Land Development Manual

Vancouver International Airport

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Land Development Manual

Vancouver International Airport

Purpose:

The primary purpose of the Land Development Manual is to alert lessees and their designers to requirements for development of property at YVR that may differ from off airport developments.

1. Land Development

1.1 Building and Structures Heights

The two major factors affecting allowable height of buildings and structures at YVR are:

 a) "Land Use in the Vicinity of Airports – TP1247E" which covers Obstacle Limitation Surfaces, Protection of Telecommunications and Electronic Systems, Bird Hazards, Aircraft Noise, Restrictions to Visibility and Site Protection and Line of Sight Requirements.

> Information on Obstacle Limitation Surfaces (OLS), Protection of Telecommunications and Electronics Systems, and Line of Sight requirements for Vancouver International Airport is available on the drawing "Current Sea Island Zoning" available through the TDC.

b) Design Guidelines;

Development heights in the Urban Interface Area are limited by the height of the Arthur Laing Bridge. The bridge deck height rises from 14.71 m. geodetic at the south abutment to 26.29 m at the northernmost pier on the south side. Please refer to the Design Guidelines, part 2A, section 3.1.

Development in Airport South is limited by the existing building heights. The maximum building height is 12.8 m (42' 0").

1.2 Building Zoning

The Building Zoning classifications are based on the Airport Master Plan classifications.

Airside Commercial

In areas designated Airside Commercial, building height will be limited by Obstacle Limitation Surfaces and the Design guidelines.

Groundside Commercial

In areas designated Groundside Commercial in the Airport Master plan:

GC 1 (Office) – The maximum height of buildings and structures shall be limited to the lesser of 5 stories, 18 m (59') or OLS. GC 2 (Light Industrial) - The maximum height of buildings and structures shall be limited to the lesser of 2 stories, 12 m (39.37') or OLS.

GC 3 (Airport Service) - The maximum height of buildings and structures shall be limited to the lesser of 2 stories, 12 m (39.37') or OLS.

GC 4 (Business Park) The maximum height of buildings and structures shall be limited to the lesser of 2 stories, 12 m (39.37') or OLS.

1.3 Building Setbacks:

The requirements for building setbacks for all developments are:

Front Yard	10 m
Side Yards	6 m
Rear Yard	6 m

Exceptions: Cornices, leaders, gutters, pilasters, sills may intrude into this setback by up to 610 mm (2'-0"). Steps, eaves, sunlight control projections, canopies may intrude into this setback by up to 1220 mm (4'-0").

1.4 Lot Coverage and Maximum Density (Floor Area Ration-FAR)

AC (Airside Commercial): 60% lot coverage and a density of 1.0.

Groundside Commercial:

GC 1 (Office) 75% lot coverage and a density of 2.5. GC 2 (Light Industrial) 60% lot coverage and a density of 1.0. GC 3 (Airport Service) 60% lot coverage and a density of 1.0. GC 4 (Business Park) 50% lot coverage and a density of 1.5.

1.5 Parking Requirements:

Provisions for parking are included as Appendix C.

1.6 Landscape/Planting

The landscaping at Vancouver International Airport forms a significant part of the impression a visitor has of our region of Canada. To ensure that both a high level of quality and an appropriate consistency is maintained, developers are encouraged

to follow the lead of the Airport Authority and use similar plant material (Native BC).

1.6.1 Present landscaped Areas

Contractors must respect established landscaped areas and will be required to install safe zones around these areas using hoarding or fencing. During construction, contractors will be required to submit a plan for utilities relative to large trees and their root systems and indicate what steps are being taken to lessen the impact on the trees.

1.6.2 Plans

Plans should indicate plant material, quantity, irrigation systems valve and backflow preventer locations, grading materials and quantities.

1.6.3 Plant Material

Plant material is to meet or exceed BC Nursery Trade Association (BCNTA) standards. Native BC plants should be used (substitutes will be considered). In addition to the regular plant materials, seasonal plants are recommended to increase color. Recommended materials are listed in Appendix A - "YVRAA Landscaping Standards."

