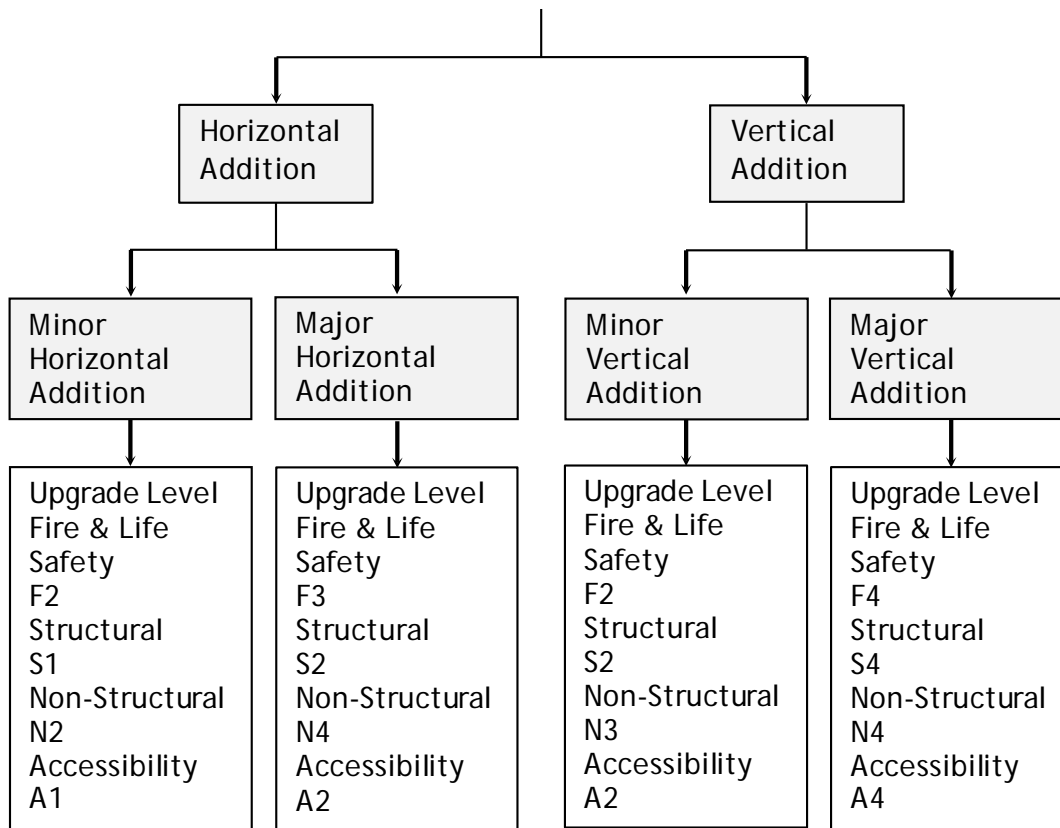
ADDITION PROJECTS (Flow Chart No. 3)

Horizontal Addition – Horizontal additions include both “minor” and “major” horizontal additions. A minor horizontal addition is any expansion of a floor area beyond the extents of the existing floor area in which it is located by not more than 25 per cent of the existing building area, or by not more than 500 m² in aggregate floor area. A major horizontal addition is any expansion of a floor area beyond the extents of the existing floor area that exceeds the limits permitted by a minor horizontal addition. Any construction that creates new floor area, by in-filling existing roof, or deck areas, or creates new superimposed floor area over existing building structure or floor area is not considered a horizontal addition.

Vertical Addition – Vertical additions include both “minor” and “major” vertical additions. A minor vertical addition is the addition of new floor area (storey, mezzanine, decks or other roof areas intended for occupancy) that in-fills existing unoccupied roof or deck areas, or is superimposed over existing building structure or floor area, with an aggregate floor area increase of not more than 25 per cent of the building area, or by not more than 500 m² in aggregate floor area. A major vertical addition is an addition that increases the aggregate floor areas or mezzanine area increase that exceeds the limits permitted by a minor vertical addition.

FLOW CHART NO. 3

Addition Project (Flow Chart #3)
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DESIGN UPGRADE LEVEL TABLES

Table A-11.2.1.2.-B
DESIGN UPGRADE LEVELS FOR FIRE, LIFE AND HEALTH SAFETY (F), STRUCTURAL SAFETY(S), NON-STRUCTURAL SAFETY (N), and ACCESSIBILITY (A)

DESIGN LEVEL(1)	OBJECTIVE STATEMENT	ALTERNATIVE ACCEPTABLE SOLUTIONS
F1	Exiting to be reviewed to ensure that the exits do not present an unsafe condition.	Project Area - Exits to be upgraded with respect to number, capacity, and fire separations only.
S1	Proposed work must not have an adverse effect on the structural capacity of the existing structure.	Entire Building - Proposed work must not reduce the structural integrity of the existing building.
N1	Project area to be reviewed to ensure safety from overhead falling hazards.	Project Area - Restrain all ceiling supporting frames, T-bars assemblies, ceiling gypsum wall boards, all overhead mechanical ducts, sprinklers, and

		equipment, overhead electrical conduits and lights
A1	The proposed work must not adversely affect the existing accessibility level of the building.	Project Area - Existing level of accessibility must be maintained throughout the project area. No additional accessibility enhancements are required.
F2	Existing building to meet the fire & life safety requirements of the Building By-law within the project area and have conforming exits leading from the project area to an acceptable open space.	Project Area - Alarms and detectors (only where existing devices are provided), emergency lights, access to exit, exits, exit signs, and exit lights. Public Area (leading from project area to an acceptable open space) - emergency lights, exit signs, access to exit, exits, and flame spread ratings.
S2	Limited structural upgrade required in order to provide minimum protection to building occupants during a seismic event within the project area.	Project Area - Non-structural elements and falling hazards must be restrained to resist lateral loads due to earthquakes within the project area.
N2	Project area and means of egress to be reviewed to ensure safety from overhead falling hazards.	Project Area Means of Egress - Restrain interior partition walls. Restrain all ceiling supporting frames, T-bars assemblies, ceiling gypsum wall boards, sprinklers, all overhead mechanical ducts, and equipment, overhead electrical conduits and lights. Restrain cladding veneer, parapets, canopies and ornaments over exit and extended to 5 m on either side of exit
A2	A limited level of upgrade shall be provided within the project area to ensure access for persons with disabilities.	Project Area - door clearances, door hardware, and areas of refuge.
F3	Existing building to meet fire, life and health safety requirements within the project area. Existing building to meet fire, life & health safety requirements within the public areas.	Project Area – Alarms & detectors (only where existing devices are provided), emergency lighting, access to exit, exits, exit signs, exit lights, flame spread ratings, floor assemblies & supports, occupancy separation, standpipes and sprinklers, washrooms. Public Area - Alarms & detectors (only where existing devices are provided), emergency lighting, access to exit, exits, exit signs, exit lights. Entire Building – Fire fighter’s access.
S3	The building structure shall be upgraded to an acceptable level in order to provide a minimum level of property and life safety to unreinforced masonry or other	Entire Building — Building to be upgraded to resist 50 percent of the current By-law specified lateral force levels, where the building is evaluated as having less than 30 percent of the current required seismic

	buildings having less than 30 percent of the current required seismic resistance. Falling hazards that may impact adjacent properties and over public ways must be addressed.	resistance. Restrain falling hazards from major building components such as cantilevered walls, parapets, exterior ornaments, towers, chimneys, or other appendages, which could impact adjacent properties and public ways to resist forces due to a seismic event.
N3	Building exits and to acceptable open space to be reviewed to ensure safety from overhead falling hazards.	Entire Building Exits - Restrain interior partition walls. Restrain ceiling supporting frames, T-bars assemblies, ceiling gypsum wall boards, overhead mechanical equipment, sprinklers, and services, overhead electrical equipment and services. Restrain falling hazards to resist forces due to a seismic event from non-structural elements including cladding, veneer, cornices, canopies, awnings, and ornaments over exit and extended to 5 m on either side of exit.
A3	The existing building shall be upgraded to an acceptable level in order to ensure complete access within the project area as well as access to the remainder of the building.	Project Area — Door clearances, door hardware, accessible washrooms, and areas of refuge. Public Area — Door clearances, door hardware, areas of refuge, washrooms, ramps, and elevators.
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.
S4	The entire building structure shall be brought up to an acceptable level in order to meet seismic requirements of the VBBL.	Entire Building — Building to be upgraded to resist 75 percent of the current By-law specified lateral force levels, where the building is evaluated as having less than 60 percent of the current required seismic resistance.
N4	Entire Building and to acceptable open space to be reviewed to ensure safety from overhead falling hazards.	Entire Building — Restrain all interior partition walls. Restrain all ceiling supporting frames, T-bars assemblies, ceiling gypsum wall boards, sprinklers, overhead mechanical equipment and services, overhead electrical equipment and services. Restrain exterior falling hazards to resist forces due to a seismic

		event from cladding, veneer, cornices, parapets, canopies, awnings, and ornaments attached to the exterior of the building.
A4	The existing building shall be upgraded in order to provide the minimum accessibility requirements of the VBBL.	Entire Building — Building to meet accessibility provisions of the current VBBL.

Notes to Table A-11.2.1.2.-B:

(1) Where there is one or more upgrade level(s) within the same category preceding the design upgrade level in Table A-11.2.1.2.-B, then the design upgrade level shall also include all of the preceding upgrade levels. For example, where the design upgrade level is F3, then all of the upgrade requirements under F2 and F1 also apply.

TABLE A-11.2.1.2.-C

Alternative acceptable solutions for Energy Efficiency

General Objective Statement: Improve the energy and GHG emissions performance of buildings, systems or components.

Solution Location: E1 through E5 - Project Location. E6 and E7 – Building Location

E Level	Building System	Alternative Acceptable Solution Options(1) (Choose one)
E1 Level Objective Statement: Review and maintain, or upgrade, basic efficiency of equipment or components.		
E1	Envelope	1) Reduce air leakage of all Glazing & Doors (per 5.4.3.2 of ASHRAE 90.1-2016) 2) Upgrade all Opaque Doors performance (per 5.5.3.6 of ASHRAE 90.1-2016)
	HVAC(3)	1) Upgrade Dead Band settings (per 6.4.3.1.2 of ASHRAE 90.1-2016) 2) Upgrade Set-point Overlap Restrictions (per 6.4.3.2 of ASHRAE 90.1-2016) 3) Upgrade Off-Hour Controls (per 6.4.3.3 of ASHRAE 90.1-2016) 4) Upgrade Ventilation System Controls (per 6.4.3.4 of ASHRAE 90.1-2016) 5) Upgrade Heat Pump Auxiliary Heat Controls (per 6.4.3.5 of ASHRAE 90.1-2016) 6) Upgrade Freeze Protection and Snow/Ice Melting Systems (per 6.4.3.7 of ASHRAE 90.1-2016) 7) Upgrade Ventilation Controls For High-Occupancy Areas (per 6.4.3.8 of ASHRAE 90.1-2016) 8) Upgrade DDC Controls (per 6.4.3.10 of ASHRAE 90.1-2016) 9) Inspect and remediate HVAC Insulation (per 6.4.4.1 of ASHRAE 90.1-2016) 10) Inspect and remediate Duct and Plenum Leakage (per 6.4.4.2 of ASHRAE 90.1-2016)

		11) Upgrade Heat and Cool Limitation (per 6.5.2.1 of ASHRAE 90.1-2016)
	SWH(4)	1) Upgrade all SWH Piping Insulation (per 7.4.3 of ASHRAE 90.1-2016)
	Lighting	1) Upgrade internal Exit Signs to not exceed 5W per face 2) Functional Testing (per 9.4.3 of ASHRAE 90.1-2016)
E2 Level Objective Statement: Review and maintain, or upgrade, basic efficiency of sub-systems.		
E2(2)	Envelope	1) Reduce air leakage of all Loading Dock Doors (per 5.4.3.3 of ASHRAE 90.1-2016) 2) Upgrade all Floor Insulation (per 5.5.3.4 of ASHRAE 90.1-2016) 3) Reduce total Skylight Fenestration/Glazing Area to 3% of gross roof area (per 5.5.4.2.2 of ASHRAE 90.1-2016)
	HVAC(3)	1) Upgrade Chilled Water Plant Monitoring (per 6.4.3.11 of ASHRAE 90.1-2016) 2) Upgrade Economizer Fault Detection and Diagnostics (per 6.4.3.12 of ASHRAE 90.1-2016) 3) Clean and Balance all Air Systems (per 6.7.2.3.2 of ASHRAE 90.1-2016) 4) Balance all Hydronic Systems (per 6.7.2.3.3 of ASHRAE 90.1-2016) 5) Remove Wood-Burning Fireplace unit 6) Replace gas fireplace pilot light with electronic ignition unit with energy rating over 50 7) Install makeup air supply per code to balance exhaust fan(s) over 300 cfm
	SWH(4)	1) Upgrade SWH system Temperature Controls (per 7.4.4.1 of ASHRAE 90.1-2016) 2) Upgrade SWH system Temperature Maintenance Controls (per 7.4.4.2 of ASHRAE 90.1-2016) 3) Upgrade SWH system Outlet Temperature Controls (per 7.4.4.3 of ASHRAE 90.1-2016) 4) Upgrade SWH system Circulating Pump Controls (per 7.4.4.4 of ASHRAE 90.1-2016) 5) Upgrade Pool systems (per 7.4.5 of ASHRAE 90.1-2016) 6) Upgrade pipe risers to incorporate Heat Traps (per 7.4.6 of ASHRAE 90.1-2016)
	Lighting	1) Upgrade to Local Control (per 9.4.1.1.(a) of ASHRAE 90.1-2016) 2) Upgrade to Restricted to Manual ON (per 9.4.1.1.(b) of ASHRAE 90.1-2016) 3) Upgrade to Restricted to Partial Automatic ON (per 9.4.1.1.(c) of ASHRAE 90.1-2016) 4) Upgrade to Bilevel Lighting Control (per 9.4.1.1.(d) of ASHRAE 90.1-2016) 5) Upgrade all Automatic Daylighting Responsive Controls for Sidelighting (per 9.4.1.1.(e) of ASHRAE 90.1-2016) 6) Upgrade all Automatic Daylighting Controls for Toplighting (per 9.4.1.1.(f) of ASHRAE 90.1-2016)

