



## **RECREATIONAL FACILITY TECHNICAL GUIDELINES**

REAL ESTATE AND FACILITIES MANAGEMENT  
Facilities Planning and Development  
June 2018



**TABLE OF CONTENTS**

<b>1.0</b>	<b>GENERAL</b> .....	<b>1</b>
1.1	INTENT .....	1
1.2	REGULATIONS AND STANDARDS .....	1
1.3	SUSTAINABILITY .....	1
1.4	UNIVERSAL DESIGN .....	2
1.5	DISCLAIMERS .....	2
<b>2.0</b>	<b>PLANNING</b> .....	<b>3</b>
2.1	INTENT .....	3
2.2	RECEPTION.....	3
2.3	GYMNASIUMS .....	3
2.4	PARKING .....	3
2.5	MAIL .....	3
2.6	STORAGE .....	3
2.7	GARBAGE AND RECYCLING .....	4
2.8	SERVICE SPACES .....	4
2.9	EXITING AND SECURITY .....	4
2.10	GENERAL HAZARDS AND ENTRAPMENT .....	4
2.11	BIRD FRIENDLY DESIGN GUIDELINES .....	5
2.12	REDUCING BARRIERS FOR TRANS* AND GENDER-VARIANT COMMUNITY MEMBERS .....	5
2.13	GUARANTEES AND WARRANTIES .....	6
2.14	HAZARDOUS MATERIALS.....	6
2.15	GENERAL FINISH REQUIREMENTS .....	6
2.16	LANDSCAPING .....	6
2.17	ACOUSTICS.....	8
2.18	ARCHITECTURAL MILLWORK .....	8
2.19	BUILDING ENVELOPE AND ROOFING .....	10
2.20	GLAZING .....	11
2.21	DOORS AND HARDWARE .....	12
2.22	FINISHES.....	14
2.23	SPECIALTIES.....	19
2.24	EQUIPMENT .....	22
2.25	FURNISHINGS .....	23
2.26	MECHANICAL.....	23
2.27	ELECTRICAL.....	26
2.28	SECURITY .....	28
<b>3.0</b>	<b>APPENDICES</b> .....	<b>29</b>
3.1	APPENDIX 1 - DDC SPECIFICATIONS .....	29
3.2	APPENDIX 2 - CITY-AFFILIATED FACILITY KITCHENS .....	34

## 1.0 GENERAL

### 1.1 INTENT

These technical guidelines are:

- To be applied to the design and construction or renovation of City-owned or leased recreational facilities.
  - While recognizing that there is a wide variety of recreational facilities, each with their own unique needs, the intent of this document is to outline the basic technical requirements for any recreational Facility secured by the City of Vancouver as a capital asset.
- To clarify the minimum standard required by the City of Vancouver for materials, finishes, equipment and other items. Variations from these guidelines may be considered, but are not to proceed without prior discussion and acceptance by the City of Vancouver.
- To be used as a tool for Facility cost estimates early in the design process.
- To be used as a tool by Consultants in developing their designs and specifications.
- To be used as a tool at Facility occupancy stage to gauge whether these minimum standards have been met.

### 1.2 REGULATIONS AND STANDARDS

Consultants and developers are to ensure that all applicable building codes, government acts and health regulations are met. These include, but are not limited to:

- The City of Vancouver Building Bylaw (VBBL).
- Occupational Health and Safety Regulation (Work Safe BC)

The Consultant is responsible for ensuring all applicable updates or revisions to the Code or regulations are addressed and included in the work.

New and renovated recreational facilities to be held as capital assets by the City are expected to follow the City's normal permitting and regulatory processes. Development, Building and Occupancy Permits are required for all new recreational facilities. For detailed information concerning these permits and other relevant codes and requirements, contact the Enquiry Centre, Development Services Department.

### 1.3 SUSTAINABILITY

- The goal for the City-owned, high performance, new construction standard is to achieve near zero greenhouse gas emissions in new buildings. The purpose of this goal is to show leadership to the broader community in meeting the targets of the Renewable City Strategy, and adopt a near zero emission standard for new buildings much earlier than required by building code for all new buildings constructed city wide.
- To achieve a goal of near zero GHG emissions in new buildings the following strategies are required to be incorporated into new City-owned buildings:

- All City capital funded buildings must be designed to be certified to the Passive House energy performance standard, or an approved alternative zero emission building standard, and use only low carbon fuel sources, in order to minimize energy consumption and GHG emissions.
- LEED® Gold Certification is also required by the City of Vancouver for all public buildings, tenant improvements, and facilities funded by City capital funds which are over 500 square meters in area. Refer to the most current LEED® Canada NC, CI, or other appropriate LEED category, Guidebook. The current version of the USGBC LEED® for Homes - Multi-family Midrise for 4 to 12 storey buildings is also acceptable.
- Facilities received from other sources, including those constructed for the city using Community Amenity Contribution (CAC) funding, and those with long term leases to the City for the life of the building, should be constructed to the same standard as City capital funded facilities. Where the city funded facility it is a small air space parcel in a larger building funded by others, and it is not viable to achieve Passive House certification for the whole building, then at a minimum the city owned portion of the building must be designed and shown to achieve a minimum of 35% reduction in energy consumption compared to the current City of Vancouver Building Bylaw (ASHRAE 90.1 2010 or NECB 2011), and reduce Greenhouse Gas Emissions through the use of only low carbon fuel sources.
- Mechanical and control systems should be designed to be as simple as possible to reduce maintenance costs and the need for specialized maintenance expertise.
- A preliminary energy modelling exercise must be undertaken during the preliminary design stage to evaluate options for design of the building envelope, mechanical and electrical systems, and energy conservation measures (ECMs) which meet or exceed the City's energy performance target and make the most sense for the project based on energy and GHG savings, financial impact and ease of maintenance.

#### 1.4 UNIVERSAL DESIGN

- Universal design is required.
  - Beyond the requirements of the VBBL, include Universal Design Principles in the design. Refer to the BC housing guidelines for Universal Design Principles:  
[http://www.housing.gov.bc.ca/pub/htmldocs/pub\\_universaldesign/](http://www.housing.gov.bc.ca/pub/htmldocs/pub_universaldesign/)

#### 1.5 DISCLAIMERS

- Items noted throughout this document as “operator preference” should be confirmed with the City of Vancouver regarding their appropriateness for each Facility.
- Any specific products named in this document are not to be taken as the City of Vancouver's endorsement of that product, but rather as an example of a standard of quality that has proven successful in the past. Any other products that meet this level of quality will be considered for use, but their use is not to proceed without prior discussion and acceptance by the City of Vancouver.

## 2.0 PLANNING

### 2.1 INTENT

- The following information supplements the functional programming documents required by the City for each unique recreational amenity Facility.

### 2.2 RECEPTION

- Be centrally located providing equal access and control to all functions.
- Provide views of all major function spaces or their access points.
- Be adjacent to the main office, do not isolate the receptionist.
- Allow easy, obvious circulation to the rest of the building.

### 2.3 GYMNASIUMS

- Be centrally located providing equal access and control to all functions.
- Provide views of all major function spaces or their access points.
- Be adjacent to the main office, do not isolate the receptionist.
- Allow easy, obvious circulation to the rest of the building.

### 2.4 PARKING

- Vehicle and bicycle parking provided must meet the minimum requirements of the Parking By-Law.
- Additional vehicle and/or bicycle parking may be required. Consult with the City and Facility operator to confirm.
- Location of bicycle and vehicle parking should be within easy access of the Facility's entrance.
- Locate parking areas so they do not detract from the aesthetics of building or landscaping.
- Use landscaping screens and berms to soften the impact of large parking areas.
- Provide adequate lighting for security and personal safety.

### 2.5 MAIL

- Mail box accessible from interior at main entrance (confirm requirements for each Facility).

### 2.6 STORAGE

- Storage is a critical design consideration to ensure the most flexible use of public facilities by the widest possible range of users. Ensure that sufficient, appropriate storage is provided.
  - In particular note any Facility need for collapsible and stackable tables and chairs, room dividers and other large items.

- Provide storage for seasonal and themed items as required.

## 2.7 GARBAGE AND RECYCLING

- Review for each Facility acceptable garbage strategies: location, water, drainage, container size, type and schedule.
- Bin size: minimum 2 cubic yard (1.5 cubic meters), approximately 5'9" (1.75m) long x 3'0" (0.9m) wide and 3'0" (0.9m) high.
- Provide interior and exterior facilities for recycling. The suggested interior space per LEED® under prerequisite 1, "Materials and Resources" for a commercial Facility of up to 465 square meters in size is 7.6 square meters. Confirm expected recycling volume for each Facility with Operator.

## 2.8 SERVICE SPACES

- Provide a separate lockable janitor room with floor sink, space for storing bucket, mops, brooms, vacuum, ladder, supplies for cleaning, shelves for paper products, light bulbs, etc.
  - Provide one per floor in multi-floored Facilities.
- Provide separate, lockable mechanical and electrical rooms to safely accommodate items such as hot water tanks, sprinkler trees, electrical panels, data, telephone and security equipment panels, gas, water or hydro meters and any other mechanical or electrical equipment that needs to be accommodated within the Facility.

## 2.9 EXITING AND SECURITY

- Public exits shall be planned in such a way that the public does not have to cross through a secure recreational amenity space for exiting.

## 2.10 GENERAL HAZARDS AND ENTRAPMENT

- For prevention of entrapment, spaces (i.e. holes or openings) accessible to children must be smaller than 9cm (3.5") or larger than 23cm (9").
  - Slots that vary in dimension such that either of the above conditions are encountered are not acceptable.
- Small dimension protuberances that may cause eye or puncture injuries are not acceptable.
- In general, edges and corners are to be rounded and eased. Sharp edges and corners are not acceptable.