1.6.4 Irrigation

Irrigation systems are recommended to protect the landscape investment during dry periods Backflow prevention is required.

1.6.5 Maintenance Programs

Information is to be provided to the Airport Authority on landscape maintenance programs in place when the landscaping is completed. Please provide the company name, phone number and contact.

1.6.6 Wildlife

During design, consideration should be given to eliminating nesting or roosting areas for birds. Plant material chosen should not provide a food source for birds or other wildlife.

1.7 Construction in a Floodplain

Sea Island is located in the Fraser River floodplane. The design flood level is 2.9 m geodetic based on a maximum astronomic tide of 2.00 m and wave and storm surge allowance of 0.9 m. It is recommended that building foundation elevations be built at or above the design flood level but this is not mandatory. Designs should consider the use and occupancy, the site, operational requirements, floodproofing, risk assessments, and requirements imposed by other agencies, for example, to register the land lease. Details on Sea Island dykes can be obtained through Engineering Services.

2. Site Servicing

2.1 Road Widths and Access

The attached drawings (Appendix B - ROAD1.DGN, and ROAD3.DGN) are the YVRAA standards for Sea Island and are similar to the City of Richmond Civil Engineering Standards. Width of entrances will also have to meet the requirements of the City of Richmond Fire Department's rescue vehicle turning radius

Road designs require a 90 mm asphalt base course during the development phase of an area. Upon completion of the development a 50 mm asphalt finish course is required to complete the road to the final grade specifications.

Note: When connecting to existing service corridors, provision should be made to allow a smooth transition between service elevations as many of the older installations have not been installed at the currently recommended elevations.

2.2 Road Crossings – Site Services

Where site servicing crosses airport roads, directional drilling shall be used for installation rather than trenching unless approved in writing by the Engineering Services Department.

2.3 Responsibility for Site Service Connections

The developer is responsible for providing all site service connections to the site including those beyond the lease line unless special arrangements with the Airport Authority have been made.

Sanitary sewer connections are to comply with "GVRD Sewer Use Bylaw 164" and "Code of Practice for Handling of Waste Generated from Food Service Facilities Operating in the GVRD".

All connections are to be witnessed and approved by the Airport Authority.

2.4 Underground Services Specifications:

Specifications shall meet or exceed City of Richmond Engineering Standards.

2.5 Water Connections

The Airport Authority will supply all water service connections to all developments at a cost. The installation of the valves shall be in accordance with the Land Development Manual. The size of the connections is to be determined by the developer's engineer. The water service will not be made until the developer has furnished the Authority will all tests reports related to the water service (Backflow prevention reports, Chlorinating reports and signed reports of system been flushed and all other relevant test reports).

All temporary water connections to fire hydrants are to be made by YVRAA Maintenance Department. They will install the appropriate backflow device on the hydrant. There will be a charge for this service and the water will be metered and the cost of the water will be billed to the developer. Notice of the required connection will have to be given to the Maintenance Department 72 hours in advance.

- a) Testing: Prior to water main connection, the contractor shall supply static and residual water flow tests to the Engineering Services Department for hydrants up and down stream from the proposed connection. The City of Richmond Fire Rescue Department must be given an opportunity to witness the field tests.
- b) **Water Meters** are required on all water services. Remote meters are recommended. Meters must be installed in a readily accessible location. Installation should include bypass and isolation valves. The lessee is responsible for maintenance and repairs of these meters.
- c) **Triple valves** shall be installed for all water line installations at each connection to mains for emergency loop continuation and potential service shutdowns.
- All valve connections to water mains shall have stainless steel clamps. All clamps shall be wrapped in dunsil wrap for corrosion protection. All valves shall be Clow Resilient Wedge type c/s stainless steel bolts and nuts.
- e) All **valve stem access covers and plates** shall be installed in and protected by asphalt or concrete pads approved by the Engineering Services Department.
- f) **Backflow Prevention Devices:** All building developments and connections to the Airport Authority's water distribution

system shall utilize premise backflow prevention devices located at the potable water entry to the building or connection.

