



**Tenant Design &
Construction Manual
Royal Centre**



ROYAL CENTRE OFFICE
TENANT DESIGN AND CONSTRUCTION MANUAL

TABLE OF CONTENTS

1. GENERAL INFORMATION	5
1.1 Introduction	5
1.2 Tenant Responsibility	5
1.3 Designers and Engineers	5
1.4 Tenant Coordination	6
1.5 Dimensions & Site Conditions	6
1.6 Permits	6
1.7 Tenant Drawing Submission	7
1.8 As Built Drawings	7
1.9 Deficiencies	7
1.10 Base Building Contractors	7
1.11 Hoarding	9
1.12 Standard of Workmanship & Materials	9
1.13 Hazardous Materials	9
1.14 Firestopping	10
1.15 LEED Guidelines	10
2. ARCHITECTURAL BUILDING INFORMATION	11
2.1 Demolition	11
2.2 Exterior	11
2.3 Elevators	11
2.4 Exit Stairs	11
2.5 Cross Over Floors	11
2.6 Elevator Lobbies	11
2.7 Base Building Ceiling System	12
2.8 Partitions	12
2.9 Fastenings	12
2.10 Plenum Barriers	12
2.11 Access Panels	13
2.12 Tenant Furniture Systems / Millwork	13
2.13 Tenant Suite Entry Doors	13
2.14 Floor Loading	13
2.15 Hardware	13
2.16 Tenant Security/Access	14
2.17 Signage	14
2.18 Window Coverings	14
3. MECHANICAL	15
3.1 Central System	15
3.2 Facility Management System	16
3.3 Base Building Plumbing Systems	16
3.4 Supplemental Cooling	16
3.5 Demolition	17
3.6 Construction	18
3.7 Tenant Installed Equipment	19
3.8 Structural Penetrations	19
3.9 Tenant Kitchen Equipment	20
3.10 Tenant Supplied Plumbing Equipment	20



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

3.11	Metering	20
3.12	Waterproofing	20
3.13	Firestopping	20
3.14	Environmental/Energy Initiatives	20
3.15	Interruption of Service	21
3.16	Chemical Cleaning	21
3.17	Hanging Equipment	21
3.18	Landlord's Use of Tenant Ceiling Space	21
3.19	Pipe Fittings	21
3.20	Maintenance Manuals	21
3.21	Rules, Regulations and Standards	22
3.22	Special Conditions	22
3.23	Standard of Workmanship & Materials	22
3.24	Noise	22
3.25	Public Washrooms	22

4. ELECTRICAL 23

4.1	Tenant Responsibilities	23
4.2	ELECTRICAL STANDARDS	23
4.3	DESIGN CAPACITIES	23
4.4	ENVIRONMENTAL / ENERGY CONSIDERATIONS	23
4.5	BASE BUILDING CONTRACTORS	24
4.6	DEMOLITION	24
4.7	METERING	24
4.8	POWER DISTRIBUTION	25
4.10	BASE BUILDING LIGHTING	26
4.11	LIGHTING CONTROLS	26
4.12	EMERGENCY LIGHTING	26
4.13	EXIT LIGHTS	26
4.14	WIRING METHODS	26
4.15	FIRE ALARM	27
4.16	COMMUNICATIONS	27
4.17	SEISMIC REQUIREMENTS	28
4.18	FIRESTOPPING	28
4.19	ELECTRICAL SYSTEM DOCUMENTATION	28
4.20	TENANT SECURITY SYSTEMS	29
4.21	CCTV	30
4.22	ENVIRONMENTAL / ENERGY INITIATIVES	30

5. CONSTRUCTION RULES AND REGULATIONS 31

5.1	Inquiries	31
5.2	Pre-Construction Approvals	31
5.3	Construction Trades	31
5.4	Construction Documentation	31
5.5	Access Request Form	32
5.6	Keys and Identification Tags	32
5.7	Safety Work Permit	33
5.8	Fire Alarm System	33
5.9	Nuisance Fire Alarm Fees	33
5.10	Smoke Heads	34
5.11	Pre-Construction Inspection/Start-up Meeting	34
5.12	Worksite Security	34
5.13	Hoarding	34