#### 2.11 BIRD FRIENDLY DESIGN GUIDELINES

- Refer to City of Vancouver Bird Friendly Design Guidelines

<http://vancouver.ca/parks-recreation-culture/vancouver-bird-strategy.aspx>

<http://vancouver.ca/files/cov/vancouver-bird-strategy.pdf>

This guideline is intended to support the design and implementation of bird friendly development throughout the city.

#### 2.12 REDUCING BARRIERS FOR TRANS\* AND GENDER-VARIANT COMMUNITY MEMBERS

- Trans\* and Gender Variant Inclusion (TGVI) Steering Committee. The TGVI Steering Committee works to create safe, inclusive, and welcoming spaces for trans\* and gender-variant individuals. It does this by giving important advice and helping implement recommendations from the 2014 report “Building a Path to Parks and Recreation for All”. Trans\* (with an asterisk) is an inclusive umbrella term used to refer to communities and individuals with gender identities and/or expression not matching gender binary stereotypes.

<http://vancouver.ca/your-government/trans-and-gender-variant-inclusion-steering-committee.aspx>

<http://vancouver.ca/files/cov/trans-and-gender-variant-inclusion-steering-committee-terms-of-reference.pdf>

- Refer to Vancouver Board of Parks and Recreation “Building a Path to Parks & Recreation for All: Reducing Barriers for Trans\* & Gender Variant Community Members

<http://former.vancouver.ca/parks/board/2014/140428/documents/REPORT-TGVIWorkingGroupReport-2014-04-28.pdf>



## TECHNICAL

### 2.13 GUARANTEES AND WARRANTIES

- In general, guaranties and warranties are to be provided per the industry standard.
- Where extended guarantees and warranties are required, they are noted in the following sections as appropriate.
- Where extended guarantees and warranties are provided, the certificates shall be issued to the City of Vancouver.

### 2.14 HAZARDOUS MATERIALS

All materials used in the constructing and finishing of the Facility are to be free of hazardous materials, including materials such as asbestos, lead and PCBs. Contact the City of Vancouver Environmental Planning Group with any questions regarding the sourcing of appropriate materials.

### 2.15 GENERAL FINISH REQUIREMENTS

All surfaces, edges, corners and protrusions shall be finished to reduce or prevent hazards. All corners shall be rounded, edges eased, and surfaces shall be smooth. Particular attention shall be focussed on concrete surfaces, window sills, flashings, and laminate edges/corners.

### 2.16 LANDSCAPING

- Design the landscaping simultaneously with new buildings for optimum compatibility.
- Co-ordinate the character and massing of landscape elements with the building and adjacent properties.
- Design for economical easy maintenance with an equipment oriented maintenance program in consultation with the Park Board horticulture manager.
- Provide 1'-4" wide mowing strips adjacent to building, fences, etc .
- Plant slow growing "permanent" trees in combination with faster growing "less permanent" trees that can be thinned or removed as the "permanent" trees mature
- Consult with the Park Board to determine what materials they wish to use
- The Park Board Standard Landscape Specifications covering items such as irrigation, growing media, etc. are to be used unless prior written consent is obtained from the Manager of Park Development. It is the responsibility of the consultants to request these specifications from the project manager.
- Fences:
  - All steel fencing to be hot dipped galvanized, then primed and painted.
  - To be un-climbable; no gaps in fence to be larger than 100mm (chain link openings to be no more than 38mm).
  - All gates to be self-closing.
- Landscaped areas / playgrounds (general):

- Outdoor areas should be designed and built to create a natural environment utilizing a variety of textures and natural materials.
- Do not use dark colours for impervious and play surfaces to reduce heat island effects..
- Very light and reflective materials are not acceptable as they cause glare problems.
- All play and walking surfaces shall be non-slip.
- The use of grass in areas should be considered carefully; it cannot sustain the traffic in small areas.
- Plants must be of sufficient size to withstand the use of the area. Plant species must not only be non-toxic but vigorous and easy maintenance.
- At grade, use pervious surfaces wherever possible to minimize storm water run-off.
- Although natural plantings are preferred, artificial turf may be considered for small areas of roof-top play areas providing that sand (rather than rubber chips) is used as the medium to hold it in place.
- All growing media to be mushroom free.
- Drainage and grading
  - Grades to provide positive drainage of all lawns, paved areas and others. Ponding is not acceptable.
  - Allow no drainage of surface water towards buildings, across sidewalks or onto neighbouring properties. Drainage must be away from building entrances.
  - All drains must be lower than interior floors.
  - All drains near engineered wood chip or sand play areas to have the capability to trap sediment with an easily removable and cleanable sediment trap.
  - Drainage from above-grade landscaped areas:
    - Drains to be bi-level, to drain both surface and roof waterproofing membrane
    - Both surface and waterproofing membrane must be sloped to drains
    - All roofs to have scuppers at a lower elevation than the interior floor elevation.
    - Drainage shall be designed so that if any roof drain should block the ponded water shall be able to flow to another exterior drain so that no water shall enter the interior.
  - Slope lawns from 1.5% to 6%.
- Irrigation
  - All rooftop landscaped areas shall be irrigated.
  - If irrigation is provided, use high-efficiency irrigation technology.
  - If irrigation is provided, include irrigation controller as part of DDC system, stand-alone irrigation control system not acceptable.
  - If irrigation is not provided, hose bibs are to be installed at minimum 15.25m (50'0") apart.

## 2.17 ACOUSTICS

- Exterior noise:
  - Outdoor landscaped areas to be effectively acoustically buffered from any noise from traffic, mechanical equipment or other disruptive noises.
- Exterior -to-interior noise:
  - Exterior noise, such as traffic, mechanical equipment or other disruptive noises is to be controlled by appropriate acoustical design of the exterior partitions to meet the allowable noise level for residential living, dining, and recreation rooms as defined in the local zoning by-law. Under no circumstances is the exterior noise to exceed a sound pressure level of 45 dB(A) 24 hour equivalent sound level in the interior of the Facility in all spaces occupied by children.
- Interior-to-interior noise between tenants:
  - At party walls between the Facility and any neighbours, an STC rating of 65 is to be achieved.
- Interior noise is to be controlled with appropriate acoustic surface treatment for interior finishes:
  - 75% of ceiling area shall be T-bar ceiling with NRC (noise reduction coefficient) = 0.70 or better, or
  - Alternately the room design shall meet an equivalent acoustical performance.
  - Spaces with ceilings higher than 3m (10'0") require acoustic treatment.

## 2.18 ARCHITECTURAL MILLWORK

- Construction / Quality:
  - To be in accordance with "Custom Grade" as defined in the latest edition of the "Quality Standards for Architectural Woodwork" as published by AWMAC (Architectural Woodwork Manufacturers Association of Canada), except as noted below.
  - AWMAC Guarantee to be provided.
  - Inspection to be provided by an appointed inspector, approved by AWMABC (BC Chapter of AWMAC).
  - All materials to be formaldehyde free.
  - Use wood certified in accordance with the Forest Stewardship Council's Principles and Criteria if it is competitively priced with non-certified wood.
  - Use adhesives and sealants that have low VOC levels per the LEED® requirements listed under credit 4.1 "Low-Emitting Materials, Adhesives and Sealants".
- Casework:
  - Cabinets: 19mm natural hardwood ply interiors with 12mm natural hardwood ply backs. (Good quality melamine interiors are acceptable except at wet areas such as kitchen sinks and around dishwashers – these must be plywood with plastic laminate). If a clear finish is desired use G1S or G2S birch plywood or maple plywood.
  - Drawers: 12mm hardwood ply drawer sides, 6mm hardwood ply bottoms, or pre-approved drawer systems.

- Doors and drawer fronts, end panels, and all exposed edges and corners: 3mm solid edges - all edges eased and corners rounded.
- Shelves: all to be hardwood ply and to have solid wood edges 12mm thick minimum.
- Finish (clear finish on wood): 1 coat of clear sealer, 2 coats of catalyzed clear lacquer finish - lacquer to be water and bleach (mild solution) resistant.
- Finish (plastic laminate). There may be a preference for plastic laminate finish on lower doors as some cleaning contractors have scarred door faces with cleaning buckets – confirm requirements for each Facility.
- Base: toe kick height of all cabinets shall be consistent with rubber base used in the Facility; rubber base over 19mm plywood. Toe kick depth to be minimum 100mm (4”).
- Vanities to be constructed of moisture resistant 19mm (¾”) plywood. Do not use particle board. Use a plastic laminate finish on exposed faces or solid surfacing. Provide a 150mm (6”) minimum backsplash. Ideally, vanities should span between walls, but can be supported on hot dip galvanized steel or aluminum brackets. Consider the use of solid concrete vanities in areas of high vandalism such as remote field houses.
- Storage Room shelving to 19mm (¾”) plywood, good one side, complete with hardboard edge. Paint or varnish. If shelf is free standing then it should be supported by metal brackets.
- Countertops:
  - 19mm high density particle board post-formed with backer under unsupported spans over 914mm, except, all counters with sinks shall be water-resistant plywood core.
  - Acceptable materials: plastic laminate (post-formed edges), or other (confirm requirements for each Facility).
  - Wood is not preferred for counter top edges. If wood is used, it is not to be exposed on the horizontal surface of the countertop.
- Backsplashes:
  - All counters with sinks shall have minimum 100 mm (4”) backsplashes and sidesplashes; additionally provide water impervious surface on wall above sinks and min. 600mm (2’0”) high (or to underside of cabinets above).
  - Gypsum board with paint finish or vinyl wall covering not acceptable.
  - Acceptable materials: plastic laminate (post-formed), ceramic tile, glass or other (confirm requirements for each Facility).
- Hardware:
  - All hardware to be commercial grade.
  - Hinges:
    - 125° minimum, Blum or Mepla, or pre-approved equal.
    - System screw mounting plates required at all hinges.