		<p>7) Upgrade to incorporate Automatic Partial OFF (per 9.4.1.1.(g) of ASHRAE 90.1-2016)</p> <p>8) Upgrade to incorporate Automatic Full OFF (per 9.4.1.1.(h) of ASHRAE 90.1-2016)</p> <p>9) Upgrade to incorporate Scheduled Shutoff (per 9.4.1.1.(i) of ASHRAE 90.1-2016)</p> <p>10) Upgrade to control Parking Garage Lighting (per 9.4.1.3 of ASHRAE 90.1-2016)</p> <p>11) Upgrade to incorporate Additional Controls for Special Applications (per 9.4.1.3 of ASHRAE 90.1-2016)</p> <p>12) Exterior Lighting Control (per 9.4.1.7 of ASHRAE 90.1-2016)</p> <p>13) Reduce total Skylight Fenestration/Glazing Area to 3% of gross roof area (per 5.5.4.2.2. of ASHRAE 90.1-2016)</p>
	Exterior or Patio Heating	<p>1) Remove exterior space heating system</p> <p>2) Upgrade energy intensity (per 10.2.2.22.(3)) and system controls per 10.2.2.22.(4)</p>
E3 Level Objective Statement: Review and improve energy performance of systems.		
E3(2)	Envelope	<p>1) Provide a Building Envelope Assessment Report, to be signed and sealed by a design professional, report to include: effective R-value, blower test, list of upgrades to achieve a compliance rating using COMcheck(5) software (latest version).</p> <p>2) Reduce air leakage of all Fenestration & Doors (per 5.4.3.2 of ASHRAE 90.1-2016)</p> <p>3) Upgrade all Below-Grade Wall Insulation (per 5.5.3.3 of ASHRAE 90.1-2016)</p> <p>4) Inspect and remediate all ceiling space and floor space equipment and services including ductwork, plumbing, insulation, penetrations, dampers, valves, coils, pans and drains.</p> <p>5) Inspect and remediate all floor/crawl space services (ducts, plumbing, insulation, penetrations, drains etc)</p>
	HVAC(3)	<p>1) Provide an HVAC System Assessment Report, to be signed and sealed by a design professional. Report to include: systems reviews, upgrade and re-commissioning options, with estimates for energy savings and cost paybacks.</p> <p>2) Upgrade all ducts, plenums, and insulation (per 6.4.4 of ASHRAE 90.1-2016); inspect and remediate HVAC Insulation (per 6.4.4.1 of ASHRAE 90.1-2016); and inspect and remediate Duct and Plenum Leakage (per 6.4.4.2 of ASHRAE 90.1-2016)</p> <p>3) Incorporate Exhaust Air Recovery systems (per 6.5.6.1 of ASHRAE 90.1-2016)</p> <p>4) Incorporate a Service Water Heating Recovery system (per 6.5.6.2 of ASHRAE 90.1-2016)</p> <p>5) Upgrade all Kitchen Exhaust and Replacement Air systems (per 6.5.7.2 of ASHRAE 90.1-2016)</p> <p>6) Upgrade all Laboratory Exhaust and Replacement Air systems (per 6.5.7.3 of ASHRAE 90.1-2016)</p>

		7) Balance all systems (per 6.7.2.3 of ASHRAE 90.1-2016)
	SWH(4)	1) Provide an HVAC System Assessment Report, to be signed and sealed by a design professional Report to include: systems reviews, upgrade and re-commissioning options, with estimates for energy savings and cost paybacks. 2) Upgrade SWH system Controls (per 7.4.4 of ASHRAE 90.1-2016)
	Lighting	1) Provide a comprehensive Lighting System Assessment Report to be signed and sealed by a design professional Report to include: systems reviews, upgrade options, with estimates for energy savings and cost paybacks. 2) Upgrade total Exterior Lighting Power (per 9.4.2 of ASHRAE 90.1-2016) of the suite. 3) Meet the interior lighting power allowance by the Building Area Method (per 9.5 of ASHRAE 90.1-2016) 4) Meet the interior lighting power allowance by the Space-by-Space Method (per 9.6 of ASHRAE 90.1-2016)
	Exterior or Patio Heating	1) Remove exterior space heating system 2) Upgrade energy intensity, system and unit/zone controls (per 10.2.2.22.(3) and (4)), and circulation fans (per 10.2.2.22.(5))
E4 Level Objective Statement: Review and improve energy performance of larger systems.		
E4(2)	Envelope	1) Reduce air leakage of entire Building Envelope (per 5.4.3 of ASHRAE 90.1-2016) 2) For single retail/tenant spaces < 500 m2) Perform an Air Leakage / Blower test and remediate 3) Upgrade all Roof Insulation (per 5.5.3.1 of ASHRAE 90.1-2016) 4) Upgrade all Above-Grade Wall Insulation (per 5.5.3.2 of ASHRAE 90.1-2016) 5) For single retail/tenant spaces < 500 m2) Replace storefront window(s) to meet the By-law. 6) Reduce total vertical Fenestration/Glazing Area to 40% of gross wall area (per 5.5.4.2.1 of ASHRAE 90.1-2016) 7) Upgrade all Fenestration/Glazing Performance (per 5.5.4.3 and 5.5.4.4 of ASHRAE 90.1-2016) 8) Inspect and remediate roof systems including membrane, parapets, scuppers, drains, gutters, downspouts and drains.
	HVAC(3)	1) Upgrade all Zone Thermostatic Controls (per 6.4.3.1 of ASHRAE 90.1-2016) 2) Upgrade HVAC to incorporate Economizers (per 6.5.1 of ASHRAE 90.1-2016) 3) Upgrade Heat Rejection Equipment (per 6.5.5 of ASHRAE 90.1-2016) 4) Upgrade to Air and Service Water Heating Heat Recovery systems (per 6.5.6 of ASHRAE 90.1-2016) 5) Upgrade entire Radiant Heating system (per 6.5.8 of ASHRAE 90.1-2016)

		6) (Re-)Commission all systems (per 6.7.2.4 of ASHRAE 90.1-2016)
	SWH(4)	1) Upgrade all Service Water Heating Equipment Efficiency (per 7.4.2 of ASHRAE 90.1-2016)
	Lighting	1) Lighting Control (per 9.4.1 of ASHRAE 90.1-2016)
	Exterior or Patio Heating	1) Remove exterior space heating system 2) Upgrade exterior space heating system (per 10.2.2.22)
E5 Level Objective Statement: Review and bring to present VBBL energy requirements, entire system(s) affected by vertical addition.		
E5(2)	Envelope	1) Upgrade insulation levels of entire Building Envelope (Opaque Areas) (per 5.5.3 of ASHRAE 90.1-2016) 2) Upgrade all Fenestration/Glazing (per 5.5.4 of ASHRAE 90.1-2016)
	HVAC(3)	1) Upgrade all HVAC Controls, Insulation and Leakage (per 6.4 of ASHRAE 90.1-2016)
	SWH(4)	1) Upgrade Service Water Heating system to meet the Mandatory Provisions (per 7.4 of ASHRAE 90.1-2016)
	Lighting	1) Upgrade Lighting system to meet the Mandatory Provisions (per 9.4 of ASHRAE 90.1-2016)
E6 Level Objective Statement: Reconstruct entire building systems to meet energy efficiency requirements of present Vancouver Building By-Law.		
E6	Envelope	1) Upgrade all aspects of Building Envelope (per Section 5 of ASHRAE 90.1-2016)
	HVAC(3)	1) Upgrade all aspects of HVAC (per Section 6 of ASHRAE 90.1-2016)
	SWH(4)	1) Upgrade all aspects of SWH (per Section 7 of ASHRAE 90.1-2016)
	Lighting	1) Upgrade all aspects of Lighting (per Section 9 of ASHRAE 90.1-2016)
E7 Level Objective Statement: Reconstruct building to meet energy efficiency requirements of present Vancouver Building By-Law.		
E7	Energy	1) Upgrade existing building (per VBBL 1.3.3.7 Energy Use)

Notes to Table A-11.2.1.2.-C:

(1) References to ASHRAE 90.1 in Table A-11.2.1.2.-C can be considered guidance for determining the scope of work when applying the upgrade requirements to low-rise multi-family projects, otherwise these projects may apply the energy upgrade requirements of Table 11.2.1.4, per the options provided within Sentence 11.2.1.2.(9)(d).

(2) BOMA BEST (Path 1) may be substituted as the solution for upgrade level E2. BOMA BEST (Path 2) may be substituted as the solution for upgrade levels E3, E4 or E5. BOMA BEST is a Canadian industry standard for commercial building sustainability certification. Official certification documentation produced by BOMA would be required for acceptance as an alternative acceptable solution option.

The intent of the inclusion of the BOMA BEST rating system is to recognise the efforts made towards improved building performance. BOMA BEST Path 1 or Path 2 will be accepted provided

a) the BOMA BEST certification is administered by BOMA,

b) BOMA BEST Path 1 - BOMA BEST (Level 1, 2, 3, 4) provides proof of a valid Certification and ongoing commissioning per BOMA's BEST Practice Q.3 (Preventative Maintenance Program), and

c) BOMA BEST Path 2 - BOMA BEST (Level 1-AL2, 2, 3, 4) provides proof of a first-time Certification (to at least Level 1 with an ASHRAE Level 2 audit) within the previous 18 months, or a valid Certification and an increase in BOMA BEST's Energy Performance Benchmark Scale by at least one level within the previous 18 months, or advancing Certification (from one level to another) within the previous 18 months.

Proof means in the form of official certified documentation produced by BOMA, or a single Commissioning/Energy Report developed and provided by a qualified consultant, contractor, or other expert in this specialized field.

(3) HVAC – Heating, Ventilating and Air Conditioning

(4) SWH – Service Water Heating

(5) COMcheck – software developed by the US Department of Energy for use with ASHRAE 90.1-2016 Building Envelope Trade-Off option

HAZARD INDEX TABLE

The hazard index for various building uses are indicated in Table A-11.2.1.2.-D.

The required level of Building By-law upgrade for a Change of Major Occupancy Type projects is dependent on whether or not the Hazard Index has increased for the proposed alteration. Hazard Index ratings are intended to reflect the level of fire and life safety risk to occupants for various building uses and suite sizes. Hazard index ratings range from 1 to 6, such that a hazard index of rating of 6 represents the highest risk to occupants.

For the purposes of a Restricted Change of Occupancy, the Hazard Index may be established based on the aggregate area of the suite, to provided indices that can be compared to establish a relative level of risk between the proposed and current uses of different sizes. Where a suite is subdivided as part of change in major occupancy, the relative risk is established based on the index number of the final aggregate size of the suite as compared to the original size of the suite (see Note A-11.2.1.2.(10)).