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

5.14	Damage-----	34
5.15	Freight Elevator -----	35
5.16	Parking-----	35
5.17	Working Hours -----	35
5.18	Cleanliness-----	35
5.19	Tenant Contractor Garbage Bin Information-----	35
5.20	Worksite Conduct and Safety -----	36
5.21	Slab Openings & Penetrations-----	36
5.22	Fastenings -----	36
5.23	Plumbing-----	36
5.24	Electrical-----	37
5.25	Pre-Occupancy Inspection -----	37
5.26	Pre-Occupancy Cleaning -----	37
5.27	Completion & Occupancy -----	37

6. LEGAL DESCRIPTION _____ 37



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

1. GENERAL INFORMATION

1.1 Introduction

The Tenant Design Criteria Manual has been written to assist the Tenants and their Designers in developing office designs, which reflect and complement the overall concept of the Complex.

This manual is intended to clarify the design concept for the office premises and guide the Tenant, designer and/or contractor for the purpose of expediting the outfitting of the Tenant's premises. It is intended to supplement the lease or offer to lease and shall not contradict either of those documents in any way.

The Tenant's work must be designed in accordance with the laws and regulations of the authorities having jurisdiction; in compliance with the requirements of the Landlord's insurer; and in conformity with these design criteria.

The Landlord reserves the right to revise this manual at any time. Full compliance with this guide does not obligate the Landlord to approve a Tenant Improvement Proposal.

1.2 Tenant Responsibility

The Tenant is responsible to ensure that the information contained in this manual is communicated to all parties associated with their project work within the facility.

1.3 Designers and Engineers

The Tenant must engage a registered Architect or Interior Designer and Professional Engineers for structural, architectural, graphic, heating, ventilation, air-conditioning, fire protection, security systems and electrical design of their premises. The Designers and Engineers services must include an inspection of construction and consultation on problems arising during construction. In addition, Consultants must allow for final letter of compliance. The Tenant must ensure that all changes to the contract receive written approval from the Designers, Engineers and the Landlord.

The Tenant may wish to retain the Landlord's Base Building Engineers under direct contractual arrangement for the production of working drawings. If the Tenant chooses to employ consultants other than the Base Building Consultants for its design work, the Landlord will have such drawings reviewed by the Base Building Consultants in order to ensure compatibility with the building systems. All requirements as a result of the review must be incorporated into the design and construction. The cost of this review will be charged to the Tenant.

Structural Engineer

Read Jones Christoffersen Ltd.
#300, 1285 West Broadway
Vancouver, British Columbia V6H 3X8

Contact – Leonard Pianalto
Phone – 604-739-6280

Electrical Engineer

Roy Campbell Ltd.
#100, 565 17th Street
West Vancouver British Columbia V7V 3S9

Contact – Bruce Campbell
Phone – 604-926-3251

Electrical Engineer

WSP – MMM Group Ltd.
1045 Howe St. #700
Vancouver British Columbia V6Z 2A9

Contact – Andy
Phone – 604 –676-1540

Mechanical Engineer

MCW Consultants
1400 – 1185 West Georgia St
Vancouver BC V6E 4E6

Contact – Willie Perez
Phone – 604-687-1821



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

Mechanical Engineer

Rodier Mechanical Consultants Ltd.
#206 – 13281 72nd Avenue
Surrey, British Columbia V3W 2N5

Contact – Paul Charlton
Phone – 604-502-8362

Sprinkler Engineer

Jensen Hughes Consulting Canada Ltd.
#228, 1185 West Broadway
Vancouver, British Columbia V6H 1X5

Contact – Ed Chow
Cel Chow
Phone – 604-732-3751

Fire Alarm System

Roy Campbell Ltd.
#100, 565 17th Street
West Vancouver British Columbia V7V 3S9

Contact – Bruce Campbell
Phone – 604-926-3251

Environmental Consultant

Shield EHS Solutions Ltd.
691 MacIntosh St.
Coquitlam, British Columbia V3J 4Y4

Email –
Phone – 604-218-5950

Any revisions to Base Building systems, including Life Safety Systems, must be designed by the above noted Base Building Consultants.