2.6 Electrical and Telecommunications Services

All electrical and telecommunications distribution is to be provided underground. The objective is to reduce aeronautical obstructions on Sea Island. Installation of power poles is no longer acceptable.

2.7 Seismic Protection of Natural Gas Service

All gas services require seismic protection on the gas main connection. Automatic gas shut off valves shall be installed on gas mains prior to entering the building. Series 300, 310 and 314 are accepted units (Available through West Coast Seismic Protection Co. Ltd.)

2.8 Storm Drainage

A system of drainage ditches and culverts are used to minimize the risk of storm runoff flooding on Sea Island. Property development must protect the capacity of the existing system and provide additional storage and runoff capacity where required as a result of the development.

3. Building Requirements

3.1 Airside/Groundside Security Requirements

The Transport Canada "Aerodrome Security Measures" require that when a fence forms part of the security barrier between the airside and groundside, it is to be chain link, no less than 2.13 m. high plus a 0.3 m three strand barbed wire overhang facing out. The security barrier must be kept clear of objects that may constitute a threat to the security of the aerodrome for a distance of 1 m inside (airside) the security barrier and 3 m outside the security barrier. (Generally this includes objects that may assist in climbing over the security barrier or could obscure a hole in the barrier.)

3.2 Bird Nesting

Openings that permit bird nesting shall not be allowed in buildings and structures. This requirement includes the enclosure of all canopies and building soffit designs.

3.3 Navigational Requirements

a) Obstruction lights may be required on buildings, equipment, antennas, light poles and other objects.

b) Transport Canada reserves the right to require changes to building finishes, signage, flood lighting, and reflective surfaces that adversely affect air traffic or ground control operations.

3.4 Signage

All structures on Authority Lands must have a conspicuous street number consistent with Richmond Bylaws and policies to facilitate identification by responding emergency services.

The City of Richmond Sign Bylaw No. 5560 with the following changes shall be used as a standard to ensure that Airport exterior signage is consistent with the community in which the airport is situated. (Please also see the Development Guidelines for restrictions on advertising and roof mounted signs.) The changes are:

- 1 Replace "Building Inspector" with "Manager, Engineering Services" (page 1)
- 3 Purpose: An additional purpose for the Signage Standards at the airport is to ensure Aviation Safety. (page 3)

Part 1: General and Administrative

- 13(a) Delete "Application for Sign Permit". A FAP application shall be used.
- 13(b)(8) Moving, Flashing or Oscillating signs are generally not acceptable.
- Add 13(b)(11) Lighting intensity must not adversely affect Air Traffic Control or Pilots vision at night.

Schedule A

Part IV: Free Standing Signs (General)

- 2(e) Delete 46 m^2 and replace with 38 m^2 .
- 3(a) Minimum Height: Delete and replace with: "Signs shall be located on land not used as a driveway, or for the parking of automobiles and shall not obscure the view from a road, sidewalk, or other premises in the vicinity. Signs shall be maintained 0.9 m above finished grade."

- 4(a) Maximum Height: In (a) replace "7.6 m" with "3.5m". Delete (i), (ii) and (iii).
- Add 5(a) Maximum Width: The Maximum width of a sign shall be 7.3 m.

Delete Part V, Part VI and Part VII.

<u>Schedule B</u> Delete Schedule B. Fees are based on the FAP Fee Schedule.

- 3.5 Annual Tests Backflow, Sprinkler Systems and Hydrants The lessee will be responsible for annual testing of the premise and irrigation backflow devices, sprinkler systems and fire hydrants. Results of these tests are to be forwarded to the Engineering Services Department
- **3.6** "Barrier Free Requirements for Construction at Vancouver International Airport" identify requirements in addition to those in the 1995 NBC.
- **3.7** Fire Inspection, Investigation and Prevention Services: YVRAA and the City of Richmond have an agreement in which the City of Richmond has agreed to provide Crash, Firefighting & Emergency Rescue Services on Authority Lands. YVRAA and the city also have a Memorandum of Agreement regarding conducting construction plans reviews with regard to life and property safety systems and access for City fire-rescue equipment. The City may review installations and witness testing of these systems. The City will also conduct ongoing fire prevention inspections and review Fire Safety Plans.