- Drawers:
  - Up to 150mm (6") deep - Blum or Mepla 3/4 extension slide or pre-approved equal.
  - Over 150mm (6") - KV or Accuride full extension slides or pre-approved equal.
- Pulls: Richelieu 33205 Brushed D or similar easy to grab handle that is a pre-approved equal (confirm requirements for each Facility).
- Standards: to be steel, adjustable on 12mm (1/2") centres, flush with cabinet side wall face.
- Shelf clips: to be compatible with the standards, and to allow for shelves to be mechanically fastened to support bracket.
- Locks: Corbin 0737 & 0738 with #75 Strike or pre-approved alternate
  - Locks on all lockable millwork to have a common key, except
  - Different individual lock on staff cabinets / lockers with master key.
  - Confirm any requirements for locked millwork beyond this minimum for each Facility.
- Keyboard trays at counters in offices (review requirements for each Facility).
- Seismic:
  - Shelves, cupboards, cabinets, etc to be made earthquake safe.
  - Adjustable shelves to be mechanically fastened to support bracket.

## 2.19 BUILDING ENVELOPE AND ROOFING

- Where a Facility includes the building envelope and/or roofing as part of the City of Vancouver's capital asset, the following shall pertain:
  - The building envelope design and construction is to be in accordance with the principles and recommendations contained in the latest edition of Walls, Windows and Roofs for the Canadian Climate by the National Research Council of Canada (NRCC 13487) and per the Building Envelope Consultant's recommendations.
  - Target overall wall assembly RSI values between 2.3 (ASHRAE minimum) and 2.9.
- If a floor of a recreational amenity is over an unheated space, consider the use of in-slab heating or, at minimum, increasing the insulation above the required RSI values by the City of Vancouver Building Bylaw and ASHRAE 90.1.
- Roofs:
  - Provide a minimum five (5) year Roofing Contractors Association of British Columbia (RCABC) Guarantee.
  - Provide roof edge safety barriers, roof anchors, and fall protection in accordance with the VBBL and with Work Safe BC requirements.
    - Specifically, for fall protection, each project should be assessed for where and how often parts of the roof may be accessed. If all or most servicing of roof areas can occur 13 feet from the edge (control zone plus buffer zone distance) there is less need for roof edge safety barriers. If areas needing servicing are located near roof edges, then we need to consider what method of fall protection is required in consultation with the City's OHS, environmental, & maintenance staff.
  - Where an extensive green roof is provided it must:

- Be easily removable (i.e. modular) to assist with maintenance access to the roof membrane and assembly below.
- Be minimal maintenance for weeding, fertilizing and plant replacement
- Not require irrigation. Temporary irrigation may be set up for the first year only (but a permanent hose bib is required at the roof).
- Be self-sustaining
- Where an extensive or intensive green roof occurs (including roof top playgrounds), a leak detection system must be provided. This system must:
  - Be reviewed with the City of Vancouver's Facility Operations and Maintenance staff. All specifications and details of the proposed system are to be provided for review and approval prior to proceeding.
  - Have a non-proprietary monitoring system.
  - Be compatible with, and actively connected to, the City's DDC systems to allow remote monitoring of any signals or alarms.

## 2.20 GLAZING

- Aluminum Windows and Frames (general):
  - Warrant windows in writing against leakage, defects and malfunction under normal usage for five (5) years minimum for the date of final completion.
  - Provide some type of 'bird-proofing' to mitigate birds from colliding into the windows, glazing and glass walls of the Facilities. Refer to City of Vancouver Bird Friendly Design Guidelines [www.vancouver/birdstrategy.ca](http://www.vancouver/birdstrategy.ca)
  - Where a sill is 457mm (18") or less above the floor, or where impact with a window may occur, use tempered and/or laminated glass as appropriate:
    - Tempered only at interior single glazed windows.
    - Tempered only at interior lite where exterior grade is within 610mm (2'0") of the interior floor level.
    - Tempered at interior lite and laminated at exterior lite where the exterior grade is a significant drop below the interior floor level (i.e. a storey or more)
    - Consider the location of Low-E coating, if used, in conjunction with the location of tempered and/or laminated glass as appropriate for each Facility.
    - Use glass systems with good insulating values (low U-value) and thermal breaks.
  - Products:
    - Polished plate, float glass: glazing quality of the thickness required for the opening size, minimum 6mm (1/4").
    - Georgian wired glass: 6 mm (1/4") polished both sides with 12 mm (1/2") square steel wire mesh centrally embedded in the glass.
    - Laminated safety glass: two sheets of 6mm (1/4") float glass laminated to 1.5 mm clear vinyl interlayer.
    - Mirrors: 6mm (1/4") float glass, silvered type 1-A with a five (5) year guarantee.

- Glass for exterior windows: hermetically sealed, double glazed units, both panes clear float glass, except where tempered glass is required by Code, 12.5mm (1/2") air space, 6mm (1/4") minimum thickness or thicker, as determined by the opening size.
  - Extruded aluminum with thermal break complete with operable hardware, weather-stripping and insulated glass for outside glazing. Fixed or operable.
  - Finish anodized or factory applied baked enamel finish.
  - Use only the highest quality commercial grade products as manufactured by nationally recognized manufacturers.
  - All units to be double glazed, see glazing section.
- Exterior openings:
    - All exterior windows, doors and other openings to:
      - Meet CAN/CSA-A440 standards per the Building Envelope Consultant's recommendations.
      - Be detailed, designed and installed as required by the Building Envelope Consultant for the project.
    - All opening windows to be:
      - Limited to a maximum opening of 100mm (4") where accessible by children.
      - Screened.
    - Where a window opens into a walkway or occupiable landscaped area, provide either a sliding window or restrict its swing so as not to create a safety hazard outside.
    - Use Low-E coatings on glass where solar heat gain may be significant. Mitigate unwanted solar gain with external shading.
    - Use glass systems with good insulating values (low U-value) and thermal breaks.
  - Entrances and Storefronts:
    - Provide a five (5) year manufacture's guarantee on all units.
    - Use thermally broken units that form a rigid unit without the use of fasteners or other thermal bridging elements.
    - Clear anodized or baked enamel finish.
    - Use only the highest quality commercial grade products as manufactured by nationally recognized manufacturers.

## 2.21 DOORS AND HARDWARE

- Main facility entry doors from the street and from the parkade to be equipped with a power-assisted door operator button for accessibility. Coordinate accessible operator button function with security requirements for these doors.
- Use institutional quality shop fronts and aluminum entrance doors and hardware for main entry doors.
- Wood doors
  - To meet AWMAC requirements for millwork (refer to 3.4 Architectural Millwork).

- To be solid wood core, except bi-fold and sliding doors to closets may be AWMAC hollow core doors.
- Use solid core 45mm (1¾") paint grade birch wood doors in wood frames in most locations. In wet areas such as pools, change rooms etc., use hollow metal doors and frames galvanized using the G90 process. Wipe coat galvanizing is not acceptable.
- Doors in wet areas are to be hot dip galvanized using the G-90 process.
- Hardware
  - All hardware to be commercial grade.
  - All hardware to meet accessibility requirements.
  - Additional support for half doors when not mounted in regular door frame; use heavy-duty piano hinge for full height of door.
  - Door stops to be wall mounted where possible complete with backing provided in the wall.
  - Sliding doors to have the ability to pin in place at open position.
  - Kick plates are required on the push side of all doors with closers and at all storage room doors.
  - Rolling shutters can be used to close off reception counters or concession areas. These should be heavy duty galvanized metal in metal frames with locking slide bolts. Exterior shutters should be weather and vandal proof. Paint with semi-gloss alkyd enamel.
- Locks
  - All locks to meet the City of Vancouver Security Standards.
    - Lock type and grade to be established for each Facility.
  - Final keys to be provided at Occupancy.
  - Interior locking strategy to be confirmed for each Facility with the following to be used as a guide:
    - All doors to have the same master key.
    - All exterior entry doors to be on same key (see also Security).
    - Internal doors and exterior storage to be on the same key, zoned where individual programs can be isolated.
    - Service rooms to be on the same key.
  - All doors to have locks with "classroom" function except
    - Storage rooms and Laundry rooms may have "classroom or "storeroom" function.
    - Janitor and service rooms to have "storeroom" function.
    - Washrooms to have "privacy" function.
- Automatic Door Opening Systems
  - Every Recreation Centre and major building to be fully accessible, which means installing automatic doors and elevators as necessary.
  - Given that automatic door openers are added to doors that are used by the general public, they should not interfere with the manual operation of the doors.



- Wherever possible an automatic door opener should not be installed in a location that has only one door or one set of doors that are wide enough for wheelchair access. For example, if there is a set of double doors where either door is wide enough, then only one of the doors should be automated, not both.
- The automatic door and controls should be clearly marked and easily recognizable. Use the international symbol of accessibility.