1.4 Tenant Coordination

The Landlord will appoint a Construction Services Manager to guide and assist the Tenant throughout the design and construction period and act as a point of contact within the Landlord's organization. All documentation pertaining to the Tenant's construction is to be sent to the Construction Services Manager via email in PDF, for review and approval. A minimum of five business days is required to review and approve all submissions.

The Tenant shall promptly pay all reasonable charges and expenses pertaining to the Landlord's review, inspection and/or supervision including the fees, costs and expenses of the Landlord's Base Building architects, engineers or other qualified consultants and all changes, fees and expenses charged by the Landlord's external architects, engineers or other qualified consultants plus an administrative fee equal to fifteen percent (15%) of all such fees, charges and expenses.

During the Tenant's construction, all additional changes or modifications to the approved drawings must be submitted to the Landlord and, if required by the Landlord, the Base Building Consultants for review and approval prior to implementation.

1.5 Dimensions & Site Conditions

The Tenant is responsible to ensure that their Designer(s) and Engineer(s) visit the site to verify all dimensions and familiarise themselves with the site conditions.

The Landlord will endeavour to provide the Tenant with drawings indicating all major elements of the Tenant's premises, as available.

1.6 Permits

The Tenant is responsible for all permits and approvals required by both the Landlord and all governmental authorities. The Tenant must provide the Landlord with copies of such permits and approvals prior to the commencement of the Tenant's construction. The Tenant is responsible for the correction of any items of work which do not meet with the approval of the Landlord and governing authority or its building inspector, notwithstanding the fact that the Tenant's drawings may have been approved previously by such authority and the Landlord. The Tenant will be given a specified time to complete the corrections; should the Tenant delay the required correction unduly, the Landlord will make the correction at the Tenant's cost.



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

1.7 Tenant Drawing Submission

Prior to the start of construction the Tenant must submit to the Landlord a sample board detailing the Tenant's finishes as well as (2) two copies in A1 Size of the following drawings:

- ◆ Architectural – Specifications, Demolition Plan, Key Plan, Partition Plan, Furniture Plan, Reflected Ceiling Plan; Elevations, Sections and Details as necessary, Finish Legend
- ◆ Mechanical – Specifications, Demolition Plan, HVAC Plan, Sprinkler and Plumbing Plan
- ◆ Electrical – Specifications, Demolition Plan, Lighting Plan, Power and Systems Plan, Security Systems, Communication Plan and Details, Fire Alarm, Exit and Emergency Lighting Plans
- ◆ Life Safety Systems

The Landlord, at the Tenant's expense, has the right to request additional information at his sole discretion.

Any revisions to Base Building systems, including Life Safety Systems, must be designed by the Base Building Consultants.

1.8 As Built Drawings

The Tenant is responsible to submit to the Landlord the following As Built information and drawings no later than 30 days after the completion of construction:

- ◆ Architectural – Specifications, Partition Plan, Furniture Plan, Reflected Ceiling Plan, Finish Legend
- ◆ Mechanical – Specifications, HVAC Plan, Sprinkler & Plumbing, Air Balancing Operating and Maintenance Manual
- ◆ Electrical – Specifications, Lighting Plan, Power and Systems Plan, Security Systems, Communication Plan and Details, Fire Alarm, Exit and Emergency Lighting Plans
- ◆ Life Safety System – Base Building Life Safety Consultants are to be responsible for as-building this information
- ◆ Structural – Detailed location, relative to the base building gridlines, and description of any special concentrated loading installed
- ◆ Structural – Detailed location, relative to the base building gridlines, of any openings through the base building structure
- ◆ Maintenance Manuals

This information shall be provided to the Landlord, via e-mail to the Construction Services Manager, in a CAD format electronically as well as one set of 24" x 36" drawings. The Landlord in its sole discretion approves "As-built" drawings. If the Tenant fails to provide this information within 30 days or in the required format, the Landlord will have the drawings completed or modified so that they conform. The Tenant shall pay to the Landlord, upon demand, all fees, costs and expenses associated with the preparation or modification of such drawings plus an administrative fee equal to fifteen percent (15%) of all such fees, charges and expenses.