Group A Division 1		
Building Use	Hazard Index (Building Area(1))	
	≤200 m2	>200 m2
Dinner Theatres	4	5

Live Theatres	4	5
Motion Picture Theatres	4	5
Opera Houses	4	5
Television Studios (With Audience)	4	5
Group A Division 1		
Building Use	Hazard Index (Building Area(1))	
	≤200 m2	>200 m2
Art Galleries	3	4
Auditoria	3	4
Billiard Halls, Amusement Arcades	3	4
Bowling Alleys	3	4
Churches	3	4
Clubs, Lodges (Non-Residential)	3	4
Community Halls	3	4
Concert Halls	3	4
Court Rooms	3	4
Dance Halls	3	4
Daycare Centres	3	4
Exhibition Halls (Without Sales)	3	4
Exhibition Halls (With Sales)	See Group E	
Gymnasia (Multi-Purpose)	3	4
Gymnasia (Athletic)	3	4
Lecture Halls	3	4
Libraries	3	4
Licensed Beverage Establishments	3	4
Licensed Clubs, Lodges	3	4
Museums	3	4
Passenger Stations/Depots	3	4
Recreational Piers	3	4
Restaurants (Seating Over 17)	3	4
Schools, Colleges	3	4
Undertaking Premises	3	4
Group A Division 3		
Building Use	Hazard Index (Building Area(1))	
	≤200 m2	>200 m2

Arenas (No Occupancy On Activity Surface)	3	4
Armouries (No Occupancy On Activity Surface)	3	4
Enclosed Stadia or Grandstand	3	4
Ice Rinks (No Occupancy On Activity Surface)	3	4
Indoor Swimming Pools	3	4
Group A Division 4		
Building Use	Hazard Index (Building Area(1))	
	≤200 m2	>200 m2
Amusement Park Structures	2	3
Bleachers	1	3
Grandstands (Open)	1	3
Reviewing Stands	1	3
Stadia (Open)	1	3
Group B, Division 1		
Building Use	Hazard Index (Building Area(1))	
	≤200 m2	>200 m2
Detention Facilities (Minimum Security)	4	5
Detention Facilities (All other types of security)	6	6
Police Station with Detention (not meeting Article 3.1.2.4.)	3	4
Group B, Division 2		
Building Use	Hazard Index (Building Area(1))	
	≤200 m2	>200 m2
Hospital, Nursing Home, Geriatric, Sanitarium (Ambulatory)	4	5
Hospital, Nursing Home, Geriatric, Sanitarium (Non-Ambulatory)	4	56
Psychiatric Hospitals (Maximum Confinement)	4	5
Psychiatric Hospitals (Minimum Confinement)	3	4
Police Station with Detention (Meeting Article 3.1.2.4.)	3	3
Group B, Division 3		
Building Use	Hazard Index (Building Area(1))	
	≤200 m2	>200 m2
Residential Care Facilities (Ambulatory)	3	4
Residential Care Facilities (Non-Ambulatory)	4	5
Children Custodial Homes	3	4

Convalescent Homes (Ambulatory)	3	4
Convalescent Homes (Non-Ambulatory)	4	5
Group Homes for Adult Residents with Developmental Disabilities (Minimum Confinement)	3	4
Group Homes for Adult Residents with Developmental Disabilities (Maximum Confinement)	4	5
Group C		
Building Use	Hazard Index (Building Area(1))	
	≤200 m2	>200 m2
Apartments	3	4
Clubs, Residential	3	4
Colleges Residential	3	4
Congregate Care Housing for Seniors	3	5
Convents	3	4
Dormitories/Hotels	3	4
Hotels	3	5
Detached Houses (up to two principal dwelling units)	2	2
Live/work units	3	5
Monasteries	3	4
Retirement Homes	3	4
Schools, Residential	3	4
Group D		
Building Use	Hazard Index (Building Area(1))	
	≤200 m2	>200 m2
Advertising and Sales Offices	3	3
Automatic Bank Deposit	3	4
Barber/Hairdresser Shops	3	4
Beauty Parlours	3	4
Branch Banks	3	4
Car Rental Premises	3	3
Chiropractic Offices	3	4
Communications Offices (Telephone Exchange)	3	4
Communications Offices (Telex)	3	4
Communications Offices (Courier)	3	3
Computes Centres	3	4

Construction Offices	3	3
Costume Rental Premises	3	4
Dental Offices (Denture Clinic)	3	4
Dental Offices (General)	3	4
Dental Offices (Surgical/Anaesthesia)	4	5
Dry Cleaning Depots	3	4
Dry Cleaning Premises (Self-Serve)	4	4
Health/Fitness Clubs	3	4
Laundries (Self-Serve)	4	4
Massage Parlours	3	4
Medical Offices (Examination)	3	4
Medical Offices (Surgical Anaesthesia)	4	5
Offices (Business)	3	3
Offices (Charitable)	3	3
Offices (Legal/Accounting)	3	3
Offices (Design)	3	4
Pharmacy Offices	3	4
Photographic Studios	3	4
Physiotherapy Offices	3	4
Police Stations (No Detention)	3	4
Printing and Duplicating	4	5
Public Saunas	3	4
Radio Stations (No Audience)	3	4
Small Tool Rental Premises	3	4
Suntan Parlours	3	4
Veterinary Offices	3	4
Group E		
Building Use	Hazard Index (Building Area(1))	
	≤200 m2	>200 m2
Automotive/Hardware Department Store	4	5
China Shops	3	4
Department Stores	4	5
Electrical Stores (Fixtures)	3	3
Exhibition Halls (With Sales)	4	5
"Fast Food" Outlets	3	4

Feed and Seed Stores	4	5
Flea Markets	4	5
Flower Shops	3	4
"Food" and Vegetable Markets	3	4
Garden Shops	3	4
"Gas" Bars	4	5
Gift Shops (without liquor sales)	3	4
Home Improvement Stores	4	5
Kitchen/Bathroom Cupboards Stores	3	4
Plumbing Stores (Fixtures/Accessories)	3	3
"Pop" Shops	3	4
Restaurants (Not More Than 30 Persons)	3	4
Shopping Malls	4	5
Stationery/Office Supply Stores	3	4
Stores (Art)	3	4
Stores (Baked Goods)	3	4
Stores (Beer)	3	4
Stores (Book)	3	4
Stores (Camera)	3	4
Stores (Candy)	3	4
Stores (Clothing)	3	4
Stores (Drugs)	4	4
Stores (Electronic)	3	4
Stores (Floor Coverings)	4	5
Stores (Food)	3	3
Stores (Furniture/Appliances)	3	4
Stores (Hardware)	4	5
Stores (Health)	4	4
Stores (Hobby)	3	4
Stores (Jewellery)	3	3
Stores (Paint/Wallpaper)	4	5
Stores (Pet)	3	4
Stores (Records/Tapes)	3	4
Stores (Spirits)	4	5
Stores (Toys)	4	5
Stores (Variety)	4	4

Stores (Video Sales/Rental)	3	4
Supermarket	3	4
Group F, Division 1		
Building Use	Hazard Index (Building Area(1))	
	≤200 m2	>200 m2
All Uses	6	6
Group F, Division 2		
Building Use	Hazard Index (Building Area(1))	
	≤200 m2	>200 m2
Aircraft Hangars	3	5
Abattoirs	3	4
Bakeries	3	5
Body Shop	3	5
Candy Plants	3	4
Cold Storage Plants with Flammable Refrigerant	3	5
Cold Storage Plants with Non-flammable Refrigerant	3	4
Dry Cleaning Establishments (non-flammable or non-explosive)	3	4
Electrical Substations	3	4
Factories (High Fire Load)	3	5
Freight Depots (High Fire Load)	3	5
Laboratories (High Fire Load)	3	5
Laundries (not self-serve)	3	4
Manufacturer Sales (High Fire Load)	3	5
Mattress Factories	3	4
Meat Packing Plants	3	4
Packaging Manufacturers (Cellulose)	3	4
Packaging Manufacturers (Noncombustible)	3	3
Packaging Manufacturers (Plastics)	3	5
Paper Processing Plants (Wet)	3	5
Planing Mills	3	5
Printing Plants	3	4
Public Heritage Buildings	3	3
Repair Garages	3	5
Sample Display Rooms (High Fire Load)	3	5
Self Service Storage Buildings	3	4

Service Stations (no spray painting)	3	5
Storage Rooms (High Fire Load)	3	5
Television Studios (no audience)	3	4
Tire Storage	3	5
Warehouse (High Fire Load)	3	5
Welding Shops	3	5
Wholesale Rooms (High Fire Load)	3	5
Wood Working Factories	3	5
Workshops (High Fire Load)	3	5
Group F, Division 3		
Building Use	Hazard Index (Building Area(1))	
	≤200 m2	>200 m2
Creameries	2	2
Factories (Low Fire Load)	2	3
Freight Depots (Low Fire Load)	2	3
Laboratories (Low Fire Load)	2	3
Manufacturers Sales (Low Fire Load)	2	3
Power Plants	2	4
Public Heritage Buildings	2	3
Sample Display Rooms (Low Fire Load)	2	3
Storage Garages	2	3
Storage Rooms (Low Fire Load)	2	3
Warehouse (Low Fire Load)	2	3
Wholesale Rooms (Low Fire Load)	2	3
Workshops (Low Fire Load)	2	3
Notes to Table A-11.2.1.2-B: (1) For the purposes of a Restricted Change of Occupancy, the Hazard Index may be established based on the aggregate area of the suite provided the suite changing occupancy is fully contained in the original suite area.		

In Book I, Division B, in the notes to Part 11, following the note A-11.2.1.2., Council inserts the following new note:

“
A-11.2.1.2.(10) Restricted Change of Occupancy. The term “restricted change of occupancy” refers to a change in major occupancy restricted to a specific set of uses as set out in Article 11.2.1.2.(10) that are limited both in scope and risk such that it does not increase the overall hazard.

While it is intended that designers and owners seeking to apply this requirement refer to the hazard index table A-11.2.1.2.-B, for the purposes of this Article – they may substitute the aggregate suite area of the suite in lieu of the building area where the change of major occupancy is wholly contained within the original suite.

For example: a suite of 300 m² is being repartitioned and converted from a “business office” use (Group D) to a suite of “retail toystore” use (Group E) of 150 m² and second suite of “health care office” use which are fully contained within the original 300 m² suite area. The aggregate suite area is therefore permitted to be used for the purposes of determining the appropriate hazard index which is then established as follows:

Business Office (300 m²) – 4 (original)

Retail Toystore (150 m²) – 4 (new)

Health Care Office (150 m²) – 3 (new)

By comparison, a larger toystore, such as the conversion of the original 300 m² suite area into a toystore, would result in a hazard index of ‘5’ which would not meet the requirements of Article 11.2.1.2. for a “restricted change of occupancy” as it represents an increase in hazard.

While the hazard index table is a useful tool for assessment, it is also important to understand that no table can address all possible combinations of uses. Designers and owners should exercise caution when making judgments of relative hazards in this regard.

”.

A decision by a court that any part of this By-law is illegal, void, or unenforceable severs that part from this By-law, and is not to affect the balance of this By-law.

Appendix C:

DRAFT

Note: A By-law will be prepared generally in accordance with the provisions listed below, subject to change and refinement prior to posting.

**A By-law to amend Parking By-law No. 6059
Regarding Parking Regulations for Change of Use**

THE COUNCIL OF THE CITY OF VANCOUVER, in public meeting, enacts as follows:

1. This By-law amends the indicated provisions of the Parking By-law No. 6059.
2. Council amends section 4.2(d) by striking out “that consists of less than 200 m²” and substituting “that consists of less than 300 m²”.
3. Council amends section 5.2 by striking out the first paragraph in its entirety and substituting the following:

“Loading spaces for any building classified in Column 1 must meet the corresponding standard listed in Column 2, except for:

 - (a) Fitness Centre - Class 1 that does not include racquet and ball courts, School - Arts or Self-Improvement, Restaurant, Health Enhancement Centre, or Animal Clinic, that consists of less than 200 m², that is commencing business in an existing building in the C-2, C-3A, C-5, C-5A or C-6 zone, and that constitutes a change of use from the previous use in the same premises, in which case the loading standard is at least one Class A space for each 100-200 sq metres of gross floor area; and
 - (b) General Office, Retail Store, Health Care Office, Barber Shop or Beauty Salon, or Beauty and Wellness Centre, that consists of less than 300 m², that is commencing business in an existing building, and that constitutes a change of use from the previous use in the same premises, in which case the loading standard is the lesser of the number of loading spaces listed in Column 2 for such new use and the number of loading spaces available for the previous use.”.
4. A decision by a court that any part of this By-law is illegal, void, or unenforceable severs that part from this By-law, and is not to affect the balance of this By-law.
5. This By-law is to come into force and take effect on January 1, 2022.

ENACTED by Council this _____ day of _____, 2021

Mayor

City Clerk

Appendix D:

This document is being provided for information only as a reference tool to highlight the proposed amendments. The draft amending by-law attached to the Council report RTS No. 14574 entitled **A By-law to amend Building By-law No. 12511 Regarding Reduction in Upgrade Triggers for Certain Uses and Major Occupancies** represent the amendments being proposed to Council for approval. Should there be any discrepancy between this redline version and the draft amending by-laws, the draft amending by-laws prevail.

Book I – Division A, Part 1 Changes

1.4.1.2. Defined Terms

- 1) The words and terms in italics in this **By-law** shall have the following meanings:

[...]

Small suite means a *suite* classified as a Group A Division 2, Group D, Group E, Group F Division 2 (wholesale showroom) or Group F, Division 3 occupancy where the *occupant load* for the entire *suite* does not exceed 60 persons.

[...]

Book I – Division B, Part 11 Changes

11.2.1.2. General Requirements

(See Note A-11.2.1.2.)

1) Where *construction of existing buildings* occurred before the effective date of this By-law, *reconstruction or alteration of existing buildings* is not a requirement of this By-law, except as required by Articles 11.2.1.3. to 11.2.1.11. inclusive.

2) Except as permitted by Sentences (3) to (9), and Articles 11.2.1.3. to 11.2.1.11., where an *alteration* is made to an *existing building*, the *alteration* shall comply with this By-law and the *existing building* shall be

a) upgraded to an *acceptable* level as defined in the *existing building* Upgrade Mechanism Model in Division B Appendix A, except that existing lighting exceeding the Lighting Power Density of ASHRAE 90.1-2016 shall be removed within existing spaces of a *suite* within the scope of a *project*,

b) upgraded to the satisfaction of the *Chief Building Official* where the *owner* demonstrates that the design levels, as defined by the Upgrade Mechanism Model in Division B Appendix A, present a hardship for the *owner*, or

c) upgraded to the satisfaction of the *Chief Building Official* through alternative upgrades, that demonstrate equivalent improvement where specific characteristics of the building are intended to be retained.