## 2.22 FINISHES

- Partitions:
  - Do not use wood frame walls in wet areas such as change rooms, showers, etc.
  - Construct walls in wet areas of concrete, concrete block, brick or on cement board on galvanized steel studs or other durable waterproof material.
  - Do not use gypsum board as a finish below 1,200mm (4'-0") on frame walls in any public area. Instead use concrete, concrete block, masonry, solid wood or some other durable hard wearing materials.
  - Frame walls in wet areas and change rooms must be on a concrete upstand 150mm (6") minimum.
  - Do not use gypsum board on washroom walls, use masonry or concrete walls or ceramic tile on cement board. It is desirable to provide a 200mm (8") high concrete upstand under concrete block walls to prevent water seepage.
  - Do not use gypsum wallboard on the walls of Storage Rooms, use concrete block, concrete, or 12mm (1/2") plywood.
  - Acoustic measures:
    - Acoustical insulating tape and strips, as required by wall assembly to meet required STC ratings.
    - Acoustical sealant, non-hardening, as required by wall assembly to meet required STC ratings.
    - Acoustical insulation, as required by wall assembly to meet required STC ratings.
  - Provide adequate blocking inside walls at all millwork locations and furniture locations where furniture will be fixed to walls and at wall-mounted door stops.
- Wall finishes:
  - Paint: painting and finishing to be the "Premium Grade" Master Painter and Decoration Association Recommendations and Standards; products to be MPI approved Institutional Low Odour VOC quality paint.
    - Provide a two (2) year MPI Guarantee or 100% two (2) year Maintenance bond both in accordance with MPI Painting Specification Manual requirements.
    - All painting work to be inspected by a Paint Agency Inspector acceptable to the specifying authority and the operator.
    - Provide documentation that the MPI approved Institutional Low Odour VOC quality paint is being used.
    - All surfaces, including those to be covered with wall vinyl, to have one coat of Hi-hide sealer primer to suit surface.

- Apply three finish coats and additional coats to cover as required.
- Paint to be brush and roller applied, completely dried and sanded between coats and finished to a smooth surface without streaks or marks.
- Gloss levels:
  - Kitchens, washrooms, laundry and janitor's room walls and ceilings to be G5 (semi-gloss).
  - Painted doors and door frames to be G5 (semi-gloss).
  - All other surfaces to be either G5 (semi-gloss), G4 (satin), or G3 (eggshell) as required for the particular Facility.
  - G1 and G2 (matte) finishes are not acceptable.
- Wall protection to be provided as required for each Facility. Top edges and corners of wall protection material to be in turn protected (details to be provided). Acceptable materials:
  - Plastic laminate.
  - Vinyl-acrylic sheet material (PVC-free) such as Acrovyn® or pre-approved alternate.
  - Sheet flooring.
  - Or pre-approved alternate.
  - Note that due to re-finishing costs, wood is not preferred.
- Tile: quarry and ceramic tile installation is to be in accordance with the recommendations of the Terrazzo Tile and Marble Association of Canada.
- Seal concrete or masonry walls with a minimum of two coats of clear silicon based sealer or paint.
- Wood finishes can be painted or stained and clear finished with urethane.
- Heavy duty vinyl wall coverings can be used in offices or private meeting rooms.
- Walls in Showers, Steam Rooms and other wet areas should be finished floor to ceiling with ceramic tile on concrete or concrete block or on cement board on galvanized steel studs. Concrete or concrete block are the preferred substrate.
- Tile wall finishes are the best in Change Rooms, or semi-gloss enamel or clear sealers on concrete or masonry.
- Walls in Gymsnasiums take considerable abuse and should be covered in FRP panels for the first 2.4m (8'-0") glued directly to 19mm (3/4") plywood. Provide acoustic control through the use of sound absorbing panels. The area of the acoustic material should be equal to the area of the ceiling.
- Do not use a gypsum board finish in weight lifting areas. Masonry, fiberglass panels, or crezone faced plywood are acceptable finishes. The base of any mirrors should be 450mm (1'-6") above the floor. Mirrors should be installed on 12mm (1/2") plywood backing and have polished and eased edges.
- Ceiling finishes (coordinate with acoustic requirements):
  - No ceiling (this may occur in janitor, storage and utility rooms):
    - Paint all exposed structure and services (refer to paint section above).

- Gypsum board:
  - Paint (refer to paint section above).
- Commercial quality suspended acoustic lay-in panel T-bar system:
  - Tiles to be minimum 16mm (5/8") thick.
  - System to have an NRC of .70 or better.
- Access to be provided to all above-ceiling services.
- All kitchens and washrooms to have ceiling finishes that are washable.
- Do not use moisture resistant gypsum board in Shower ceilings as it does not stand up over time, instead use a system such as Georgia Pacific Densheild with a plaster finish or ceramic tile or exposed concrete. Slope the ceiling to allow condensation to run off.
- Use ceramic tile finish in steam rooms, whirlpools etc. and slope the ceiling to allow condensation to run off.
- Do not use T-bar ceiling in Change Rooms. Generally expose the ceiling structure to the deck above or use moisture resistant 16mm (5/8") gypsum board. Ceilings in this area should be as high as possible.
- The ceiling structure can be left exposed if this will provide an attractive ceiling.
- Suspended acoustic tile ceilings can be used in areas such as private meeting rooms or public corridors. Do not use acoustic tile ceilings in areas where damage or vandalism is a problem such as gymnasiums or teen rooms.
- Normally the structure in a Gymnasium is left exposed. All elements such as speakers, lights, sprinklers, ducts, etc., must be protected from or be able to resist damage from balls. There should be no crevices or spaces where balls can lodge.
- Ceilings in Washroom with concrete ceiling structures can be left exposed if this will provide an attractive ceiling. Moisture resistant gypsum board is acceptable (15mm 5/8" aqua board) paint with alkyd enamel.
- Ceilings in Fitness areas can be exposed concrete or a high level "T"-bar ceiling with acoustic tiles work well. Ceiling heights should be as high as possible, 2,700mm (9'-0") as a minimum in the weight training area with 3,300mm (11'-0") or higher preferable.
- Floor finishes
  - Use hard wearing, durable materials that are easily maintained in public area: vinyl composite tile, sheet vinyl, rubber tile, quarry tile and non-slip ceramic tile. Small private or semi-private meeting rooms may be carpet.
  - Carpet can be used in meeting rooms, offices and other spaces not subject to heavy traffic. Heavy duty commercial quality carpet or carpet tile is acceptable. Do not use polypropylene carpet.
  - Do not use carpet in weight rooms instead use rubber sports flooring or other rubber flooring such as raised dot Pirelli rubber flooring.
  - Seal all quarry or ceramic tile and concrete floors.
  - Use dark colored epoxy grout in ceramic tile floors.
  - Solid maple flooring is preferred in Gymnasiums with special consideration given to the sub-floor design to provide some spring or give to avoid body joint shock. Consult the Owner for the exact specifications for the flooring system before designing and

specifying. Finish with clear moisture cured urethane or epoxy ester finish. All game lines must be done with epoxy coating. Do not use gym floor varnishes.

- Floor finishes in Change Rooms to be non-slip ceramic tile, seamless quartz or equal on a concrete sub-floor. Provide multiple 150mm (6") drains as required. Slope floors to drain at 10mm per meter (1/4" to 1'-0"). Use dark colored grout in tile joints. Continue floor finish 150mm (6") up the walls insert flush with the face of the walls.
- Floor finishes in Showers to be non-slip ceramic tile with a dark coloured grout, continue floor finish up the walls. Provide multiple 150mm (6") drains as required. Slope floors to drain at 10mm per meter (1/4" to 1'-0")
- Floor finishes in Washrooms to be non-slip ceramic tile, non-slip quarry tile, non-slip terrazzo tile, Sheet vinyl. Use integral baseboard, not rubber base. Provide multiple 150mm (6") drains as required. Slope floors to drain at 10mm per meter (1/4" to 1'-0").
- For the Fitness areas use, a synthetic rubber floor such as "Mondo-Ramflex" in free weight and weight machine areas. Ensure proper sub-floor conditions and colour retention in the specification.
- Carpet and resilient flooring installation to be in accordance with the recommendations of the National Floor Covering Association as detailed in their "Floor Covering Specification Manual" as issued by the BC Floor covering Association.
- Use adhesives and sealants that have low VOC levels per LEED® requirements listed under credit 4.1 "Low-Emitting Materials, Adhesives and Sealants".
- Maximize recycled content and end-of-life recycle-ability.
- Carpet requirements:
  - Carpet systems must meet or exceed the Carpet and Rug Institute's Green Label Plus testing and product requirements per LEED® requirements listed under credit 4.3 "Low-Emitting Materials, Carpet Systems".
  - Underpad, if required, acceptable product: 6mm (1/4") Duracushion, or pre-approved alternate.
  - The carpet pattern must be integrated, not applied.
  - Carpet may be broadloom or carpet tile.
  - Carpet to be solution dyed nylon, level loop construction, pile weight 950g/m<sup>2</sup> (28 oz/yd<sup>2</sup>) minimum if broadloom, or 610g/m<sup>2</sup> (18 oz/yd<sup>2</sup>) minimum if carpet tile.
  - All edges to be sealed.
  - Provide 5% extra of carpet of the same dye lot as installed for future maintenance requirements.
  - Carpet installer to guarantee in writing the installation of the carpet for two (2) years against loose fitting, breaking of seams, breaking away from the sub-base or any other installation defect.
  - Carpet manufacturer to provide a ten (10) year guarantee that the carpet shall retain 90% or more of its pile fibre. The guarantee shall also cover against defects of zippering, unravelling, colour fading, deterioration and delamination of backing materials, pulls, piling, matting, shedding or any other manufacturing defect.