Maintenance manuals shall include the care and cleaning of all finishes; all operating and maintenance instructions for all mechanical and electrical components, all mechanical and electrical shop drawings. Two copies of the Maintenance manuals are to be provided to the Landlord prior to completion of construction.

1.9 Deficiencies

All project deficiencies must be rectified within 30 days of Substantial Completion. After this time the Landlord reserves the right to rectify any remaining deficiencies; all costs associated with this work will be billed back to the Tenant at cost plus an administration fee of 15%.

1.10 Base Building Contractors

The following is a list of Base Building Contractors:



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

Air Balancing	KD Engineering	Ph – 604-872-8651
Cleaners	Bee Clean	Ph – 604-278-0236
Electrical	Corporate Electric Harborview Electric SASCO Systems Ltd.	Ph – 604-879-0551 Ph – 604-430-4777 Ph – 604-299-1640
Security System	Securitas (Diebold Canada) Convergint Technologies	Ph – 604-420-3112 Ph – 604-288-7963
Elevator	Otis Technologies Canada Inc.	Ph – 604-412-3400
Fire Alarm	Corporate Electric	Ph – 604-879-0551
Fire Alarm Verification	Tyco Integrated Fire & Security (Simplex/Grinnell Canada)	Ph – 604-515-8872
Locksmith	Al Scott Lock & Safe	Ph – 604-581-5000
Mechanical	Arid Mechanical Total Energy Systems Broadway Refrigeration MCR Mechanical Lathams	Ph – 604-526-2247 Ph – 604-5440-2233 Ph – 604-255-2461 Ph – 604-939-8258 Ph – 604-683-2321
Controls	Control Solutions Trane Northwest	Ph – 604-521-9282 Ph – 604-473-5600
Sprinklers	Simplex/Grinnell Canada Priority Fire Systems Ltd	Ph – 604-515-8872 Ph – 778-952-9399
HVAC Cleaning	Clean Air Services Pacific Flo Mechanical	Ph – 604-888-7488 Ph – 604-817-5745
Concrete Restoration & Parkade Systems	Applied Coatings & Restoration Inc.	Ph – 604-460-9104

In order to protect the integrity of Base Building Systems within the building, the following work must be performed by the above named Base Building contractors:

The Base Building Electrical Contractor must perform the following electrical work -

- ◆ All modifications to the Life Safety Systems including all Fire Alarm, Exit Lighting, Emergency Lighting and Emergency Power Systems work
- ◆ Electronic Metering – Installation of metering components and terminations, modification to data communication wiring, and testing of the system
- ◆ Power – Co-ordination of electrical shut-down with Landlord, performance of the shut-down, all connections to the building 600 volt power or emergency power systems, any installation into the primary side of the building security system.
- ◆ Lighting – installation of components within the lighting relay cabinet, low voltage lighting control revisions, rezoning and testing of lighting control zones
- ◆ Security – All modifications and installations into the base building security system including testing and commissioning of the security system installation.
- ◆ Communication Wiring – Installation of all communication riser cabling

The Base Building Security Contractor must perform the following work -

- ◆ All modifications and installations into the base building security system.



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

- ◆ All modifications to the base building locks on all doors in the building.
- ◆ Power – co-ordination of electrical shut-down with Landlord, performance of shut-down, any installation into the primary side of the building security system.