3) Except as required by Sentence (9) and changes of *major occupancy* in a *small suite*, where an *alteration* does not involve an *addition* or a change in *major*

occupancy, further upgrading to an *existing building* is not a requirement of this By-law provided

- a) *construction* or a full upgrade of the *building* occurred by means of a *building permit* issued on or after November 1, 1999,
- b) all *unsafe conditions* are corrected to the satisfaction of the *Chief Building Official*, and
- c) all new work is in compliance with this By-law.

4) Where a voluntary upgrade for fire alarm systems, *sprinkler systems*, *exits*, accessibility, seismic work, washrooms or kitchens for *single room accommodations*, energy efficiency or *building envelope* repair is carried out, no further upgrade of the *building* is required except that, where other work is included in the application, the upgrade requirement will only be based on the non-voluntary work proposed.

5) Where *building envelope* repair involves more than 60% of an opaque portion of a *building face*, the *building envelope* on the entire vertical section of that *building face* shall be replaced and upgraded to the thermal resistance and air-tightness requirements of Part 10, except where

- a) the scope of work is limited to the replacement of windows
- b) the *building* is two *storeys* in *building height* or less and is required to comply with Part 9 per Division A, Article 1.3.3.3., or
- c) the *building face* has heritage merit and is required to be retained as part of an approved retention plan.

6) Where a *building* is altered and is a *post disaster building* as defined in Table 4.1.2.1., or where there is a major *addition* to a *post disaster building*, the entire *building* shall be upgraded to design upgrade levels F4, S4, N4, A4 and E4 as detailed in the Upgrade Mechanism Model in Division B Appendix A.

7) Where there is a temporary change of *major occupancy in a building for a temporary emergency shelter or an arts and culture indoor event*, the upgrade requirements shall be based solely on Section 11.6.

8) Except as permitted by Setence (10), ~~W~~where there is a change of *major occupancy* in a *building*, and the aggregate area of the change in *major occupancy* within any 5 year period is greater than 50% of the *building area* in a one *storey building* or greater than 100% of the *building area* in a *building* of more than one *storey*, the entire *building* shall be upgraded to design upgrade levels F4, S4, N4, A4 and E3 as detailed in the Upgrade Mechanism Model in Division B Appendix A except where

- a) the change in *major occupancy* is to a single *suite* and the work does not exceed 5% of the *building area* or more than 100 m² in area, or
- b) such upgrades are in conflict with an approved heritage retention plan.

9) The upgrade requirements for energy efficiency to *existing buildings* shall conform to the upgrade mechanism model in Division B Appendix A for energy efficiency except for

- a) *buildings* designed and constructed in conformance with ASHRAE 90.1-2007 or as deemed acceptable to the *Chief Building Official*,
- b) *buildings* designed and constructed in conformance with Article 9.25.2.1. Division B of Building By-law No. 9419,
- c) *buildings* where the *alteration* is limited to the upgrade of energy related specific equipment, as listed in Table 11.2.1.2.-A, provided the replacement equipment complies with industry standards for "high efficiency," and

d) *multi-family buildings* not more than 3 storeys in *building height* may comply with the energy efficiency upgrade requirements of Table 11.2.1.4.(2).

Table 11.2.1.2.-A
Energy Related Equipment
Forming part of sentence 11.2.1.2.(9)

Equipment Type Specific Equipment	Equipment Type Specific Equipment
Basic Building Systems	Boilers
	Furnaces
	Hot Water Tanks
	Lighting Systems
	Energy Reduction Sensors (occupant, light, etc.)
Renewable Energy Systems	Photovoltaic system
	Solar Thermal system
	Biofuel-based Energy system
	Geothermal Heating system
	Geothermal Electric system
High Performance Energy Systems	Wave & Tidal Power system
	Ground Source Heat Pump system
	Air Source Heat Pump system
	Waste Heat Recovery system

10) Where there is a change of *major occupancy* in a *building*, the upgrade requirements of Flow Chart #2 of the Upgrade Mechanism Model in Division B Appendix A need not be provided for a change in major occupancy where

- a) the change in *major occupancy* is to a single *suite*,
- b) the aggregate *suite* area does not exceed the lesser of 50% of the *building area* or 300 m²,
- c) the major occupancy of the *suite* is Group D or Group E, and
- d) the use and aggregate *suite* area complies with Table 11.2.1.2.-B.

Table 11.2.1.2.-B
Maximum Aggregate Suite Area
Forming part of sentence 11.2.1.2.(10)

Major Occupancy	Suite Use	Aggregate Suite Area	
		≤200 m ²	201 to 300 m ²
Group D	Administrative & Business Offices	Y	Y
	Barber and Hairdressing Shop Beauty Salon	Y	Y
	Health Care Offices (non-surgical, non-sedation)	Y	Y ⁽¹⁾
Group E	General Retail (Non-hazardous materials)	Y ⁽¹⁾	N ⁽²⁾

Notes to Table 11.2.1.2.-B:

⁽¹⁾ Provided the Hazard Index of the space is not increased (see Table A-11.2.1.2.D)

⁽²⁾ Except as acceptable to the *Chief Building Official*

Book I – Division B, Notes to Part 11 Changes

NOTES TO PART 11 EXISTING BUILDINGS

A-11.2.1.2. EXISTING BUILDING UPGRADE MECHANISM

BACKGROUND AND INTENT. When work is carried out to an existing building, the Building By-law requires that the building be upgraded to an “acceptable” level. On April 20, 2004 Council approved a new model for determining the “acceptable” level of Building By-law upgrade for existing buildings undergoing alterations under the City’s building permit process.

Prior to April 20, 2004, the Upgrade Mechanism Model was based primarily on construction values. The new Upgrade Mechanism Model determines the required “acceptable” level of upgrade for an existing building using the concept of “Project Types and Categories of Work”.

The intent of the Upgrade Mechanism Model is to provide a road map for building owners and designers to determine the required level of Building By-law upgrade for the existing portion of a building as a function of the project types and the related categories of work.

The Upgrade Mechanism Model is not generally intended for existing residential buildings containing not more than two principal dwelling units. The general upgrade requirement for these types of buildings is defined in Article 11.2.1.4. of Division B.

VOLUNTARY BUILDING BY-LAW UPGRADES. Where a voluntary upgrade for fire alarm systems, sprinkler systems, exits, accessibility, seismic work, building envelope repair, energy efficiency, or water efficiency is performed, it is not the intent of this By-law to require the owner to further upgrade the building provided no other work is included in the project. If other work is included in the project, the upgrade requirement will only be based on the non-voluntary work proposed.

PROCEDURE FOR USING THE UPGRADE MECHANISM MODEL

The following steps outline a recommended procedure for using the Upgrade Mechanism Model.

STEP 1 – Determine Any Other Requirements that may be Applicable. Other Building By-law requirements may be applicable to the existing building project. Review the Overall Conditions for the Upgrade Mechanism Model to determine if other requirements are applicable.

STEP 2 – Determine the appropriate Project Type(s) and Related Category or Categories of Work as a function of the scope of work for the alteration.

If the renovation includes more than one category of work or project type, then the most restrictive upgrade levels from each project type would be applied.

Table A-11.2.1.2.-A Project Types and Related Categories of Work			
Project Type	Rehabilitation (See Flow Chart No. 1)	Change of Major Occupancy (See Flow Chart No. 2)	Addition (See Flow Chart No. 3)
Categories of Work	Voluntary Upgrade Repair/Small Suite Minor Renovation Major Renovation Reconstruction	Change of Major Occupancy Classification Change of Major Occupancy Classification to a Small Suite	Major Horizontal Addition Minor Horizontal Addition Major Vertical Addition Minor Vertical Addition

STEP 3 – Determine the Required Design Upgrade Level Based on the Category of Work for the Project

The required upgrade levels for fire, life & health safety; structural safety; non-structural safety; accessibility for persons with disabilities; and energy efficiency are to be determined using each of the applicable project type flow charts and the related category of work

For Rehabilitation Type Projects use Flow Chart No. 1.

For Change of Major Occupancy Type Projects use Flow Chart No. 2.

For Addition Type Projects use Flow Chart No. 3.

NOTE: Where a project involves more than one category of work, the most restrictive upgrade level, as determined from each category of work, shall determine the upgrade design level.

STEP 4 – Determine the objective and acceptable solution for the most restrictive upgrade level for fire, life and health safety; structural safety; non-structural safety; accessibility for persons with disabilities; and energy efficiency. The most restrictive upgrade levels are the design upgrade levels that are to be applied to the existing building.

The model is based on incremental upgrade levels for each of the fire, life and health safety (F), structural safety (S); non-structural safety (N); accessibility (A); and energy (E) objectives. For each of the upgrade levels, the model states the objective of the upgrade level as well as the corresponding acceptable solution that is deemed to meet the intended objective of the applicable upgrade level. The objective statement and acceptable solution for each F, S, N and A upgrade level is defined in Table A-11.2.1.2.-B. The objective statement and acceptable solution for each E upgrade level is defined in Table A-11.2.1.2.-C.

The alternative acceptable solution for energy efficiency requires that the determined E design upgrade level from Flow Chart No 1 is used to enter Table A-11.2.1.2.-C to determine the Objective Statement and review the list of options of alternative

acceptable solutions. Within Table A-11.2.1.2.-C and the appropriate E Level section, the user selects one alternative acceptable solution from within the Building System chosen by the user to be upgraded. Only one (1) of the solutions in the Alternative acceptable solutions Options column in Table A-11.2.1.2.-C is required to meet the objective. It is up to the user to determine which system in the Building System column and corresponding upgrade solution in the Alternative acceptable solution Option column shall be chosen to satisfy the objective. Within any 5 year period, when an alternative acceptable solution has been used previously within the project area, then that option is not permitted to be used as an alternative acceptable solution.

PROJECT TYPES AND THEIR RELATED CATEGORIES OF WORK

The Upgrade Mechanism Model is based on the following defined three Project Types and related Categories of Work as illustrated in Table A-11.2.1.2.-A. If the renovation includes more than one category of work or project type, then the most restrictive upgrade levels from all the applicable project types would be applied.

Table A-11.2.1.2.-A Project Types and Related Categories of Work			
Project Type	Rehabilitation (See Flow Chart No. 1)	Change of Major Occupancy (See Flow Chart No. 2)	Addition (See Flow Chart No. 3)
Categories of Work	Voluntary Upgrade Repair/Small Suite Minor Renovation Major Renovation Reconstruction	Change of Major Occupancy Classification Change of Major Occupancy Classification to a Small Suite	Major Horizontal Addition Minor Horizontal Addition Major Vertical Addition Minor Vertical Addition

REHABILITATION PROJECT TYPE (Flow Chart No. 1)

Voluntary Building By-law Upgrades – Voluntary Building By-law upgrades are limited to alterations that directly contribute to the improvement of the fire alarm, sprinkler, exit, accessibility, seismic, building envelope, and energy or water efficiency systems in an existing building.

REPAIR – Repair pertains to a limited scope of interior or exterior renovation work to replace existing building components with functionally equivalent components. Repair work may not include work that increases the usable floor area of a building, creates an interconnected floor space, supports an addition or change of use, or the consolidation of more than one existing suite into a single tenant space. For Repairs, an E1 level of energy upgrade shall be applied.

SMALL SUITE – The upgrade trigger for a Small Suite pertains to limited renovation work within **a suite separated from adjacent spaces in a building by a fire separation incorporating at least two layers of gypsum wallboard on the suite side, which is**

- a small suite as defined in Division A, Article 1.4.1.2., or
- a suite of Group A, Division 2, D, or E major occupancy with an occupancy up to 100 persons as determined by Division B, Article 3.1.17.1.(1)(c) and egress directly to the adjoining ground level.

Small Suite work may include reconfiguration of the interior space of the suite, but may not include work on more than level (storey or mezzanine), interconnected floor spaces, exterior renovations, or the consolidation of more than one existing suite into a single new tenant space. For Small Suite renovations, an E2 level of energy upgrade shall be applied.

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 which does not include the public or common floor areas of the building. Minor renovation may also include the subdivision of a single suite of not more than one storey into smaller constituent suites.

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,
- Subdivision of an existing suite of not more than one storey into one or more suites which do not include floor area outside of the subdivided suite,
- 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.