- Resilient (smooth, non-absorbent, non-slip and washable) flooring required in kitchens, washrooms, laundry, janitorial closets, and others as required for each Facility.
  - Flooring to be:
    - Homogeneous sheet vinyl with heat welded seams, for example Tarkett or other pre-approved alternate (minimize VOC off-gassing).
    - Homogeneous sheet rubber with welded seams.
    - Consider flash coving the walls if sheet vinyl is used.
    - Or pre-approved alternate.
    - Linoleum is not acceptable.
    - All edges to be sealed.
  - Resilient flooring may be tiles in less intense use contexts such as office environments, for example. The appropriateness of tile use vs. sheeting flooring to be reviewed for each Facility. If tiles are used, they are to be:
    - 0.25% dimensionally stable to minimize joint size.
    - Acceptable product: Karndean International Heavy Duty Commercial Vinyl Tile, or pre-approved alternate (minimize VOC off-gassing).
  - Either sheet flooring or tiles to be 0.11” or 2mm thick, minimum. Provide 5% extra of resilient flooring material of the same production run as installed for future maintenance requirements. Provide sheet materials in full roll width by the length required.
  - Resilient flooring installer to guarantee in writing the installation of the flooring material for two (2) years against loose fitting, breaking of seams, breaking away from the sub-base or any other installation defect.
  - Provide a minimum five (5) year guarantee that the resilient flooring will provide the specified level of appearance and wear, subject to proper care and maintenance.
- Wood Flooring
  - Install wood flooring in accordance with good trade practises and the Manufacturer’s recommendations.
  - The wood flooring installer to guarantee in writing the installation of the flooring material for one (1) year against loose fitting, breaking away from sub-base or any other installation defect covering materials, labours and installation.
- At high wear and tear locations in the Facility, such as the main entrance, consider the use of a more durable flooring material such as ceramic tile. All surfaces must be non-abrasive, washable and cleanable.
- Base to be rubber, continuous throughout, and minimum 100mm (4”) high.
- Where demountable partitions and other items are indicated for installation on top of flooring material, install flooring material before these items are to be installed.

## 2.23 SPECIALTIES

- Toilet partitions:
  - Toilet partitions are particularly susceptible to vandalism and must be carefully selected. Do not use metal toilet stalls or urinal screens.
  - Use plastic laminate covered high density particle board or solid phenolic partitions if the budget allows.
  - Plastic laminate covered high density particle board; acceptable product:
    - Bobrick 1042.65 Series floor anchored and overhead braced partitions with, stile base, full height institutional hardware, high density particle board cores covered with plastic laminate and continuous sheet steel reinforcing in the stiles are our standard.
    - Or pre-approved alternate.
  - or Phenolic if budget allows; acceptable product:
    - Bobrick 1842 Series FRP faced phenolic core partitions with institutional hardware are preferred if the budget allows and are required for high vandalism areas.
    - Or pre-approved alternate.
  - Hardware: heavy duty stainless steel with tamper-proof screws, concealed where possible.
  - Use floor mounted overhead braced partitions.
- Washroom accessories:
  - Do not use wall hung lavatories use vanity mounted lavatories except in dedicated handicapped accessible washrooms.
  - Paper towel dispensers to accommodate single-fold towels with no saw tooth cutting bar. Alternate types may be considered depending on Operator preference - confirm type required for each Facility.
  - Hand Dryers to be Dyson air blade mod. # EF1-CA-EDA0551A 4. Outside Lighting to have HOA (Hand/Off/Auto switch) controls for servicing.
  - Provide a waste receptacle in each washroom: confirm type required for each Facility.
  - Soap dispensers: generally provide one at each sink (confirm type and locations required for each Facility).
  - Sanitary napkin/tampon dispenser and disposal: Bobrick B-3506 Trimline, with satin stainless steel finish or preapproved equal. Not required in ice rink change rooms, fieldhouses or stand alone washrooms not part of a community centre.
  - Condom dispenser: By others
  - Grab bar: Use 32mm (1 ¼") diameter, 18 gauge stainless steel bars with a satin finish, grab areas should have a knurled finish.
  - Shower rod, curtain and rings: Rod - 32mm (1-1/4") dia. satin stainless steel, 18 Ga., Bobrick B 6047. Curtain - Opaque matt white vinyl .2mm thick with nickel plated grommets along one edge at 150mm o/c, Bobrick 204-2. Curtain hooks - stainless steel, Bobrick 204-1 or preapproved equals.

- Shower Soap dishes: stainless steel with bright polished finish, recessed mounting, Bobrick B-665 or equal.
- Shower seats: Type 304 stainless steel frame and mounting brackets with self locking mechanism and 8mm thick solid phenolic seat, barrier free design, Bobrick B-5191 or preapproved equal.
- Mirrors: For large mirrors use 6mm (¼") mirror glass (wall to wall over vanities). For small mirrors use 450 x 760mm 18" x 30" glass mirrors in a stainless steel frame. Consider solid stainless steel mirrors if vandalism is a problem. Mount one mirror so that it is usable by a person in a wheelchair.
- Confirm any other requirements for each Facility.
- Provide a change table in one of each male and female washrooms. It may be a prefabricated item. Acceptable product:
  - Koala Kare surface mounted change station that supports static loads up to 400 lbs complete with child protection straps.
  - Or pre-approved alternate.
- Lockers:
  - Staff Use
    - Half-sized lockers or quarter sized lockers (to fit a backpack, if a coat closet is provided) required for staff if not provided as millwork or as part of office furnishing (confirm number and type required for each Facility).
  - Public Use
    - The general consensus of our Recreation staff is that a mix of bring your own lock and coin or token returning lockers are the best. (Confirm number and type required for each Facility).
    - Install well ventilated metal lockers with a baked enamel finish on 6" high concrete up stands. All lockers should have sloped tops to prevent the accumulation of garbage and dust.
    - Use high quality stainless steel lockers where high moisture and vandalism are a problem, otherwise high quality steel lockers can be used. Stainless steel is the only option for swimming pools.
    - All lockers must be securely fastened to the backing wall and must be on a 150mm (6") minimum concrete upstand to prevent rusting. Continue the floor finish up the upstand.
- Benches:
  - Wall mounted benches shall be on hot dip galvanized or aluminum frames. Provide 150mm (6") minimum clearance below benches for ease of cleaning.
  - Seats shall be of solid wood planking, fastened to the frame or legs with galvanized carriage bolts
- Blinds:
  - All blinds to be commercial grade; chain operated roller style preferred.
  - Blinds to be installed on all exterior windows.
  - Blinds to be installed at interior windows as required for each Facility.

- All cords or chains to terminate 1.5m (5'0") above the floor, or to be supported on a hook at that height.
- Mailboxes:
  - One large mail box accessible from interior at main entrance (confirm need for this Facility).
- Entrance mats:
  - At all entrances from the outdoors provide walk-off mats (minimum size should allow for an adult to take two steps before stepping onto another flooring surface). Either a recessed grille or surface walk-off mats are acceptable.
- Notice boards
  - Tackboards:
    - Corkboard complete with trim, or pre-approved alternate.
  - White boards
  - Magnetic white boards
  - Confirm size, type and mounting locations for each Facility.
- Signage
  - To conform to the City of Vancouver Sign By-Law.
  - To conform to requirements for disabled persons and reduce barriers for trans\* & gender variant community members. Refer to Section 2.12
  - Multilingual signs may be required (confirm requirements for each Facility).
  - Ensure signage is provided for the following:
    - To identify the Facility.
    - To indicate the entrance to the Facility.
    - At dedicated parking stalls.
    - For all necessary way-finding.
    - At entries.
    - At service rooms.
    - Provide any other signage required for each Facility.

Ensure all signage required by Building Code, including Fire and Life Safety Evacuation Plans, is provided.
- Fire and Life Safety Plans
  - Fire safety plans to be reviewed with the Operator prior to submitting to the Fire Department at Occupancy.
  - Ensure a copy is provided to the City of Vancouver with the operations and Maintenance Manuals.
- Fire Extinguishers
  - To be recessed
  - If surface mounted, all corners and edges are to be rounded.



- Elevator
  - If the Facility has a dedicated elevator, the elevator controllers shall be non-proprietary allowing 3rd party maintenance to adjust or troubleshoot fault codes and be designed so that it can be included in the City of Vancouver elevator maintenance program.
  - The suitability of the proposed controller products will be determined based on the proprietary nature of the equipment, degree of site programmability, track record on previous installations and the experience of local personnel with the product proposed.
  - Pre-approved controller products (subject to change):
    - Motion Control Engineering (MCE) Model PTC-AC.
    - Or pre-approved alternate.
  - Cab size and layout to be confirmed for each Facility.
  - Elevators in facilities with roof-top play or landscaped areas should be easily accessible from the loading area, or at minimum from the back lane, to facilitate delivery of items for routine maintenance such as sand and engineered wood chips.
  - The elevator lobby should not open directly into any secure social Facility space.
  - Ensure that the ceiling finish is of solid construction. Do not use egg crate or a suspended ceiling system.
  - Install curtain studs mounted on the top portion of the wall to enable a protective screen to be hung when transporting items likely to damage the wall surface.

## 2.24 EQUIPMENT

- All appliances to be “Energy Star” where “Energy Star” has that appliance category.
- Provide minimum one (1) year warranty on all appliances except provide a minimum two (2) year warranty on microwave ovens.
- Kitchen appliances:
  - If a commercial dishwasher is required it shall have a sani-cycle, 70°F heat booster, and back-flow preventer valve. Note that these dishwashers require deeper than standard millwork: millwork to be designed to suit.
  - Refrigerator: 21.5 cubic feet, frost free, with freezer compartment (bottom mounted preferred), or as required by the City of Vancouver.
  - Additional freezer may be required if the Facility plans a lunch program.
  - Stove with oven: 760mm (30”) wide, with 4 burners; placement of controls to be suitable for child safety, for example at back; self-cleaning convection oven. (separate wall oven and range top are also acceptable)
  - Range hood to mechanically exhaust stove to the outside; exhaust rate (CFM) to be determined by HVAC engineer.
  - Microwave oven: 2.0 cubic feet, 1100 watt, minimum.
- Laundry room (confirm requirements for each Facility):
  - Commercial washing machine is preferred, but residential style washing machine may be considered.