The Base Building Mechanical Contractor must perform the Following Mechanical Work -

- ◆ Any cutting into base building mechanical piping
- ◆ Connections to base building sanitary or vent risers
- ◆ All system testing
- ◆ Shutdown of Base Building System

The Base Building Contractors as noted must perform the Following Miscellaneous Work -

- ◆ Simplex/Grinnell must complete any alterations to the sprinkler system.
- ◆ Control work must be performed by a base building approved contractor
- ◆ Air and water balancing must be performed by a base building approved contractor
- ◆ Chemical cleaning and degreasing of the new piping shall be performed by approved contractors
- ◆ Telecommunications vertical riser work (electrical contractor)

1.11 Hoarding

During construction the Landlord, at the Tenant's expense, will supply and install a hoarding consisting of drywall, seams taped with masking tape, base, no visible fasteners, locking door if required. If a locking door is installed it will be keyed to the Base Building system. The Tenant will be responsible to install a poly barrier at the top of the hoarding to prevent construction dust escaping from the worksite. The Landlord will specify the hoarding paint and base colour to the Tenant. If the entrance is a glass entrance the Tenant will be responsible to have the entrance glass painted out with the approved masking product to block the view from the public side of the space during construction. The Tenant must retain the Base Building contractor to supply and install the glass-masking product.

1.12 Standard of Workmanship & Materials

All work by the Tenant, their contractor and sub-contractors shall be completed with new materials and all workmanship shall be performed in accordance with the very best standards of practice. Interior materials and workmanship that does not meet with the Landlord's approval or conform to governing codes shall be replaced at the Tenant's expense. For Tenants who are interested in Green practices, a copy of WPM's is available by contacting the Manager of Operations at 604-602-4800.

1.13 Hazardous Materials

The Landlord shall provide to the Tenant and their contractors with the most recent Summary Letter of Report for Hazardous Building Materials Assessment prior to the start of construction, as required by Section 20.112 of the British Columbia Occupational Health & Safety (OHS) Regulation.

Should the Tenant or their contractors come across any suspect material, they are to immediately stop work and notify the Tenant and the Landlord's Manager of Construction Services. The Tenant and their contractors will then be responsible to contact, coordinate with and pay for the Base Building Environmental Consultant to test the suspect material.

A copy of the test results and recommendations from the Base Building Environmental Consultant is to be provided to the Landlord's Manager of Construction Services when available. In the event the test results of the suspect material and the recommendation by the Base Building Environmental Consultant is to remove the suspect material, then the Tenant and their contractor will make the necessary arrangements with a qualified abatement company for timely removal at their cost. Removal must conform to Occupational Health & Safety's requirements.

The following 11 substances are among those designated by the *Occupational Health and Safety Act* as toxic:



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

- ◆ Acrylonitrile
- ◆ Arsenic
- ◆ Asbestos
- ◆ Benzene
- ◆ Core Oven Emissions
- ◆ Ethylene Oxide
- ◆ Isocyanates
- ◆ Lead
- ◆ Mercury
- ◆ Silica
- ◆ Vinyl Chloride

1.14 Firestopping

The Tenant's Contractor is responsible to ensure that all penetrations through fire rated assemblies are immediately sealed in accordance with approved building standards.

1.15 LEED Guidelines

For the benefit of those tenants who may choose to pursue a LEED Commercial Interior (LEED-CI) certification for their premises, the Landlord will provide, upon request, a copy of the LEED-CI screening and documentation survey that will identify the potential credits which may be applied to a tenant's application for certification.



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

2. ARCHITECTURAL BUILDING INFORMATION

2.1 Demolition

The Tenant is responsible to remove all redundant architectural elements, mechanical, electrical, security and life safety systems within their leased premises as part of the demolition and construction of their Tenant Improvements. The Tenant's contractors must remove all redundant elements back to the base building connection point, in a manner acceptable to the base building consultants.

Also, the Tenant's contractor must remove any lead, combustibles or unprotected fiberglass insulation that are discovered existing in the ceiling space.

The Tenant's contractor is responsible to supply and install temporary filters (MERV 8 or higher rated) at the mechanical compartment room, replace media throughout construction and remove prior to air balancing and/or occupancy. The Tenant's contractor must thoroughly clean all induction and/or radiation units and filters at completion of project, as well as ensure that all open-ended ducts are sealed off during construction and any seals removed prior to connection or occupancy. The Tenant's contractor must inform the Landlord of any special air handling requirements prior to the start of demolition.