4. Construction Requirements

4.1 Security Requirements

The Airdrome Security Act and the Airport Authority and Transport Canada Security Regulations stipulate special procedures and construction requirements for development that are in or adjacent to the airside. These include the Security Escorts, and Fencing and Security requirements.

4.2 Temporary Water Supply

If water is required for preloading or other construction activities, the developer shall contact Engineering Services for meter and billing requirements.

Appendix A

YVRAA Landscaping Standards

YVRAA LANDSCAPING STANDARDS

BOTANICAL NAME	COMMON NAME	
CHAMAECYPARIS NOOTK. PENDULA	NOOTKA FALSE CYPRESS	
PINUS CONTORTA	LODGEPOLE PINE	
THUJA PLICATA	WESTERN RED CEDAR	
TSUGA HETEROPHYLLA	WESTERN HEMLOCK	
ARBUTUS MENZIESSII	PACIFIC MANDRONE	
ACER CIRCINATUM	VINE MAPLE	
ACER MACROHYLLUM	BIGLEAF MAPLE	
ALNUS RUBRA	RED ALDER	
BETULA JACQUEMONT II	JACKMAN BIRCH	
CORNUS NATALLI	PACIFIC DOGWOOD	
CRATAGEUS DOUBLAS II	PACIFIC HAWTHORN	
CEANOTHUS VELUTINUS	MOUNTAIN BALM	
CORNUS STOLONIFERA	REDTWIG DOGWOOD	
CORNUS FLAVIRAMEA	YELLOWTWIG DOGWOOD	
CORYLUS CORNUTA	HAZEL	
GAULTHERIA SHALLON	SALAL	
HOLODISCUS DISCOLOR	OCEANSPRAY	
MAHONIA AQUIFOLIUM	OREGON GRAPE	
PINUS MUGO MUGHUS	MUGHO PINE	
POTENTILLA F "GOLD FINGER"	SHRUBBY CINQUEFOIL	
POTENTILLA F "RED ACE"	SHRUBBY CINQUEFOIL	
POTENTILLA F "TANGERINE"	SHRUBBY CINQUEFOIL	
POTENTILLA F "WHITE"	SHRUBBY CINQUEFOIL	
RIBES SANGUINEUM	FLOWERING CURRANT	
ROSA NUTKANA	NOOTKA ROSE	
ROSA RUGOSA	RUGOSA ROSE	
SALIX DISCOLOR	PUSSYWILLOW	
SPIREA DOUGLAS II	HARDHACK	
SYMPHORICARPOS ALBUS	SNOWBERRY	
ADIANTUM PEDATUM	MAIDENHAIR FERN	
BLECHNUM SPICANT	DEER FERN	
POLYSTICHUM MUNITUM	SWORD FERN	
AQUILESIA FORMOSA	RED COLUMBINE	
ARCTOSTAPHYLUS UVA-URSI	BEARBERRY	
DICENTRA FORMOSA	BLEEDING HEART	
GAULTHERIA PROCUMBENS	WINTERGREEN	
LILIUM COLUMBIANUM	TIGERLILY	
LINNAEA BOREALIS	TWINFLOWER	
MAHONIA NERVOSA	SPREADING MAHONIA	
TRILLIUM OVATA	TRILLIUM	
METASEQUOIA GLYPTOSTROBOIDES	DAWN REDWOOD	
PINUS NEGRA	AUSTRIAN PINE	
THUJA SP	CEDAR	
BETULA SP	CLUMP BIRCH	
CORNUS SP	DOGWOOD	