- Consider specifying a front-loading machine for water conservation.
- Commercial dryer is preferred, but residential dryer may be considered
- May be stackers or side-by-side machines.
- Entrances:
  - Provide walk off mats at entrances if recessed grilles are not provided (minimum size should allow for an adult to take two steps before stepping onto another flooring surface).

## 2.25 FURNISHINGS

- Furniture:
  - The legal requirements for funding or provision of furniture and equipment will vary from project to project and should be confirmed for each Facility. The list below is provided for guidance, but the final list shall be confirmed during the design phase:
    - Office:
      - ergonomic office chair and under-counter file for each workstation,
      - Sit/stand workstations (systems furnishings preferred, where applicable)
      - visitor chairs,
      - large file and
      - miscellaneous furnishings as required for each Facility.
    - Stacking chairs on a dolly and folding tables for evening use of space – confirm quantity at design stage.
    - Furniture to replace required millwork at the option of the project team (for example, office system furniture desk with transaction top in lieu of a reception counter).
- Seismic:
  - All furnishings greater than 1.22m (4'0") high to be secured to prevent tipping.

## 2.26 MECHANICAL

- HVAC
  - HVAC system to be designed to suit spaces with operable windows.
  - All rooms to be adequately ventilated to remove odours, especially from laundry, kitchen and washroom areas (to meet ASHRAE Standard 62).
  - Exhaust Fans to be 1.5 sone or less.
  - All air intakes to be located away from sources of fumes or dust, including parking and/or loading areas.
  - If baseboard heaters or radiators are used, they are to be shielded to prevent child access to hot surfaces where applicable. Electric base baseboard heaters are discouraged.
  - For space and domestic hot water heating, the City's preference is for low carbon energy sources such as air source or ground source heat pump or high efficiency condensing boiler. Where appropriate, allow for connection to existing or future district energy systems.

- Equipment to be easily accessible for maintenance. For example, filters and remote condensing units shall be accessible without the use of temporary scaffolding or Genie Lift type equipment. Install permanent cat walks for access and utilize best practises for fall arrest if required for service access.
  - Units shall not be located over parking stalls.
- Better than average exhaust ventilation should be provide for Washrooms. Exhaust fan must be rated for continuous operation with a sone rating of less than 3.5.
- Above average ventilation is required in the Fitness area. Do not design minimum ASHARAE requirements.
- Controls
  - Controls to be DDC and to have internet access. Manufactures to be:
    - Delta Controls (installed by ESC Automation) or
    - Reliable Controls (installed by Control Solutions, Houle Controls or Fraser Valley Controls).
  - Each major room is to be controlled individually.
  - Perimeter to be on separate zones if the layout of spaces / windows create problem areas.
  - Install a permanent carbon dioxide monitoring system. Install monitoring devices at areas with the highest occupancy per the Controls Engineer's direction.
  - Refer also to Landscape (irrigation controls), Roofing (leak detections system monitoring), Metering and Lighting Controls sections for other items to be on DDC.
  - Refer to Section 4.0 Appendix 1 "Guideline for DDC Specifications for New Projects for the City of Vancouver" for more details.
- Plumbing
  - Plumbing and mechanical systems must conform to Works By-law 4848.
  - Flow rates (toilets, faucets, etc.) must conform with the Vancouver Building By-law. Pre-rinse spray valves, for example, are required to have a maximum flow rate of 4.8 L/min and be equipped with an automatic shut-off and be WaterSense certified.
  - All drains in outdoor landscaped areas with playgrounds, especially if they are also roof drains, to have sediment traps. Type and style of trap to be confirmed with the City of Vancouver for each Facility.
    - Traps to be accessible for clean-out.
    - If there is not sufficient head room in the space below for a sediment trap, then at minimum provide a wye 45° elbow complete with clean-out access. Review with the City of Vancouver for each Facility.
  - At roof drains in occupy-able landscaped areas, use two level drains (at play surface and at roof membrane) and provide sediment traps in hard surfaces near loose fill and entrances - refer also to the "Drainage and Grading" section in 3.4 Landscaping.
  - Interior floor drains to be provided in each washroom, kitchen and janitor room.
    - All floor drains to have pre-approved trap primers.

- Trap primers to be accessible within the same room as the floor drain behind access panels.
- Hose bibs to be provided:
  - In each outdoor occupy-able landscaped areas.
  - At condensing units.
  - At any green roof.
  - If the Facility has a dedicated garbage room, a hose bib (and floor drain) is to be provided there as well.
  - Provide a tamper proof hose bib underneath each vanity.
- Hose bibs to be:
  - Frost-free with a vacuum breaker.
  - Vandal proof when they occur at grade or at any location that is accessible to the public.
  - Recessed if wall-mounted in outdoor play areas
- Hot water shall be temperature adjustable.
- All hot water tanks to:
  - Be seismically secured
  - Have drain/leak pans installed and piped to drain.
  - To be set at 60° C (140° F) minimum.
- Each plumbing fixture to have its own shut-off valve
- All faucets to have aerators for water conservation.
- All fixtures and fittings should be water saver low consumption.
- In each kitchen:
  - Provide a two-compartment stainless steel sink complete with faucet ledge.
  - Provide a separate single compartment stainless steel hand washing sink, complete with faucet ledge, in the largest kitchen to support a catered lunch program. If space allows, also provide this sink in other kitchens.
- Provide a floor-mounted mop sink in each Janitor room, complete with approved backflow preventer valve.
- All toilets to be low-flow, gravity standard (for tank style), and dual flush. Toilets to meet a Maximum Performance (MaP) Test of 500g or better. Review with Operator if flush valve or tank style is preferred for each Facility.
- Showers heads:
  - Mount shower heads at 1,980mm (6'-6") for men and 1,800mm (6'-0") for women
  - Shower heads should be flush vandal proof types from the approved list of products.
  - Provide one handicap accessible shower with a telephone type adjustable shower head, with a quick disconnect.

- One shower in each bank of showers shall be equipped with a twin handle shower control to provide tempered and cold water. All other showers shall have self-closing shower controls.
- Drinking water fountains and bottle filling stations must be located in or near the Fitness area use best-practise to determine the locations. Additional outdoor drinking water fountains may be required. Consult with the City and Facility operator to confirm.
- Metering
  - Facilities to have dedicated gas, electricity and water metering and/or sub-metering.
  - Where a Facility occurs in a mixed-use building, meters and/or sub-meters are to be located in service rooms that are easily accessible to the staff of the Facility.
  - All meters to be connected to DDC and trended for monitoring.

## 2.27 ELECTRICAL

- Power
  - All outlets to be childproof; to have childproof and shatterproof faceplates.
  - GFCI receptacles to be Tamper Resistant
  - Electric Panels to be bolt on Square D or Cutler Hammer.
  - Power to be provided in exterior landscaped areas.
  - A weather-proof outlet to be provide at any roof-top or exterior-located mechanical equipment.
  - Appropriate power provisions to be made for:
    - Photocopier.
    - Stove/oven.
    - Washer/dryer.
    - Freezer.
    - Fridge.
    - Microwave.
    - Portable phones and answering machines.
    - Fitness equipment (TBD)
  - Power in staff kitchen to be to residential standards plus additional outlets (confirm number required for each Facility).
  - All power in Change Rooms, Shower areas, and Washrooms must be G.F.I., on individual circuit breakers and have red cover plates.
  - A sound system should be considered in the Fitness Room. As a minimum the conduit for the speaker cabling must be installed. Minimize the number of floor mounted receptacles. Install cable TV or rough in the outlets.
- Wiring
  - Wiring to be copper. Aluminum alloy may be considered if the specification is pre-approved by CoV Facilities Development and Planning.

- Lighting
  - LED lighting is preferred.
  - Minimize the number of fixture types and lamp types; no more than four (4) fixture types for indoor use. No more than three (3) fixture types for exterior uses.
  - Preferred fluorescent lamp type for 1'0" X 4'0" and 2'0" X 4'0" fixtures are high efficiency T8's.
  - If 2'0" X 2'0" fluorescent fixtures are used then the lamp must be 2 lamp F17T8 (no U-tubes will be allowed under any circumstances).
  - No halogen lamps permitted.
  - Exterior lighting is required in play areas and other occupy-able landscaped areas, to illuminate entries, exits, , and as required for security.
  - Where the building has an emergency generator, the emergency lighting system shall be powered by the generator and not be powered by separate battery packs.
  - In Shower areas provide above average light levels.
  - Use vapour proof and rust resistant light fixtures in Change Rooms, Showers and Washrooms.
- Lighting Controls
  - Each room or area is to have its own light switch/controls – to be designed to be simple and intuitive.
  - Dimmers and stage lighting should be installed in all public program or multipurpose rooms.
  - Storage rooms must have occupancy sensors.
  - Occupancy sensors may be provided throughout to turn off lighting, in which case the wall switches function only to turn lighting on.
  - DDC controls to be provided for lighting such that:
    - Lighting is turned off 30 minutes after scheduled end of day.
    - Sweeps are to be programmed to turn lights off every hour until 30 minutes before opening. Provide 2 minute flicker warning.
    - Outdoor lighting to be separately programmable from indoor lighting such that they can be controlled for ambient light levels and schedule.
    - Wall switches to over-ride DDC controls at all times.
- Fire Alarm
  - Coordinate set-up of fire alarm monitoring with the monitoring company of the City's choice – to be confirmed for each Facility.
- Cable
  - Provide home runs to Electrical room from all offices and meeting/staff rooms (confirm cable requirements for each Facility).
  - Provide cable outlet in activity room, parents' room, and as required by the Operator.

- Telephone
  - Provide outlets as required for each Facility
    - Alarm, fire, intruder, and emergency elevator phone can capture regular lines when needed.
- Data
  - Provide outlets as required for each Facility
    - Include 1 with fixed IP address for DDC controls
    - Structured cabling to be CAT 6.