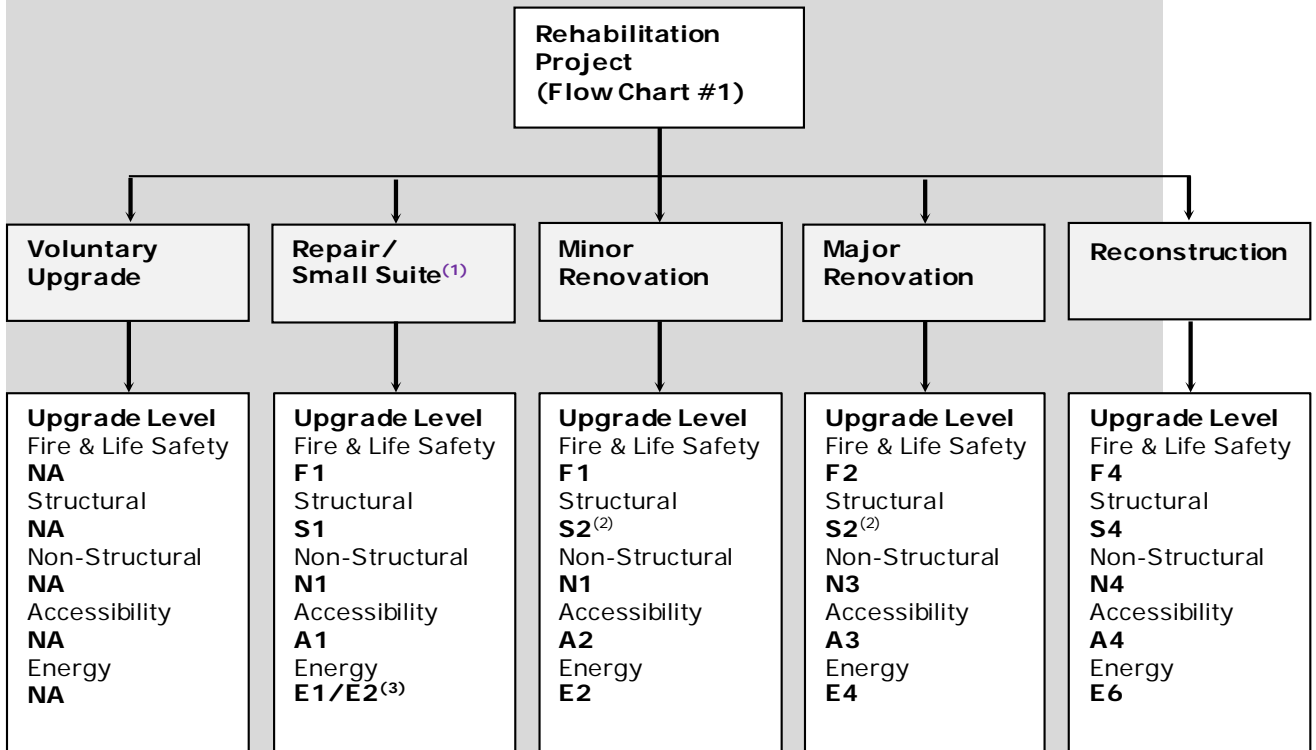
MAJOR RENOVATION – Major renovations means work within multiple tenant spaces that is not otherwise considered a minor renovation. Major renovations may include (singly or in combination): Interior re-configuration of multiple tenant spaces, creation of interconnected floor spaces, exterior alterations, 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.

RECONSTRUCTION - Reconstruction means the extensive removal of the majority of construction to expose the building's primary structure on interior and exterior walls, floors and roof with only the primary structural elements remaining in place (building skeleton). Reconstruction also includes substantial reconfiguration of the interior floor space. Where work, which might otherwise be considered as reconstruction, is undertaken solely to facilitate the repair or the abatement of a health hazard of a building, then such work need not be considered a reconstruction and would be considered a repair, minor renovation or a major renovation as defined in this By-law.

Reconstruction project typically include:

- extensive renovations throughout the entire building and the building is gutted.
- the removal of the majority of drywall and plaster from the interior walls.
- the removal of the majority of drywall, plaster, insulation and exterior cladding from the exterior walls,
- the removal of floor and roof membranes and coverings.

FLOW CHART NO. 1



Notes to Flow Chart No. 1:

⁽¹⁾ For small suites, the small suite must be separated on the suite side of the suite separation with at least two layers of gypsum wall board (GWB). Where only one layer exists, then an additional layer of GWB must be added to the suite side only. The additional layer of GWB may be any type of GWB with a minimum thickness of 13 mm.

⁽²⁾ Notwithstanding the upgrade levels in Flow Chart #1, where a minor or major renovation involves an entire building and the renovation includes the removal of the majority interior wall cladding then the structural seismic upgrade level shall be S3.

⁽³⁾ For Small suite renovations, an E2 level of energy upgrade shall be applied.

CHANGE OF MAJOR OCCUPANCY CLASSIFICATION PROJECTS (Flow Chart No. 2)

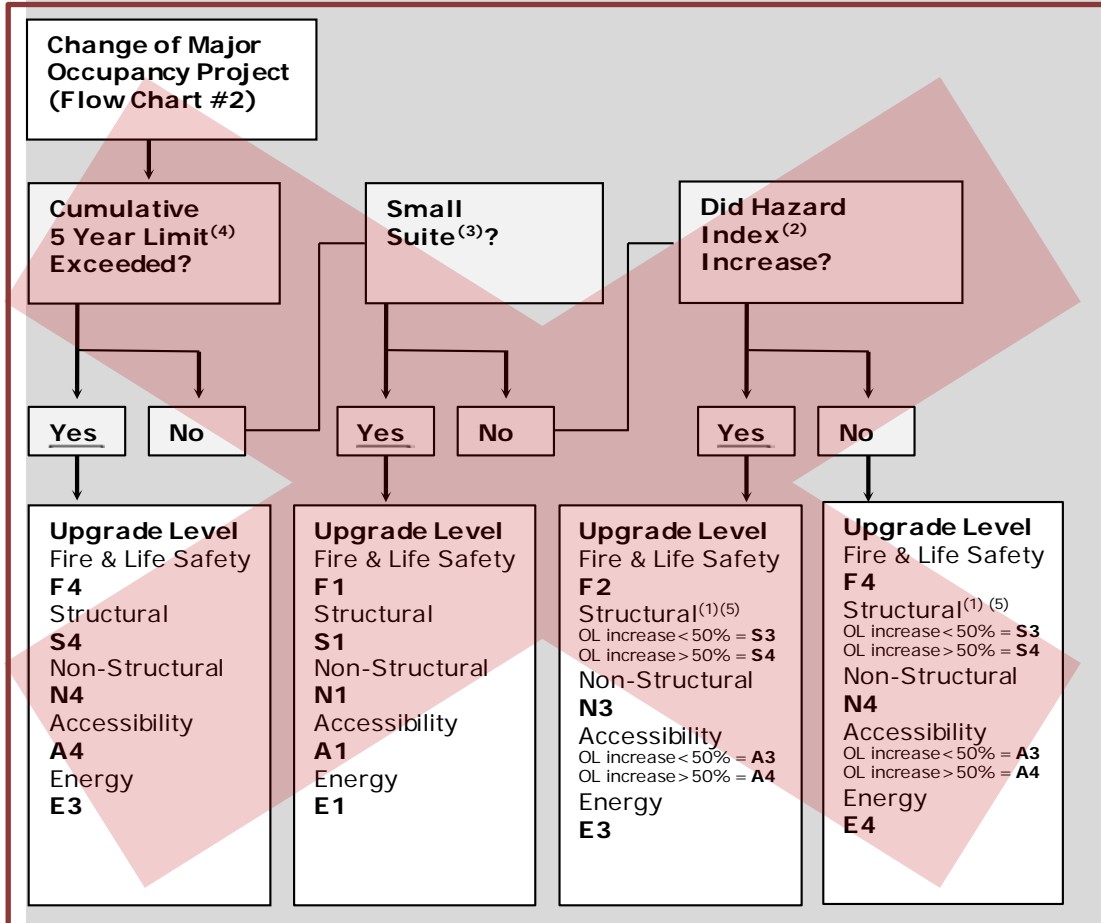
Restricted Change of Occupancy. The term “restricted change of occupancy” refers to a change in major occupancy restricted to a specific set of uses as set out in Article 11.2.1.2.(10) that are limited both in scope and risk such that it does not increase the overall hazard.

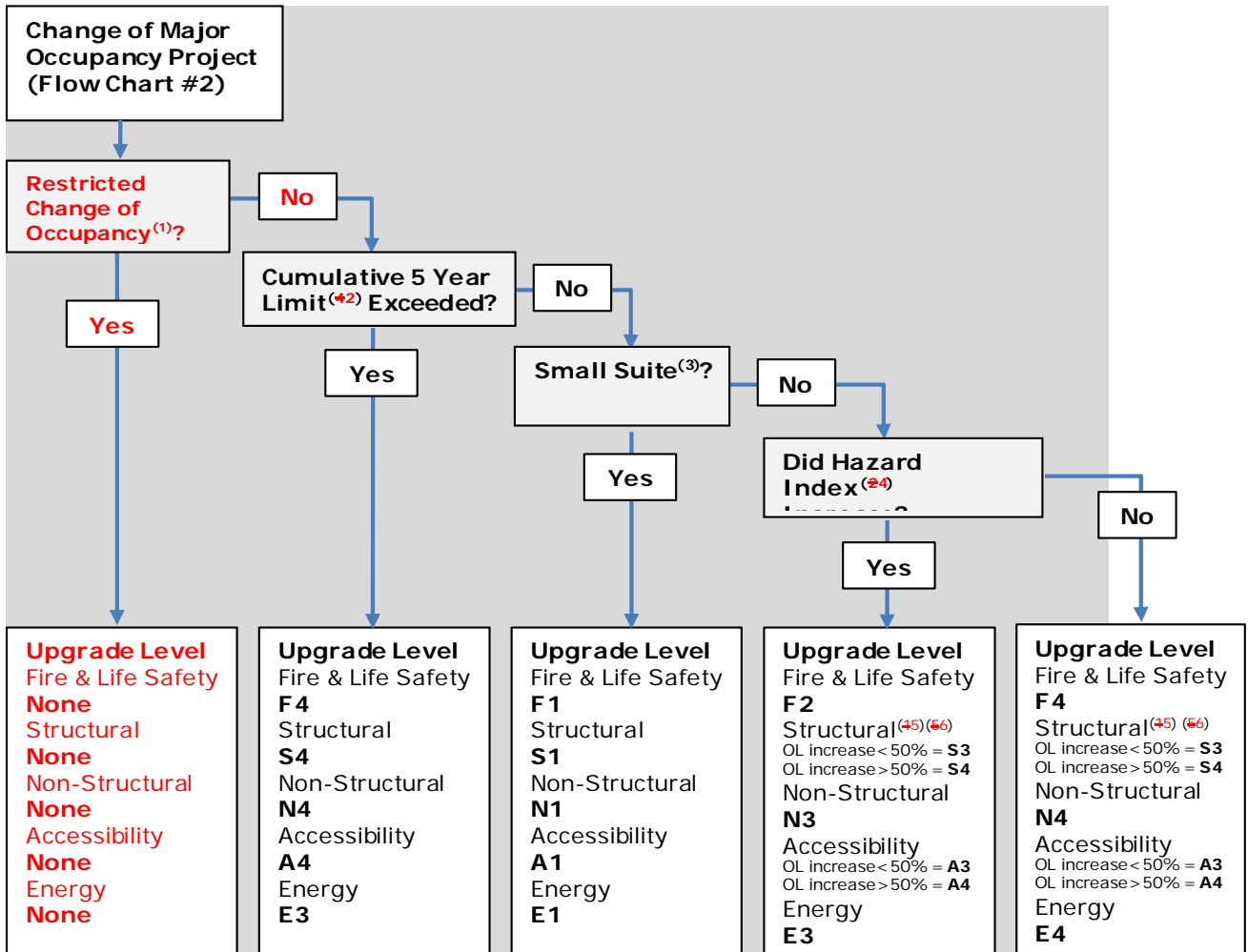
Change of Major Occupancy Classification – Change of major occupancy classification means a change of use within a building, a suite, or its constituent floor

areas where the proposed use is outside of the currently defined uses of the existing major occupancy classification permitted for the building, the suite, or its constituent floor areas.

Small Suite Change of Major Occupancy Classification – Small suite change of major occupancy classification means a change of use within a small suite, or the constituent floor areas of a small suite, where the occupant load for the entire suite does not exceed 60 persons and the small suite is limited to a Group A, Division 2, Group D, Group E, Group F, Division 2 (wholesale showroom), or Group F, Division 3 major occupancy.

FLOW CHART NO. 2





Notes to Flow Chart No. 2:

⁽¹⁾ Restricted Change of Occupancy (see Article 11.2.1.2.(10) and note A-11.2.1.2.(10))

⁽⁴²⁾ The cumulative 5 year limit is triggered when there is a change of major occupancy in an existing building and the aggregate area of the change in major occupancy including the current work within any 5 year period is greater than 50% of the building area (as defined in Article 1.4.1.2. of Division A) in a building of not more than one storey, or the aggregate area of the change in major occupancy within any 5 year period is greater than 100% of the building area (as defined in Article 1.4.1.2. of Division A) in a building of more than one storey.

⁽³⁾ For small suites, the small suite must be separated on the suite side of the suite separation with at least two layers of gypsum wall board (GWB). Where only one layer exists, then an additional layer of GWB must be added to the suite side only. The additional layer of GWB may be any type of GWB with a minimum thickness of 13 mm.

⁽²⁴⁾ The Hazard Index may be determined by the Hazard Index Table A-11.2.1.2.-D. or other methodology as deemed acceptable to the Chief Building Official.

⁽⁴⁵⁾ Occupant load (OL) increase is based on the proposed occupant load for the entire building versus the current occupant load for the entire building. The OL change may be assessed in a comparative manner by considering only those areas undergoing a change of major occupancy, where the occupant load of the remainder of the building cannot otherwise reasonably be assessed. Occupant loads are to be determined by the acceptable solutions in Subsection 3.1.17. of Division B.