The Landlord is committed to diverting waste generated by building alterations and additions from landfills and incineration facilities. As such, we have put a procedure in place to track this diversion for our projects.

The Landlord strongly supports Tenants taking the same measures. For more information on diverting construction waste from the landfills, please contact the Manager, Construction Services.

The Landlord reserves the right to assess the impact of proposed demolition on building systems and request additional protection as required. Please be advised that the Tenant's contractor may be required to complete a Safety Work Permit prior to starting any demolition work.

2.2 Exterior

White precast concrete cladding on corner structure and window spandrels. Anodized aluminum window mullions, rails, doors and frames. No film is to be applied to the exterior window without the prior written consent of the Landlord.

2.3 Elevators

Office Tower – A total of 12 elevators serve the Office Tower as follows:

- ◆ There are six elevators serving the low rise (floors 1 - 20)
- ◆ There are six elevators serving the high rise (floors 21 - 36)
- ◆ There are two elevators serving the retail and parking

2.4 Exit Stairs

There are two clearly marked exit stairs on each floor; one exits to the outside at grade and the other exits outside into the main floor lobby.

2.5 Cross Over Floors

The Office Tower crossover floors are as follows – 3, 4, 6, 11, 16, 20, 21, 22, 27, 28, 33 & 35.

2.6 Elevator Lobbies

Multi-Tenant Lobby - The Landlord will provide carpet in corridors and elevator lobbies on multi-Tenant floors. The public corridor and elevator lobby walls will have either a painted drywall or vinyl finish to building standard. The elevator doors and frames are painted steel. The ceilings are a combination of drywall and t-bar with lay-in acoustical tile. Tenant suite entrances must conform to one of the base building standards; architectural detail drawings detailing entrance options are available upon request from the Construction Manager.



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

Single Tenant Lobby – All finishes and signage proposed by the Tenant are subject to the review and approval of the Landlord. If painted, elevator entry doors must be done using an electrostatic painting process or equal. All flooring adjacent to the elevator opening must be level with the elevator framing threshold and must meet the requirements of all applicable codes and directives of the governing authorities.

The Tenant is responsible to ensure that their space is designed so that the exit stairwell(s) are accessible, as per all applicable code requirements and under all circumstances from the elevator lobbies and freight elevator lobbies. This responsibility includes, but is not limited to the following: corridor design, specification of proper door hardware and exit signage and the Tenant must ensure that all code requirements that apply to both emergency exiting and entrapment issues are satisfied by the appropriate governing authorities. If the Tenant's space is deemed not to be compliant at any time, then the Tenant is responsible for all costs associated with reconfiguring their premise to meet governmental requirements, as well as completing the work in a timely manner. Should the Tenant's design include changes in location of corridor walls, doors, pull stations, fire phone or fire extinguishers the Tenant will be solely responsible for all costs associated with changes to the Fire Escape Plan in the lobby.

2.7 Base Building Ceiling System

The slab to slab height is approximately 11'-0" and the ceiling height in the office tower is approximately 8'-4" above the finished floor on typical floors. The ceiling grid in this building is 4'-10" x 4'-10".

The suspended ceiling is comprised of lay-in acoustical panels and base building light fixtures in a t-bar grid.

Under no circumstances shall the Tenant or the Tenant's agent(s) paint or apply any covering so as to change the colour of the base building ceiling system, nor will the T-bar be cut, severed or adjusted for any purpose without the Landlord's written approval.

2.8 Partitions

All interior partitions must be of non-combustible construction and shall not interfere with base building systems, with supply air troffers or light fixtures. Partitions must terminate at a window mullion with adequate access to the perimeter radiation as required for building maintenance. No fasteners will be permitted to penetrate at the exterior wall of the building.

Interior partitions at the building perimeter must not prevent access to the mechanical equipment (induction fan or fan coil unit screen), controls or convactor thermostats. To facilitate the removal of exterior windows, removable filler panels are to be used in order to extend partitions over the induction units or fan coils up to the window mullions. Screws are not to be used to anchor to window mullions or induction unit or fan coil enclosures. Where walls are installed over handholes or trench-covers, for the under floor duct system, suitable access is to be provided.