QUERCUS SP.	OAK
ROBINIA PSEUDOACACIA	BLACK LOCUST
BOTANICAL NAME	COMMON NAME
GEDITSIA TRIACANTHOS	HONEY LOCUST
RHODO/PIERIS/CORNUS	RHODO/PIERIS/DOGWOOD
ACER CIRCINATUM	VINE MAPLE
ACER RUBRUM "MORGAN"	MORGAN RED MAPLE
BETULA PAPYRIFERA – SINGLE TRUNK	PAPER BIRCH
BETULA PAPYRIFERA – CLUMP	PAPER BIRCH
ABIES FRASERII	FRASER FIR
ABIES GRANDIS	GRAND FIR
CHAMAECYPATIS N. "PENDULA"	WEEPING FALSE CYPRESS
PINUS CONTORIA VAR. CONTORTA	SHORE PINE
MAHONIA AQUIFOLIUM	OREGON GRAPE HOLLY
TAXUS MEDIA "H.M. EDDIE"	HEDGE YEW
ARCTOSPAPHYLLUS UVA-URSI	KINNIKINNICK
ASARUM CAUDATUM	WILD GINGER
CORNUS CANADENSIS	BUNCHBERRY
ACER PLAT "CRIMSON KING"	CRIMSON KING MAPLE
QUERCUS PALUSTRIS	PIN OAK
ARBUTUS UNEDO "COMPACTA"	STRAWBERRY SHRUB
COTONEASTER DAMMERI	COTONEASTER
PAXISTIMA MYRSINITES	OREGON BOX
ROSA "BONICA"	BONICA ROSE
THUJA OCCIDENTALIS "SMARAGO"	EMERALD CEDAR

Appendix B

Road Cross Sections

Road1.Dgn – Typical Cross Section Arterial Road – Undivided

Road3.dgn – Typical Cross Section Collector Road

Appendix C

Parking Requirements

Parking Requirements

Vancouver International Airport

1.0 Voluntary Establishment of Parking Facilities

1.1 Where off-street parking spaces in excess of these requirements are provided, their location, design and operation shall comply with these requirements.

2.0 Use of Parking Facilities

- 2.1 All required off-street parking spaces shall be used only for the purpose of accommodating the vehicles of clients, customers, employees, members, residents, tenants or visitors who make use of the principal building or use for which the parking area is provided, and such parking area shall not be used for off-street loading, driveways, access or egress, commercial repair work, display, sale or storage of goods of any kind.
- 2.2 Off street parking spaces may be provided and used collectively by two or more buildings or uses, provided that the total number of parking spaces when used together is not less than the sum of the requirements for the various individual uses and that such parking facilities shall be located not more than 150 meters from any building or use to be served.

3.0 Development and Maintenance Standards for Off-Street Parking

- 3.1 Off-street parking areas shall be developed as an integral part of an overall site plan, and shall be designated to satisfy the concerns of topography, orderly arrangement, ease of access, safety, security and landscaping.
- 3.2 Off-street parking areas shall be so arranged as to ensure the safe and convenient circulation of vehicles to and from the public road system.
- 3.3 Off-street parking spaces may not be arranged so as to require the backing out of vehicles on to a public road.
- 3.4 Adequate provision shall be made for individual access to or from all parking spaces at all times by means of unobstructed maneuvering aisles. Maneuvering aisles of not less than the following widths shall be provided.

Parking Angle:	Width of aisle:
90 deg.	7.0 m.
60 deg.	7.0 m. two way drive aisles
	5.5 m. one way drive aisles

Low turnover parking (employee parking facilities)

Parking Angle:	Width of aisle:
90 deg.	6.8 m. two way drive aisles
60 deg.	6.8 m. two way drive aisles
-	5.2 m. one way drive aisles

3.5 Off street parking spaces shall have clear minimum dimensions as follows:

	Length	<u>Width</u>	
Standard space:	5.2 m.	2.6	ն m.
Handicap parking:	5.2 m.	3.7 m.	
Low Turnover parking	4.88 m.	2.54 m.	

Where parking space adjoins a fence or other structure of greater that 0.3 m. in height, the width of the parking space shall be increased by 0.3 m. to enable the convenient opening of vehicle doors.