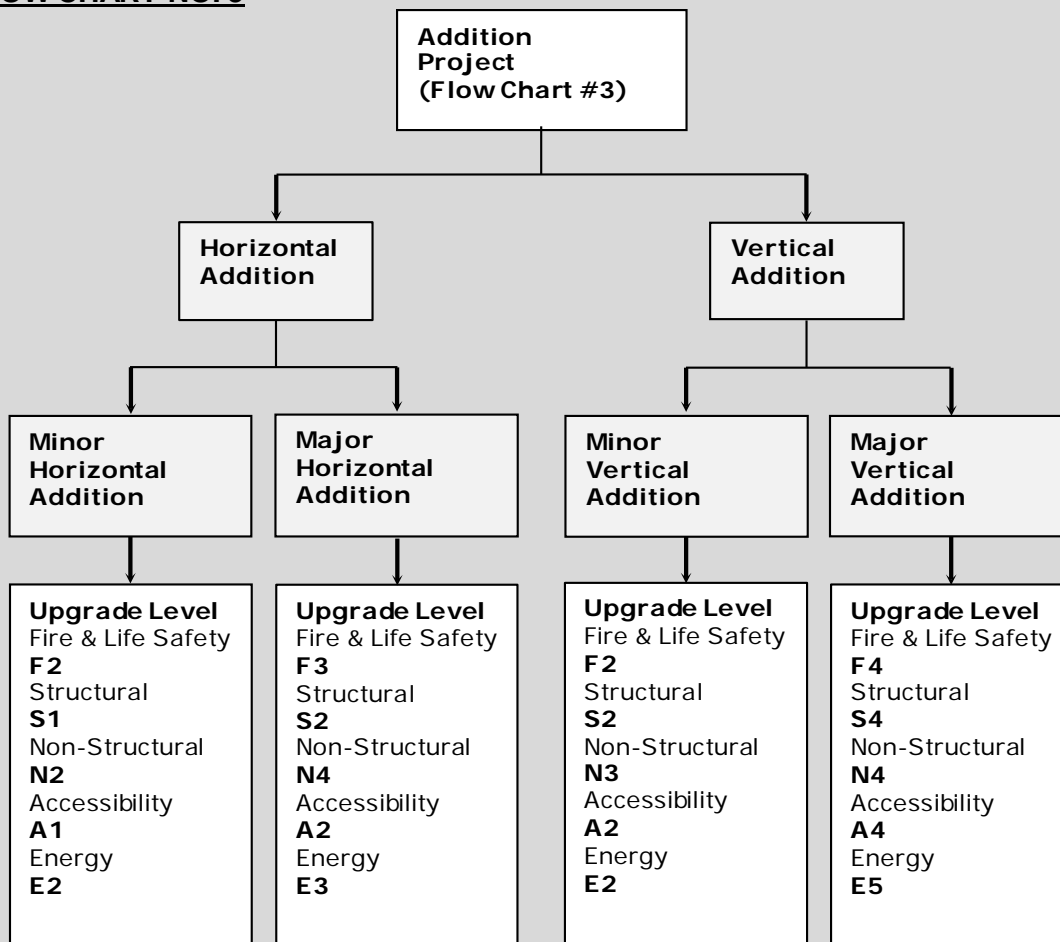
⁽⁵⁶⁾ Where there is a change of major occupancy and the structural load paths or structural design criteria are altered then it must be demonstrated that the existing building has the structural capacity to carry the increase in load or the building shall be structurally upgraded to carry the increase in live load.

ADDITION PROJECTS (Flow Chart No. 3)

Horizontal Addition – Horizontal additions include both “minor” and “major” horizontal additions. A minor horizontal addition is any expansion of a floor area beyond the extents of the existing floor area in which it is located by not more than 25 per cent of the existing building area, or by not more than 500 m² in aggregate floor area. A major horizontal addition is any expansion of a floor area beyond the extents of the existing floor area that exceeds the limits permitted by a minor horizontal addition. Any construction that creates new floor area, by in-fillings existing roof, or deck areas, or is creates new superimposed floor area over existing building structure or floor area is not considered a horizontal addition.

Vertical Addition – Vertical additions include both “minor” and “major” vertical additions. A minor vertical addition is the addition of new floor area (storey, mezzanine, decks or other roof areas intended for occupancy) that in-fills existing unoccupied roof or deck areas, or is superimposed over existing building structure or floor area, with an aggregate floor area increase of not more than 25 per cent of the building area, or by not more than 500 m² in aggregate floor area. A major vertical addition is an addition that increases the aggregate floor areas or mezzanine area increase that exceeds the limits permitted by a minor vertical addition.

FLOW CHART NO. 3



DESIGN UPGRADE LEVEL TABLES

**Table A-11.2.1.2.-B
DESIGN UPGRADE LEVELS FOR FIRE, LIFE AND HEALTH SAFETY (F), STRUCTURAL SAFETY(S), NON-STRUCTURAL SAFETY (N), and ACCESSIBILITY (A)**

DESIGN LEVEL⁽¹⁾	OBJECTIVE STATEMENT	ALTERNATIVE ACCEPTABLE SOLUTIONS
F1	Exiting to be reviewed to ensure that the exits do not present an unsafe condition.	Project Area - Exits to be upgraded with respect to number, capacity, and fire separations only.
S1	Proposed work must not have an adverse effect on the structural capacity of the existing structure.	Entire Building - Proposed work must not reduce the structural integrity of the existing building.
N1	Project area to be reviewed to ensure safety from overhead falling hazards.	Project Area - Restrain all ceiling supporting frames, T-bars assemblies, ceiling gypsum wall boards, all overhead mechanical ducts, sprinklers , and equipment, overhead electrical conduits and lights
A1	The proposed work must not adversely affect the existing accessibility level of the building.	Project Area - Existing level of accessibility must be maintained throughout the project area. No additional accessibility enhancements are required.
F2	Existing building to meet the fire & life safety requirements of the Building By-law within the project area and have conforming exits leading from the project area to an acceptable open space.	Project Area - Alarms and detectors (only where existing devices are provided), emergency lights, access to exit, exits, exit signs, and exit lights. Public Area (leading from project area to an acceptable open space) - emergency lights, exit signs, access to exit, exits, and flame spread ratings.
S2	Limited structural upgrade required in order to provide minimum protection to building occupants during a seismic event within the project area.	Project Area - Non-structural elements and falling hazards must be restrained to resist lateral loads due to earthquakes within the project area.
N2	Project area and means of egress to be reviewed to ensure safety from overhead falling hazards.	Project Area Means of Egress - Restrain interior partition walls. Restrain all ceiling supporting frames, T-bars assemblies, ceiling gypsum wall boards, sprinklers , all overhead mechanical ducts, and equipment, overhead electrical conduits and lights. Restrain cladding veneer, parapets, canopies and ornaments over exit and extended to 5 m on either side of exit
A2	A limited level of upgrade shall be provided within the project area to ensure access for persons with disabilities.	Project Area - door clearances, door hardware, and areas of refuge.
F3	Existing building to meet fire, life and health safety requirements within the project area. Existing building to	Project Area – Alarms & detectors (only where existing devices are provided), emergency lighting, access to exit, exits, exit signs, exit

	meet fire, life & health safety requirements within the public areas.	lights, flame spread ratings, floor assemblies & supports, occupancy separation, standpipes and sprinklers, washrooms. Public Area - Alarms & detectors (only where existing devices are provided), emergency lighting, access to exit, exits, exit signs, exit lights. Entire Building – Fire fighter’s access.
S3	The building structure shall be upgraded to an acceptable level in order to provide a minimum level of property and life safety to unreinforced masonry or other buildings having less than 30 percent of the current required seismic resistance. Falling hazards that may impact adjacent properties and over public ways must be addressed.	Entire Building — Building to be upgraded to resist 50 percent of the current By-law specified lateral force levels, where the building is evaluated as having less than 30 percent of the current required seismic resistance. Restrain falling hazards from major building components such as cantilevered walls, parapets, exterior ornaments, towers, chimneys, or other appendages, which could impact adjacent properties and public ways to resist forces due to a seismic event.
N3	Building exits and to acceptable open space to be reviewed to ensure safety from overhead falling hazards.	Entire Building Exits - Restrain interior partition walls. Restrain ceiling supporting frames, T-bars assemblies, ceiling gypsum wall boards, overhead mechanical equipment, sprinklers , and services, overhead electrical equipment and services. Restrain falling hazards to resist forces due to a seismic event from non-structural elements including cladding, veneer, cornices, canopies, awnings, and ornaments over exit and extended to 5 m on either side of exit.
A3	The existing building shall be upgraded to an acceptable level in order to ensure complete access within the project area as well as access to the remainder of the building.	Project Area — Door clearances, door hardware, accessible washrooms, and areas of refuge. Public Area — Door clearances, door hardware, areas of refuge, washrooms, ramps, and elevators.
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.
S4	The entire building structure shall be brought up to an acceptable level in order to meet seismic requirements of the VBBL.	Entire Building — Building to be upgraded to resist 75 percent of the current By-law specified lateral force levels, where the building is

		evaluated as having less than 60 percent of the current required seismic resistance.
N4	Entire Building and to acceptable open space to be reviewed to ensure safety from overhead falling hazards.	Entire Building — Restrain all interior partition walls. Restrain all ceiling supporting frames, T-bars assemblies, ceiling gypsum wall boards, sprinklers , overhead mechanical equipment and services, overhead electrical equipment and services. Restrain exterior falling hazards to resist forces due to a seismic event from cladding, veneer, cornices, parapets, canopies, awnings, and ornaments attached to the exterior of the building.
A4	The existing building shall be upgraded in order to provide the minimum accessibility requirements of the VBBL.	Entire Building — Building to meet accessibility provisions of the current VBBL.

Notes to Table A-11.2.1.2.-B:

⁽¹⁾ Where there is one or more upgrade level(s) within the same category preceding the design upgrade level in Table A-11.2.1.2.-B, then the design upgrade level shall also include all of the preceding upgrade levels. For example, where the design upgrade level is F3, then all of the upgrade requirements under F2 and F1 also apply.

TABLE A-11.2.1.2.-C
Alternative acceptable solutions for Energy Efficiency

General Objective Statement: Improve the energy and GHG emissions performance of <i>buildings</i> , systems or components.		
Solution Location: E1 through E5 - Project Location. E6 and E7 – Building Location		
E Level	Building System	Alternative Acceptable Solution Options ⁽¹⁾ (Choose one)
E1 Level Objective Statement: Review and maintain, or upgrade, basic efficiency of equipment or components.		
E1	Envelope	<ol style="list-style-type: none"> 1) Reduce air leakage of all Glazing & Doors (per 5.4.3.2 of ASHRAE 90.1-2016) 2) Upgrade all Opaque Doors performance (per 5.5.3.6 of ASHRAE 90.1-2016)
	HVAC ⁽³⁾	<ol style="list-style-type: none"> 1) Upgrade Dead Band settings (per 6.4.3.1.2 of ASHRAE 90.1-2016) 2) Upgrade Set-point Overlap Restrictions (per 6.4.3.2 of ASHRAE 90.1-2016) 3) Upgrade Off-Hour Controls (per 6.4.3.3 of ASHRAE 90.1-2016) 4) Upgrade Ventilation System Controls (per 6.4.3.4 of ASHRAE 90.1-2016) 5) Upgrade Heat Pump Auxiliary Heat Controls (per 6.4.3.5 of ASHRAE 90.1-2016) 6) Upgrade Freeze Protection and Snow/Ice Melting Systems (per 6.4.3.7 of ASHRAE 90.1-2016) 7) Upgrade Ventilation Controls For High-Occupancy Areas (per 6.4.3.8 of ASHRAE 90.1-2016) 8) Upgrade DDC Controls (per 6.4.3.10 of ASHRAE 90.1-2016) 9) Inspect and remediate HVAC Insulation (per 6.4.4.1 of ASHRAE 90.1-2016)

		<p>10) Inspect and remediate Duct and Plenum Leakage (per 6.4.4.2 of ASHRAE 90.1-2016)</p> <p>11) Upgrade Heat and Cool Limitation (per 6.5.2.1 of ASHRAE 90.1-2016)</p>
	SWH ⁽⁴⁾	1) Upgrade all SWH Piping Insulation (per 7.4.3 of ASHRAE 90.1-2016)
	Lighting	<p>1) Upgrade internal Exit Signs to not exceed 5W per face</p> <p>2) Functional Testing (per 9.4.3 of ASHRAE 90.1-2016)</p>
E2 Level Objective Statement: Review and maintain, or upgrade, basic efficiency of sub-systems.		
E2 ⁽²⁾	Envelope	<p>1) Reduce air leakage of all Loading Dock Doors (per 5.4.3.3 of ASHRAE 90.1-2016)</p> <p>2) Upgrade all Floor Insulation (per 5.5.3.4 of ASHRAE 90.1-2016)</p> <p>3) Reduce total Skylight Fenestration/Glazing Area to 3% of gross roof area (per 5.5.4.2.2 of ASHRAE 90.1-2016)</p>
	HVAC ⁽³⁾	<p>1) Upgrade Chilled Water Plant Monitoring (per 6.4.3.11 of ASHRAE 90.1-2016)</p> <p>2) Upgrade Economizer Fault Detection and Diagnostics (per 6.4.3.12 of ASHRAE 90.1-2016)</p> <p>3) Clean and Balance all Air Systems (per 6.7.2.3.2 of ASHRAE 90.1-2016)</p> <p>4) Balance all Hydronic Systems (per 6.7.2.3.3 of ASHRAE 90.1-2016)</p> <p>5) Remove Wood-Burning Fireplace unit</p> <p>6) Replace gas fireplace pilot light with electronic ignition unit with energy rating over 50</p> <p>7) Install makeup air supply per code to balance exhaust fan(s) over 300 cfm</p>
	SWH ⁽⁴⁾	<p>1) Upgrade SWH system Temperature Controls (per 7.4.4.1 of ASHRAE 90.1-2016)</p> <p>2) Upgrade SWH system Temperature Maintenance Controls (per 7.4.4.2 of ASHRAE 90.1-2016)</p> <p>3) Upgrade SWH system Outlet Temperature Controls (per 7.4.4.3 of ASHRAE 90.1-2016)</p> <p>4) Upgrade SWH system Circulating Pump Controls (per 7.4.4.4 of ASHRAE 90.1-2016)</p> <p>5) Upgrade Pool systems (per 7.4.5 of ASHRAE 90.1-2016)</p> <p>6) Upgrade pipe risers to incorporate Heat Traps (per 7.4.6 of ASHRAE 90.1-2016)</p>
	Lighting	<p>1) Upgrade to Local Control (per 9.4.1.1.(a) of ASHRAE 90.1-2016)</p> <p>2) Upgrade to Restricted to Manual ON (per 9.4.1.1.(b) of ASHRAE 90.1-2016)</p> <p>3) Upgrade to Restricted to Partial Automatic ON (per 9.4.1.1.(c) of ASHRAE 90.1-2016)</p> <p>4) Upgrade to Bilevel Lighting Control (per 9.4.1.1.(d) of ASHRAE 90.1-2016)</p> <p>5) Upgrade all Automatic Daylighting Responsive Controls for Sidelighting (per 9.4.1.1.(e) of ASHRAE 90.1-2016)</p> <p>6) Upgrade all Automatic Daylighting Controls for Toplighting (per 9.4.1.1.(f) of ASHRAE 90.1-2016)</p>