## 2.28 SECURITY

- Secure access system planning
  - To ensure a proper security solution for each Facility (particularly if the Facility is located in a multi-use building), it is strongly recommended that meetings occur with the Security Consultant, the City of Vancouver, the Operator and any other interested parties at appropriate points in the design and construction phases.
  - Utilize an appropriate entry security system e.g. bell, buzzer, intercom, etc. which will operate during program hours (confirm type required for this Facility).
  - If the entrance is remote from the Facility a video enterphone system shall be provided linking the entrance to the Facility.
  - Secure access to and from the parking to be addressed to suit the proposed plan for each Facility.
    - If the Facility is accessed by elevator, secure access to the elevator and secure control of the elevator shall be addressed.
- Access equipment
  - Access equipment must be compatible with the City of Vancouver standards. Acceptable product:
    - Keyscan System Vantage
  - Pass cards / fobs or key pad controlled from Facility:
    - If swipe cards or fobs provided, confirm number required for each Facility.
- Security systems
  - Security systems to conform to the City of Vancouver Security Standards (confirm for each Facility the security systems required).
    - For intruder alarm type systems, acceptable product is the Ademco Vista, or pre-approved alternate.
    - For surveillance type systems, refer to the City of Vancouver Security Standards for acceptable products. Note that these systems are generally not required for social amenity and will only be used in certain unique conditions.
  - Entrance and exit doors may require chimes or other door monitoring system (confirm requirements for each Facility).

### 3.0 APPENDICES

#### 3.1 APPENDIX 1 – DDC SPECIFICATIONS

A summary is provided below but the complete specification is available as a separate file on CoV website.

<http://vancouver.ca/home-property-development/facility-policies-guidelines.aspx>

#### **Guideline for DDC Specifications for New Projects for the City of Vancouver Summary**

##### **General:**

- DDC System must be Reliable or Delta Controls
- Every building is to have an outdoor air sensor on the North side of the building. The effects of the sun warming the other 3 sides of the building can produce unacceptable temperature errors. If the North side is not available, the sensor can be mounted on the North side of a unit with a sun shield. Depending on the size and layout of the building more than one sensor may be required. Sensors to be mounted away from exhaust fans, doors and anything else that can affect the temperature readings.
- CO2 sensor required for each air handling/roof top unit. CO2 sensors will regulate the amount of fresh air entering the space (set the minimum position for outdoor/mixed/return air dampers). Wall mounted sensors are recommended because duct mounted sensors provide more of an average rather than CO2 levels in individual areas.
- All controllers to be networked together unless otherwise specified. All controllers to be clearly labelled and easy to locate in the space.
- Detailed network layout with panel locations, network/circuit numbers to be provided by the controls contractor
- Night setback/setup to be used for energy conservation during unoccupied hours.

##### **Programming:**

- All equipment with status to be placed in a runtime log
  - Eg – RTU1\_Status = switch( RTU1\_Status , RTU1\_Amps , 0.5 , 1)
  - Heating / cooling should not be able to run if there is no fan status
- All analog points to be trended.
- All digital points to have runtime trends
- All outputs to have individual program
  - Only turn the output on once in a program – use local variables if necessary

##### **Graphics:**

- All graphics are to show the outdoor air temperature
- Navigation around the site should be clear.
- Summarizes all the units and gives a quick overview of any problems in the space. Hotlinks from this page will take the end-user to any mechanical unit.



- A summary page for easy identification of problems is required ie. A table showing useful information regarding mechanical equipment.
- Floor plans to show thermostat/CO2 locations. Color code zones for easy identification of zoning. Show ductwork if available. Hotlinks to access any mechanical equipment.

Graphic to indicate:

- Room temperature and set point
- CO2 levels and set point
- Runtime for all mechanical equipment. Runtime to be based on actual status and not the output
- Link for trend logs for all analog equipment
- Set points/trend logs to be in different colour
- Information table on bottom left hand corner
- Any other useful information to help the end user.

Fans, pumps and any other equipment with status should indicate with color the status – Green = on, grey = off, red = alarm.

- Any global variables used should be shown on a separate graphic

### **Commissioning**

- Report from controls contractor
- Full sequence of operations and operations of unit verified by COV
- Any deficiencies dealt with in a timely manor
- Panels labelled- controller addresses and name
- Network/power layout
- Circuit, panel numbers and locations
- Locations of all DDC controllers
- As-built documentation from controls contractor
- IP information for controllers clearly identified

### **Rooftop Unit (RTU)**

Inputs:

- Analog current sensor for fan – supply and return
- Analog current sensor for condensing unit
- Supply, return and mixed air temperature sensor. Mixed sensor to be an averaging style. Mixed air sensor is not mandatory.
- If VFD's are present – Feedback and alarm
- CO2 sensor – as indicated above.
- Room Sensor – with set point adjustment and override capability – depending on location set point adjustment may not be required on all space sensors

Outputs:

- Start/Stop for fan – supply and return
- Cooling enable – could be condensing unit or cooling valve
- Heating enable – could be gas, heating valve or electric duct heater
- Outdoor air dampers – exhaust, mixed and outdoor can be all on one output
- If VFD's are present – enable and speed control

**Heat Pump**

Inputs:

- Analog current sensor for fan
- Analog current sensor for condensing unit
- Supply air sensor
- Room Sensor – with set point adjustment and override capability - depending on location set point adjustment may not be required on all space sensors

Outputs:

- Start/Stop for fan
- Condensing unit
- Heating enable –electric duct heater – first stage heating provided by the condensing unit
- Reversing valve if condensing unit to be used for heating and cooling

**Fan Coil**

Inputs:

- Analog current sensor for fan
- Supply air sensor
- Room Sensor – with set point adjustment and override capability - depending on location set point adjustment may not be required on all space sensors

Outputs:

- Start/Stop for fan
- Heating enable –heating valve, electric duct heater or condensing unit
- Cooling enable – cooling valve or condensing unit

**Heating System**

Inputs:

- Hot water supply/return
- Analog current sensor for pumps
- Boiler status –temperature sensor for each boiler if more than one and feedback from boiler
- Outdoor air sensor
- If VFD's present – feedback and alarm

Outputs:

- Boiler enable
- Boiler pump enable
- Supply pump enable
- Boiler reset – based on demand and outdoor air
- Heating valves – if present

**Chiller – Evaporator side**

Inputs:

- Chilled water supply/return
- Status
- Alarm
- Analog current sensor for pumps

Outputs:

- Enable
- Reset
- Pump control
- Valve Control

**Chiller – Condenser side**

Inputs:

- Condenser water supply/return
- Cooling tower fan status
- Analog current sensor for pumps
- Feedback and alarm if VFD present

Outputs:

- Pump control
- Cooling tower fan – speed control if present
- Spray pump/damper if present
- Valve Control

**Exhaust Fans:**

Inputs:

- Analog current sensor for fan

Outputs:

- Fan start/stop

**BACnet:**

- All components must be native BACnet and must supply protocol implementation conformance statements. BACnet must connect to the BMS (Reliable or Delta Controls), communicate on 47806 and/or 47808 (port must be interchangeable) and have BACnet over IP integration.

**VRF System:**

- Must be native BACnet.

### 3.2 APPENDIX 2 - CITY-AFFILIATED FACILITY KITCHENS

#### 1. GENERAL

##### 1.1 Intent

These guidelines should be used when renovating an existing kitchen or designing a new kitchen in a City-affiliated social or recreational facility.

##### 1.2 Regulations

All new builds or renovations must comply with:

- The current edition of the Vancouver Building By-law (VBBL) and its referenced standards
- Bulletin 2007-005-BU/PL/EL/EV/AD regarding Kitchen Ventilation Systems (or the most recently updated version)
- Vancouver Coastal Health (VCH) permitting requirements
- Metro Van by-laws and permitting requirements

Your project may require City or VCH permits. Please visit the Inquiry Centre at 515 W10th Avenue or call 604 873-7611 to make an appointment to confirm what permits will be required.

#### 2.0 PLANNING

##### 2.1 Intended kitchen uses

Kitchens are most successful when they are built/ renovated with consideration for all of their intended uses.

Work with the operator to determine the intended end uses.

<b>Intended kitchen uses</b>	<b>Examples</b>
Food skills /educational programming AND/OR	Teaching and practicing food preparation, healthy eating and preservation skills
Meal provision / food service AND/OR	Senior's lunches, after school snacks, on-site event catering
Food rescue AND/OR	Receiving larger quantities of produce and processing it
Social ventures / small businesses AND/OR	Farmers' market vendors, small scale jam or baked goods preparation
Community celebrations and gatherings	Neighbourhood parties, holiday celebrations

Each use requires different space, equipment, and design considerations. For example, food service for larger numbers or food rescue requires industrial equipment, larger storage capacity, and loading bays, whereas educational programming requires adequate counter space and adjacent eating space. A kitchen that is not designed for its end use will limit the quality of programming, may pose safety hazards, and may limit accessibility. Kitchen design must consider future growth requirements and should be adaptable to multiple needs.

## 2.2 VCH Permit

A kitchen's design determines whether an appropriate VCH permit can be obtained and thus enables or limits uses.

VCH Environmental Health Officers will consider how the kitchen is proposed to be used to determine if and for what type of cooking the kitchen can be permitted. VCH will assess features such as dedicated handwashing stations, kitchen equipment, food storage, lighting, and the flow of food through the facility.

VCH Health Protection should be consulted during kitchen design and for approvals prior to construction or renovation. Contact 604-675-3800 to speak to a Senior Environmental Officer or check the kitchen plan at 604-871-6642. [www.vch.ca/public-health/environmental-health-inspections](http://www.vch.ca/public-health/environmental-health-inspections)

## 3.0 GENERAL DESIGN CONSIDERATIONS

See *subappendix 2a* for a summary.