- 3.6 Off-street parking areas shall be surfaced with asphalt, concrete, gravel, or similar material so as to provide a durable surface and shall be graded and drained so as to dispose of surface water. Where a surface such as gravel is provided, measures shall be implemented to ensure that dust is effectively controlled. Individual parking spaces, maneuvering aisles, entrances and exits shall be clearly marked by curbs or fences, lines and signs. (See Environmental Standards for oil-water separator requirements.)
- 3.7 Off-street parking areas shall be provided with adequate curbs in order to retain vehicles within permitted parking areas, and to ensure that fences, walls, hedges, landscaped areas, buildings, sidewalks and public roads and lanes will be protected.
- 3.8 Lighting used to illuminate off-street parking areas or parking garages shall be so arranged that all direct rays of light are reflected upon the parking areas or garages, and not upon adjoining property.
- 3.9 On off-street parking areas which contain 11 or more spaces, a minimum of 2% of the spaces provided, rounded upward to the nearest whole number, shall be located close to the building entrance and shall be marked with a clearly visible sign identifying the spaces for the use by disabled persons only as specified in Schedule 2 of Division 23 of the Motor Vehicle Act Regulations, and marked on the parking surface with the international symbol for wheelchair accessibility.

4.0 Units of Measurement

- 4.1 For the purposes of calculating off-street parking requirements, "gross floor area" shall be consider to be the total area of all floors of the building(s) measured to the outer limits of the building(s) but excluding basement storage spaces, utility areas and parking.
- 4.2 For the purposes of calculating off-street parking requirements, "gross leasable floor area" shall be considered to be the total floor area designed for tenant occupancy and exclusive use including basements, mezzanines and upper floors, measured from the centre lines of joint partitions and the outer limits of the building(s).
- 4.3 When the calculations of off-street parking requirements results in a fractional figure, it shall be rounded upward to the nearest whole number.

5.0 Parking Spaces Required

- 5.1 College Use 10 spaces for each 100 square metres of gross floor area of building
- 5.2 Commercial (Office, Retail) Use:4 spaces for each 100 square metres of gross leasable floor area of building(s)

- 5.3 Custom Workshop, Trade & Service Use:4 spaces for each 100 square metres of gross floor area of building(s)
- 5.4 Food Catering Establishment Use;10 spaces for each 100 square meters of gross leasable floor area of building.
- 5.5 Health Care Facility Use:
 1 space for each patient bed in Acute, Activation or Rehabilitation Hospitals:
 1 space for each 3 patient beds in a Care Facility

5.6 Hotel Use

 space for each 2 guest sleeping rooms; plus
 spaces for each 100 square meteres of gross floor area of building except guest sleeping rooms and food catering establishments.
 Note: There are additional requirements for Commercial, Food Catering Establishment uses if applicable.

5.7 Industrial Use:

1 space for each 100 square metres of gross floor area of building. Note: There are additional requirements for Custom Workshops, Trades & Services, Recreation Facilities, Commercial and Food Catering Establishment uses, if applicable.

5.8 Marina Use:

1 space for each 2 boat moorages: plus

2 spaces for each float home or liveaboard vessel moorage: plus 2 spaces for each 100 square meteres of gross floor area of building used for servicing or repairs.

Note: There are additional requirements for Commercial, Food Catering Establishment if applicable.

- 5.9 Neighborhood Pub Use:25 spaces for each Neighborhood Pub.
- 5.10 Places of Worship or Assembly Use:10 spaces for each 100 square metres of gross floor area of building.
- 5.11 Public and Private School Use:
 2 spaces for each classroom. Note: There are additional requirements for Recreation Facility and Commercial uses, if applicable.
- 5.12 Recreation Facility Use:
 2 spaces for each 100 square metere of gross floor area of building; plus
 1 space for each 4 spectator seats provided; plus
 3 spaces for each sheet of curling ice; plus
 3 spaces for each tennis, badminton or squash court.
- 5.13 Roadside Stand Use;6 spaces for each 100 square metres of gross floor area of building.