		<p>7) Upgrade to incorporate Automatic Partial OFF (per 9.4.1.1.(g) of ASHRAE 90.1-2016)</p> <p>8) Upgrade to incorporate Automatic Full OFF (per 9.4.1.1.(h) of ASHRAE 90.1-2016)</p> <p>9) Upgrade to incorporate Scheduled Shutoff (per 9.4.1.1.(i) of ASHRAE 90.1-2016)</p> <p>10) Upgrade to control Parking Garage Lighting (per 9.4.1.3 of ASHRAE 90.1-2016)</p> <p>11) Upgrade to incorporate Additional Controls for Special Applications (per 9.4.1.3 of ASHRAE 90.1-2016)</p> <p>12) Exterior Lighting Control (per 9.4.1.7 of ASHRAE 90.1-2016)</p> <p>13) Reduce total Skylight Fenestration/Glazing Area to 3% of gross roof area (per 5.5.4.2.2. of ASHRAE 90.1-2016)</p>
	Exterior or Patio Heating	<p>1) Remove exterior space heating system</p> <p>2) Upgrade energy intensity (per 10.2.2.22.(3)) and system controls per 10.2.2.22.(4)</p>
E3 Level Objective Statement: Review and improve energy performance of systems.		
E3 ⁽²⁾	Envelope	<p>1) Provide a Building Envelope Assessment Report, to be signed and sealed by a design professional, report to include: effective R-value, blower test, list of upgrades to achieve a compliance rating using COMcheck⁽⁵⁾ software (latest version).</p> <p>2) Reduce air leakage of all Fenestration & Doors (per 5.4.3.2 of ASHRAE 90.1-2016)</p> <p>3) Upgrade all Below-Grade Wall Insulation (per 5.5.3.3 of ASHRAE 90.1-2016)</p> <p>4) Inspect and remediate all ceiling space and floor space equipment and services including ductwork, plumbing, insulation, penetrations, dampers, valves, coils, pans and drains.</p> <p>5) Inspect and remediate all floor/crawl space services (ducts, plumbing, insulation, penetrations, drains etc)</p>
	HVAC ⁽³⁾	<p>1) Provide an HVAC System Assessment Report, to be signed and sealed by a design professional. Report to include: systems reviews, upgrade and re-commissioning options, with estimates for energy savings and cost paybacks.</p> <p>2) Upgrade all ducts, plenums, and insulation (per 6.4.4 of ASHRAE 90.1-2016); inspect and remediate HVAC Insulation (per 6.4.4.1 of ASHRAE 90.1-2016); and inspect and remediate Duct and Plenum Leakage (per 6.4.4.2 of ASHRAE 90.1-2016)</p> <p>3) Incorporate Exhaust Air Recovery systems (per 6.5.6.1 of ASHRAE 90.1-2016)</p> <p>4) Incorporate a Service Water Heating Recovery system (per 6.5.6.2 of ASHRAE 90.1-2016)</p> <p>5) Upgrade all Kitchen Exhaust and Replacement Air systems (per 6.5.7.2 of ASHRAE 90.1-2016)</p> <p>6) Upgrade all Laboratory Exhaust and Replacement Air systems (per 6.5.7.3 of ASHRAE 90.1-2016)</p> <p>7) Balance all systems (per 6.7.2.3 of ASHRAE 90.1-2016)</p>
	SWH ⁽⁴⁾	<p>1) Provide an HVAC System Assessment Report, to be signed and sealed by a design professional</p>

		<ul style="list-style-type: none"> Report to include: systems reviews, upgrade and re-commissioning options, with estimates for energy savings and cost paybacks. <p>2) Upgrade SWH system Controls (per 7.4.4 of ASHRAE 90.1-2016)</p>
	Lighting	<p>1) Provide a comprehensive Lighting System Assessment Report to be signed and sealed by a design professional</p> <ul style="list-style-type: none"> Report to include: systems reviews, upgrade options, with estimates for energy savings and cost paybacks. <p>2) Upgrade total Exterior Lighting Power (per 9.4.2 of ASHRAE 90.1-2016) of the suite.</p> <p>3) Meet the interior lighting power allowance by the Building Area Method (per 9.5 of ASHRAE 90.1-2016)</p> <p>4) Meet the interior lighting power allowance by the Space-by-Space Method (per 9.6 of ASHRAE 90.1-2016)</p>
	Exterior or Patio Heating	<p>1) Remove exterior space heating system</p> <p>2) Upgrade energy intensity, system and unit/zone controls (per 10.2.2.22.(3) and (4)), and circulation fans (per 10.2.2.22.(5))</p>
E4 Level Objective Statement: Review and improve energy performance of larger systems.		
E4⁽²⁾	Envelope	<p>1) Reduce air leakage of entire Building Envelope (per 5.4.3 of ASHRAE 90.1-2016)</p> <p>2) For single retail/tenant spaces < 500 m²) Perform an Air Leakage / Blower test and remediate</p> <p>3) Upgrade all Roof Insulation (per 5.5.3.1 of ASHRAE 90.1-2016)</p> <p>4) Upgrade all Above-Grade Wall Insulation (per 5.5.3.2 of ASHRAE 90.1-2016)</p> <p>5) For single retail/tenant spaces < 500 m²) Replace storefront window(s) to meet the By-law.</p> <p>6) Reduce total vertical Fenestration/Glazing Area to 40% of gross wall area (per 5.5.4.2.1 of ASHRAE 90.1-2016)</p> <p>7) Upgrade all Fenestration/Glazing Performance (per 5.5.4.3 and 5.5.4.4 of ASHRAE 90.1-2016)</p> <p>8) Inspect and remediate roof systems including membrane, parapets, scuppers, drains, gutters, downspouts and drains.</p>
	HVAC ⁽³⁾	<p>1) Upgrade all Zone Thermostatic Controls (per 6.4.3.1 of ASHRAE 90.1-2016)</p> <p>2) Upgrade HVAC to incorporate Economizers (per 6.5.1 of ASHRAE 90.1-2016)</p> <p>3) Upgrade Heat Rejection Equipment (per 6.5.5 of ASHRAE 90.1-2016)</p> <p>4) Upgrade to Air and Service Water Heating Heat Recovery systems (per 6.5.6 of ASHRAE 90.1-2016)</p> <p>5) Upgrade entire Radiant Heating system (per 6.5.8 of ASHRAE 90.1-2016)</p> <p>6) (Re-)Commission all systems (per 6.7.2.4 of ASHRAE 90.1-2016)</p>
	SWH ⁽⁴⁾	1) Upgrade all Service Water Heating Equipment Efficiency (per 7.4.2 of ASHRAE 90.1-2016)
	Lighting	1) Lighting Control (per 9.4.1 of ASHRAE 90.1-2016)
	Exterior or Patio Heating	<p>1) Remove exterior space heating system</p> <p>2) Upgrade exterior space heating system (per 10.2.2.22)</p>

E5 Level Objective Statement: Review and bring to present VBBL energy requirements, entire system(s) affected by vertical addition.		
E5⁽²⁾	Envelope	1) Upgrade insulation levels of entire Building Envelope (Opaque Areas) (per 5.5.3 of ASHRAE 90.1-2016) 2) Upgrade all Fenestration/Glazing (per 5.5.4 of ASHRAE 90.1-2016)
	HVAC ⁽³⁾	1) Upgrade all HVAC Controls, Insulation and Leakage (per 6.4 of ASHRAE 90.1-2016)
	SWH ⁽⁴⁾	1) Upgrade Service Water Heating system to meet the Mandatory Provisions (per 7.4 of ASHRAE 90.1-2016)
	Lighting	1) Upgrade Lighting system to meet the Mandatory Provisions (per 9.4 of ASHRAE 90.1-2016)
E6 Level Objective Statement: Reconstruct entire building systems to meet energy efficiency requirements of present Vancouver Building By-Law.		
E6	Envelope	1) Upgrade all aspects of Building Envelope (per Section 5 of ASHRAE 90.1-2016)
	HVAC ⁽³⁾	1) Upgrade all aspects of HVAC (per Section 6 of ASHRAE 90.1-2016)
	SWH ⁽⁴⁾	1) Upgrade all aspects of SWH (per Section 7 of ASHRAE 90.1-2016)
	Lighting	1) Upgrade all aspects of Lighting (per Section 9 of ASHRAE 90.1-2016)
E7 Level Objective Statement: Reconstruct building to meet energy efficiency requirements of present Vancouver Building By-Law.		
E7	Energy	1) Upgrade existing building (per VBBL 1.3.3.7 Energy Use)

Notes to Table A-11.2.1.2.-C:

⁽¹⁾ References to ASHRAE 90.1 in Table A-11.2.1.2.-C can be considered guidance for determining the scope of work when applying the upgrade requirements to low-rise multi-family projects, otherwise these projects may apply the energy upgrade requirements of Table 11.2.1.4, per the options provided within Sentence 11.2.1.2.(9)(d).

⁽²⁾ BOMA BEST (Path 1) may be substituted as the solution for upgrade level E2. BOMA BEST (Path 2) may be substituted as the solution for upgrade levels E3, E4 or E5. BOMA BEST is a Canadian industry standard for commercial building sustainability certification. Official certification documentation produced by BOMA would be required for acceptance as an alternative acceptable solution option.

The intent of the inclusion of the BOMA BEST rating system is to recognise the efforts made towards improved building performance. BOMA BEST Path 1 or Path 2 will be accepted provided

- a) the BOMA BEST certification is administered by BOMA,
- b) BOMA BEST Path 1 - BOMA BEST (Level 1, 2, 3, 4) provides proof of a valid Certification and ongoing commissioning per BOMA's BEST Practice Q.3 (Preventative Maintenance Program), and
- c) BOMA BEST Path 2 - BOMA BEST (Level 1-AL2, 2, 3, 4) provides proof of a first-time Certification (to at least Level 1 with an ASHRAE Level 2 audit) within the previous 18 months, or a valid Certification and an increase in BOMA BEST's Energy Performance Benchmark Scale by at least one level within the previous 18 months, or advancing Certification (from one level to another) within the previous 18 months.

Proof means in the form of official certified documentation produced by BOMA, or a single Commissioning/Energy Report developed and provided by a qualified consultant, contractor, or other expert in this specialized field.

⁽³⁾ HVAC – Heating, Ventilating and Air Conditioning

⁽⁴⁾ SWH – Service Water Heating

⁽⁵⁾ COMcheck – software developed by the US Department of Energy for use with ASHRAE 90.1-2016 Building Envelope Trade-Off option

HAZARD INDEX TABLE

The hazard index for various building uses are indicated in Table A-11.2.1.2.-D.

The required level of Building By-law upgrade for a Change of Major Occupancy Type projects is dependent on whether or not the Hazard Index has increased for the proposed alteration. Hazard Index ratings are intended to reflect the level of fire and life safety risk to occupants for various building uses **and suite sizes**. Hazard index ratings range from 1 to 6, such that a hazard index of rating of 6 represents the highest risk to occupants.

For the purposes of a Restricted Change of Occupancy, the Hazard Index may be established based on the aggregate area of the suite, to provided indices that can be compared to establish a relative level of risk between the proposed and current uses of different sizes. Where a suite is subdivided as part of change in major occupancy, the relative risk is established based on the index number of the final aggregate size of the suite as compared to the original size of the suite (see Note A-11.2.1.2.(10)).