### i. Kitchen Access, Size, and Location

Situate the kitchen next to a space that can be used as a dining area. It should be possible to book and use the kitchen and adjacent areas separately. Access to the kitchen should be possible without passing through another program room and the public should not need to pass through the kitchen to access the seating area. Washroom access is required.

Kitchen size varies greatly with intended use.

Consider the way in which food will arrive at the facility (loading area), and how food will be distributed to eating areas. (e.g. proximity to walk in coolers, service hatches).

Design for issues including noise, cooking odours, and pests like mice. For example, appropriate location of kitchen vis-à-vis other programming spaces that may require quiet times or scent-free times; doors/hatches/ windows that can be opened / closed.

If more than one group will use the kitchen at the same time, consider impacts on work spaces and storage.

Natural light in the kitchen and/or dining areas contributes to a welcoming space.

### ii. Accessible Kitchen Design

Consider incorporating accessibility features, at a minimum good lighting, non-slip flooring, wheelchair accessible entrance ways, and height adjustable, moveable tables that can better accommodate a spectrum of users. Discuss the level of accessibility required with the operator which could then indicate the need for specific equipment such as work spaces or sinks or stoves that are cut away for wheelchair users, or dishwashers that open as drawers rather than a drop down door.

### iii. General: All surfaces must be constructed of smooth, durable, easily cleanable and non-slip materials. Ensure waterproof floors. Floor to wall joints must be covered. For educational programming, ensure adequate space and wide walkways for approximately 12 people. Include door sweeps to reduce pest entry.

### iv. Counter space / Work stations for educational programming: Ensure adequate counter and walkway space for approximately 12 people. A central island with a stove enhances programming as the instructor can face participants. Create multiple work 'stations' to enable small groups to work together. Consider tables or islands that are flexible (such as on casters and/or height

changeable) to enable a wider variety of usage by participants, such as better accommodating wheelchairs or individuals with mobility issues, seniors and children.

- v. Dry storage: Kitchens must have a securable area with appropriate space for dry food storage, cooking small wares, and cleaning products appropriate for the type and scale of operations. Stored food and equipment must be 6 inches above ground and vermin/ pest proof. Storage areas and shelves should be cleanable. If there are multiple users, consider including a small number of lockable drawers and cupboard doors and at least two separate lockable storage spaces.
- vi. Lighting: Kitchens must have sufficient artificial light to ensure the safe and sanitary production of food and to facilitate cleaning of the premises.
- vii. Janitorial: Kitchens must have access to a mop sink /janitor station and adequate floor drains for cleaning the floors, as well as storage space for cleaning supplies separate from food storage.
- viii. Waste management area: Kitchens must have adequate space for separated waste management streams appropriate to the scale of operations, including organics, recycling, cardboard, oil disposal (if applicable), and glassware.
- ix. Security: Consider intended uses and whether lockable drawers and doors are needed to enable different user groups to store supplies. Consider whether cable locks are needed for small appliances, or whether security cameras are needed.
- x. Grease interceptors: Ensure easy access to enable cleaning / maintenance, for example, in a parkade for larger operations.
- xi. Signage: Consider a designated area to post health and safety signage (e.g. handwashing, temperature danger zone, food storage standards).

#### 4.0 EQUIPMENT CONSIDERATIONS

See subappendix 2a for a summary. Choose Energy Star appliances.

- i. Fridges / coolers/ freezers: Commercial fridges / freezers are preferred for most settings. If food service, food rescue, or food donations are anticipated, walk-in coolers should be considered. Intended uses and number of users dictate how many are needed and whether they need to be lockable. All should have thermometers.
- ii. Stoves: Domestic stoves work well for infrequent use or for cooking classes. Multiple stoves and /or electrical capacity for hot plates / electric woks allow for multiple work 'stations' which may be useful for cooking classes. Locating a stove on a central island assists educational programming. Consider having a commercial gas range for larger operations (i.e. regularly serving >50 people). Determine whether a 4- or 6-burner stove will best meet the intended uses.
- iii. Ovens: Domestic ovens are acceptable for infrequent use or for cooking classes. Consider commercial style convection ovens for larger operations (i.e. regularly serving >50 people).
- iv. Ventilation: The class of cooking must be determined to ensure the appropriate ventilation system is installed. See Subappendix 2b for more information. In a mixed-use building consider "exhaust scrubbing" technology to minimize potential conflicts over smell.
- v. Dishwashers / sinks: The number of sinks will depend on the complexity of food preparation and the number of users. Wherever possible, commercial dishwashers should be installed in addition to

hand washing sinks and non-domestic 2 or 3 compartment sinks. Ensure sinks are deep enough to be able to wash pots appropriate for the scale of operations. *High heat* sanitizing commercial dishwashers are recommended instead of *chemical* sanitizing commercial dishwashers as they are simpler and cost less to operate.

- vi. Handwashing station: The kitchen must have a separate handwashing sink in addition to any dishwashing or food preparation sinks. More than one station may be needed depending on the operations. The station should include hot and cold water, a mounted liquid soap dispenser, and a paper towel dispenser.
- vii. Power: Ensure adequate power supply for planned equipment. Consider other power requirements (e.g. additional 220 volt outlet for mobile heated or cooled units used in catering, power needs for multiple smaller hot plates used in community programming).
- viii. Fire suppression: Ensure adequate fire extinguishers according to VBBL.
- ix. Other elements: For educational programming, consider a laptop station with access to network lines and TV monitor as well as mobile rotating demonstration mirrors. Food warmers may be beneficial for food service.



**Subappendix 2a** – Highlight of key equipment differences between educational programming and food service

Many kitchens will be designed with both of these end uses in mind and the design and equipment will need to balance the needs of both uses.

<b>Equipment or design feature</b>	<b>Food skills / Educational programming</b> <i>Including cooking classes, group cooking</i>	<b>Food Service</b> <i>Including meal provision, food rescue, and social ventures</i>
Counter and kitchen space <i>Section 3.iv.</i>	A centre island that includes a stove greatly enables effective programming. Adequate counter and walking space is needed for ~12 participants. Consider moveable tables or islands, as well as areas that serve as small group work stations.	Varies according to scale of operations.
Dry storage <i>Section 3.v</i>	Kitchens must have appropriate space for dry food storage, cooking small wares, and cleaning products appropriate for the type /scale of operations. Stored food and equipment must be 6” above the ground. If there are multiple users, consider at least 2 separate lockable storage areas, as well as some lockable drawers and cupboard doors.	
Fridge / freezer / coolers <i>Section 4.i</i>	Multiple smaller commercial coolers / freezers are typically needed and may need to be lockable.	Commercial or walk in coolers and freezers. Number / size varies according to scale of operations.
Stove / Ovens <i>Section 4.ii and 4.iii</i>	A domestic stove and oven is often appropriate and less intimidating to users. Locating the main stove on a centre island enables the instructor to face participants. Multiple stoves, hot plates, and work stations can be beneficial.	Commercial 4- or 6- burner stove(s) depending on scale of operations. Consider a commercial gas range and convection ovens if regularly cooking for >50 people.
Ventilation <i>Section 4.iv &amp; Subappendix 2b</i>	Varies with scale and intended use. See Subappendix 2b.	
Dishwasher / sinks <i>Section 4.v and 4.vi</i>	Commercial dishwasher appropriate for scale of operations. The number of sinks will depend on the complexity of food preparation and the number of users. At least one specific handwashing sink is always required, in addition to any food preparation and dish cleaning sinks.	
Power <i>Section 4.vii</i>	Consider power needs for multiple hot plates or other small equipment.	Consider additional power needs for any mobile heated or cooled units.
Other design elements <i>Section 3.0</i>	Consider general kitchen design elements including durability and easily cleanable and non-slip materials. Consider lighting, cleaning needs, waste management, security, grease interceptors, and signage.	
Other equipment <i>Section 4.viii.</i>	Consider the need for rotating demonstration mirrors or laptop /TV display and network access	Consider the need for food warmers

**Subappendix 2b - Classes of Cooking Operations and Ventilation Requirements**

*Reference Bulletins:*

Kitchen Ventilation Systems: <http://bulletins.vancouver.ca/2007/2007-005.pdf>

Horizontal versus Vertical shafts: <http://bylaws.vancouver.ca/bulletin/F011.pdf>

<b>Class of cooking operations</b>	<b>Description</b>	<b>Types of uses seen in publicly accessible facilities</b>	<b>Example of facility</b>	<b>Vent hood required</b>
1	Produce significant levels of smoke or grease-laden vapors	Daily or weekly meal programs or Frequent cooking classes	Collingwood Neighbourhood house; Roundhouse Community Centre Hastings Community Centre	Type I hood
2	Produce significant levels of steam or heat but without grease-laden vapors	Daily or weekly meal programs or frequent cooking classes using non grease-laden foods (e.g. soups, stews, sous-vide, boiling/steaming vegetables)	Killarney Community Centre; Cedar Cottage Neighbourhood house	Type II hood
3	Limited smoke and limited grease-laden vapors are produced such as in normal usage in a single family home	A weekly cooking class or A bi-annual turkey dinner	Marpole Neighbourhood house; Eastside Family Place	Domestic hood
4	Typically devices that have their own enclosed fire suppression and grease filtering systems, such as mini-donut fryer	Not generally recommended due to noise, moisture, and heat which may impact building and its system	None	Integrated into device
5	Significant steam, heat or grease-laden vapors cannot be produced, and general equipment examples are coffee makers, toasters, microwaves, etc.	Kitchens that receive / store catering Or Kitchens where coffee/ muffins are served	Coal Harbour Community Centre	No hood