**Table A-11.2.1.2.-D
Hazard Index Table**

Group A Division 1		
Building Use	Hazard Index (<i>Building Area</i>⁽¹⁾)	
	≤200 m²	>200 m²
Dinner Theatres	4	5
Live Theatres	4	5
Motion Picture Theatres	4	5
Opera Houses	4	5
Television Studios (With Audience)	4	5
Group A Division 1		
Building Use	Hazard Index (<i>Building Area</i>⁽¹⁾)	
	≤200 m²	>200 m²
Art Galleries	3	4
Auditoria	3	4
Billiard Halls, Amusement Arcades	3	4
Bowling Alleys	3	4
Churches	3	4
Clubs, Lodges (Non-Residential)	3	4
Community Halls	3	4
Concert Halls	3	4
Court Rooms	3	4
Dance Halls	3	4

Daycare Centres	3	4
Exhibition Halls (Without Sales)	3	4
Exhibition Halls (With Sales)	See Group E	
Gymnasia (Multi-Purpose)	3	4
Gymnasia (Athletic)	3	4
Lecture Halls	3	4
Libraries	3	4
Licensed Beverage Establishments	3	4
Licensed Clubs, Lodges	3	4
Museums	3	4
Passenger Stations/Depots	3	4
Recreational Piers	3	4
Restaurants (Seating Over 17)	3	4
Schools, Colleges	3	4
Undertaking Premises	3	4
Group A Division 3		
Building Use	Hazard Index (<i>Building Area</i>⁽¹⁾)	
	≤200 m²	>200 m²
Arenas (No Occupancy On Activity Surface)	3	4
Armouries (No Occupancy On Activity Surface)	3	4
Enclosed Stadia or Grandstand	3	4
Ice Rinks (No Occupancy On Activity Surface)	3	4
Indoor Swimming Pools	3	4
Group A Division 4		
Building Use	Hazard Index (<i>Building Area</i>⁽¹⁾)	
	≤200 m²	>200 m²
Amusement Park Structures	2	3
Bleachers	1	3
Grandstands (Open)	1	3
Reviewing Stands	1	3
Stadia (Open)	1	3
Group B, Division 1		
Building Use	Hazard Index (<i>Building Area</i>⁽¹⁾)	
	≤200 m²	>200 m²
Detention Facilities (Minimum Security)	4	5
Detention Facilities (All other types of security)	6	6

Police Station with Detention (not meeting Article 3.1.2.4.)	3	4
Group B, Division 2		
Building Use	Hazard Index (<i>Building Area</i>⁽¹⁾)	
	≤200 m²	>200 m²
Hospital, Nursing Home, Geriatric, Sanitarium (Immobile Ambulatory)	4	5
Hospital, Nursing Home, Geriatric, Sanitarium (Non-Ambulatory)	4	5
Psychiatric Hospitals (Maximum Confinement)	4	5
Psychiatric Hospitals (Minimum Confinement)	3	4
Police Station with Detention (Meeting Article 3.1.2.4.)	3	3
Group B, Division 3		
Building Use	Hazard Index (<i>Building Area</i>⁽¹⁾)	
	≤200 m²	>200 m²
To be added—use OBC data		
Residential Care Facilities (Ambulatory)	3	4
Residential Care Facilities (Non-Ambulatory)	4	5
Children Custodial Homes	3	4
Convalescent Homes (Ambulatory)	3	4
Convalescent Homes (Non-Ambulatory)	4	5
Group Homes for Adult Residents with Developmental Disabilities (Minimum Confinement)	3	4
Group Homes for Adult Residents with Developmental Disabilities (Maximum Confinement)	4	5
Group C		
Building Use	Hazard Index (<i>Building Area</i>⁽¹⁾)	
	≤200 m²	>200 m²
Apartments	3	4
Clubs, Residential	3	4
Colleges Residential	3	4
Congregate Care Housing for Seniors	3	5
Convents	3	4
Dormitories/Hotels	3	4
Hotels	3	5
Detached Houses (1 or 2 Family up to two principal <i>dwelling units</i>)	2	2
Live/work units	3	5
Monasteries	3	4

Retirement Homes	3	4
Schools, Residential	3	4
Group D		
Building Use	Hazard Index (<i>Building Area</i>⁽¹⁾)	
	≤200 m²	>200 m²
Advertising and Sales Offices	3	3
Automatic Bank Deposit	3	4
Barber/Hairdresser Shops	3	4
Beauty Parlours	3	4
Branch Banks	3	4
Car Rental Premises	3	3
Chiropractic Offices	3	4
Communications Offices (Telephone Exchange)	3	4
Communications Offices (Telex)	3	4
Communications Offices (Courier)	3	3
Computes Centres	3	4
Construction Offices	3	3
Costume Rental Premises	3	4
Dental Offices (Denture Clinic)	3	4
Dental Offices (General)	3	4
Dental Offices (Surgical/Anaesthesia)	4	5
Dry Cleaning Depots	3	4
Dry Cleaning Premises (Self-Serve)	4	4
Health/Fitness Clubs	3	4
Laundries (Self-Serve)	4	4
Massage Parlours	3	4
Medical Offices (Examination)	3	4
Medical Offices (Surgical Anaesthesia)	4	5
Offices (Business)	3	3
Offices (Charitable)	3	3
Offices (Legal/Accounting)	3	3
Offices (Design)	3	4
Pharmacy Offices	3	4
Photographic Studios	3	4
Physiotherapy Offices	3	4
Police Stations (No Detention)	3	4

Printing and Duplicating	4	5
Public Saunas	3	4
Radio Stations (No Audience)	3	4
Small Tool Rental Premises	3	4
Suntan Parlours	3	4
Veterinary Offices	3	4
Group E		
Building Use	Hazard Index (<i>Building Area</i>⁽¹⁾)	
	≤200 m²	>200 m²
Automotive/Hardware Department Store	4	5
China Shops	3	4
Department Stores	4	5
Electrical Stores (Fixtures)	3	3
Exhibition Halls (With Sales)	4	5
"Fast Food" Outlets	3	4
Feed and Seed Stores	4	5
Flea Markets	4	5
Flower Shops	3	4
"Food" and Vegetable Markets	3	4
Garden Shops	3	4
"Gas" Bars	4	5
Gift Shops (<i>without liquor sales</i>)	3	4
Home Improvement Stores	4	5
Kitchen/Bathroom Cupboards Stores	3	4
Plumbing Stores (Fixtures/Accessories)	3	3
"Pop" Shops	3	4
Restaurants (Not More Than 30 Persons)	3	4
Shopping Malls	4	5
Stationery/Office Supply Stores	3	4
Stores (Art)	3	4
Stores (Baked Goods)	3	4
Stores (Beer)	3	4
Stores (Book)	3	4
Stores (Camera)	3	4
Stores (Candy)	3	4
Stores (Clothing)	3	4

Stores (Drugs)	4	4
Stores (Electronic)	3	4
Stores (Floor Coverings)	4	5
Stores (Food)	3	3
Stores (Furniture/Appliances)	3	4
Stores (Hardware)	4	5
Stores (Health)	4	4
Stores (Hobby)	3	4
Stores (Jewellery)	3	3
Stores (Paint/Wallpaper)	4	5
Stores (Pet)	3	4
Stores (Records/Tapes)	3	4
Stores (Spirits)	4	5
Stores (Toys)	4	5
Stores (Variety)	4	4
Stores (Video Sales/Rental)	3	4
Supermarket	3	4
Group F, Division 1		
Building Use	Hazard Index (<i>Building Area</i>⁽¹⁾)	
	≤200 m²	>200 m²
All Uses	6	6
Group F, Division 2		
Building Use	Hazard Index (<i>Building Area</i>⁽¹⁾)	
	≤200 m²	>200 m²
Aircraft Hangars	3	5
Abattoirs	3	4
Bakeries	3	5
Body Shop	3	5
Candy Plants	3	4
Cold Storage Plants with Flammable Refrigerant	3	5
Cold Storage Plants with Non-flammable Refrigerant and	3	4
Dry Cleaning Establishments (non-flammable or non-explosive)	3	4
Electrical Substations	3	4
Factories (High Fire Load)	3	5
Freight Depots (High Fire Load)	3	5
Laboratories (High Fire Load)	3	5

Laundries (not self-serve)	3	4
Manufacturer Sales (High Fire Load)	3	5
Mattress Factories	3	4
Meat Packing Plants	3	4
Packaging Manufacturers (Cellulose)	3	4
Packaging Manufacturers (Noncombustible)	3	3
Packaging Manufacturers (Plastics)	3	5
Paper Processing Plants (Wet)	3	5
Plaining Mills	3	5
Printing Plants	3	4
Public Heritage Buildings	3	3
Repair Garages	3	5
Sample Display Rooms (High Fire Load)	3	5
Self Service Storage Buildings	3	4
Service Stations (no spray painting)	3	5
Storage Rooms (High Fire Load)	3	5
Television Studios (no audience)	3	4
Tire Storage	3	5
Warehouse (High Fire Load)	3	5
Welding Shops	3	5
Wholesale Rooms (High Fire Load)	3	5
Wood Working Factories	3	5
Workshops (High Fire Load)	3	5
Group F, Division 3		
Building Use	Hazard Index (<i>Building Area</i>⁽¹⁾)	
	≤200 m²	>200 m²
Creameries	2	2
Factories (Low Fire Load)	2	3
Freight Depots (Low Fire Load)	2	3
Laboratories (Low Fire Load)	2	3
Manufacturers Sales (Low Fire Load)	2	3
Power Plants	2	4
Public Heritage Buildings	2	3
Sample Display Rooms (Low Fire Load)	2	3
Storage Garages	2	3
Storage Rooms (Low Fire Load)	2	3

Warehouse (Low Fire Load)	2	3
Wholesale Rooms (Low Fire Load)	2	3
Workshops (Low Fire Load)	2	3

Notes to Table A-11.2.1.2-B:

⁽¹⁾ For the purposes of a Restricted Change of Occupancy, the Hazard Index may be established based on the aggregate area of the *suite* provided the *suite* changing occupancy is fully contained in the original *suite* area.

A-11.2.1.2.(10) Restricted Change of Occupancy. The term “restricted change of occupancy” refers to a change in major occupancy restricted to a specific set of uses as set out in Article 11.2.1.2.(10) that are limited both in scope and risk such that it does not increase the overall hazard.

While it is intended that designers and owners seeking to apply this requirement refer to the hazard index table A-11.2.1.2.-B, for the purposes of this Article – they may substitute the aggregate suite area of the suite in lieu of the building area where the change of major occupancy is wholly contained within the original suite.

For example: a suite of 300 m² is being repartitioned and converted from a “business office” use (Group D) to a suite of “retail toystore” use (Group E) of 150 m² and second suite of “health care office” use which are fully contained within the original 300 m² suite area. The aggregate suite area is therefore permitted to be used for the purposes of determining the appropriate hazard index which is then established as follows:

- Business Office (300 m²) – 4 (original)
- Retail Toystore (150 m²) – 4 (new)
- Health Care Office (150 m²) – 3 (new)

By comparison, a larger toystore, such as the conversion of the original 300 m² suite area into a toystore, would result in a hazard index of ‘5’ which would not meet the requirements of Article 11.2.1.2. for a “restricted change of occupancy” as it represent an increase in hazard.

While the hazard index table is a useful tool for assessment, it is also important to understand that no table can address all possible combinations of uses. Designers and owners should exercise caution when making judgments of relative hazards in this regards.

Appendix E:

This document is being provided for information only as a reference tool to highlight the proposed amendments. The draft amending by-law attached to the Council report RTS No. 14574 entitled **A By-law to amend Building By-law No. 12511 Regarding Reduction in Upgrade Triggers for Certain Uses and Major Occupancies** represent the amendments being proposed to Council for approval. Should there be any discrepancy between this redline version and the draft amending by-laws, the draft amending by-laws prevail.

4.2 Table of Number of Required and Permitted Accessory Parking Spaces in R except for Downtown, C except for Downtown and Central Broadway, M, I except for Mount Pleasant industrial area, DEOD, and First Shaughnessy Districts, and Broadway Station Precinct shown outlined in heavy black on Map 4.5.

For sites within the heavy black outline shown on Map 2B, use section 4.3.

In R except for Downtown, C except for Downtown and Central Broadway, M, I except for Mount Pleasant industrial area, DEOD, and First Shaughnessy Districts and in Broadway Station Precinct, parking spaces for any building classified in Column 1 must meet the corresponding standard listed in Column 2, except for:

- (a) sub-area 1 of DEOD;
- (b) heritage sites in First Shaughnessy District;
- (c) specified uses in Broadway Station Precinct listed in Section 4.5; and
- (d) any permitted use in a commercial or heritage zone that consists of less than 300 m², and that constitutes a change of use from the previous use in the same premises, in which case the parking standard is the lesser of the number of parking spaces listed in Column 2 for such new use and the number of parking spaces available for the previous use.

5.2 Table of Number of Required Off Street Loading Spaces

Loading spaces for any building classified in Column 1 must meet the corresponding standard listed in Column 2, except for:

- (c) Fitness Centre - Class 1 that does not include racquet and ball courts, School - Arts or Self-Improvement, Restaurant, Health Enhancement Centre, or Animal Clinic, that consists of less than 200 m², that is commencing business in an existing building in the C-2, C-3A, C-5, C-5A or C-6 zone, and that constitutes a change of use from the previous use in the same premises, in which case the loading standard is at least one Class A space for each 100-200 sq metres of gross floor area; and
- (d) General Office, Retail Store, Health Care Office, Barber Shop or Beauty Salon, or Beauty and Wellness Centre, that consists of less than 300 m², that is commencing business in an existing, and that constitutes a change of use from the previous use in the same premises, in which case the loading standard is the lesser of the number of loading spaces listed in Column 2 for such new use and the number of loading spaces available for the previous use.