All interior partitioning built to the underside of the ceiling or slab must align with the base building ceiling grid. Exterior partitions must align with a vertical mullion in the exterior window system.

2.9 Fastenings

Mechanical fasteners are not permitted to fasten to curtain walls, window frames, or special fire rated structures. No screw penetrations are permitted into the grid system; a clip system must be utilized.

2.10 Plenum Barriers

Tenants requiring baffling in the ceiling space must obtain approval from the Landlord and, where feasible, baffling will be permitted at the Tenant's expense. Baffling must not interfere with the efficient operation of the ceiling space as a return air plenum. No lead, combustibles or unprotected fibreglass insulation will be allowed in the ceiling space. If required, demising walls shall have a drywall plenum barrier constructed of 2' 1/2" steel stud with one layer of 1/2" drywall to each side with



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

staggered joints, drywall to be taped and sanded. Openings must be provided for return air purposes. Directions to be given by the Base Building Mechanical Engineer to avoid disruption of the return air system.

Transfer air openings through plenum barriers shall be located and sized on tenants design drawings. See mechanical section for additional information.

2.11 Access Panels

Solid ceilings are to be provided with access panels for maintenance of any equipment located in the ceiling. The tenant is responsible to ensure that their design allows for adequate access to all equipment as required. The Landlord reserves the right to approve all access panel locations prior to installation.

2.12 Tenant Furniture Systems / Millwork

The base building mechanical system supplies heated and cooled air to the perimeter office spaces via floor mounted grilles. To ensure the floor grilles can perform as designed and to permit maintenance access, all office furnishing must be installed no closer than 15" inboard of the perimeter glazing.

2.13 Tenant Suite Entry Doors

Suite entry doors on multi-tenant floors will be single full height solid core stained hardwood veneer; frame stained to match. Double doors will be permitted on multi-tenant floors opposite the elevator lobby entrances only. Glass sidelights are an acceptable option. Tenant entrance designs must be submitted to the Landlord for approval and installed by the Tenant at the Tenant's expense.

2.14 Floor Loading

Royal Centre is a conventionally reinforced concrete building designed for a live load of 65lbs/sq.ft. plus 20lbs/sq.ft. partition load.

No suspended loads will be attached to the underside of the floor or roof except for normal suspended ceiling and lighting systems. No load greater than the live load specified above shall be uniformly distributed on any concrete floor. Special high-density items must be subject to floor load capacity approvals by the Base Building Structural Engineer.

2.15 Hardware

The hardware for all Office floors (Building Standard) is as follows:

For all heavy use doors (Examples: main entrance, corridors, etc.):

Schlage ND-Series Cylindrical Locks, Lever Style

Preferred Style: Athens Series Standard

Finish: Silver 26D

or

Schlage Mortise Cassette L9000 Series (Note: For glass doors a compatible Glass Keeper will also be required)

For all other doors (Examples: inner office, storage room, etc.):

Schlage AL-Series Cylindrical Locks, Lever Style

Preferred Style: Jupiter Series

Standard Finish: Silver 26D

Electric Strikes:

For Cylindrical Locks: Rutherford 6

For Mortise Locks: Rutherford F2164

Deadbolts:

Schlage B-500 Series, preferably B560 Single Cylinder Deadbolt Lock



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

Panic Bar:

Von Durpin 98 Series Quiet Electric Latch (QEL)

Combination Locks:

Schlage CO-100 Battery Powered Push Button Combination Lock

Door Closers:

LCN 4040XP Series, preferably the LCN4040XP or DORMA RTS88

All locks will be installed by the Tenant's contractor at the Tenant's Expense. The cylinders will be turned over to the landlord representative no later than two (2) weeks prior to the Tenant's occupancy date. The Landlord's representative will re-pin the locks to the buildings Master Key system. All doors must be keyed to the buildings Master Key system (Abloy Canada Protec 2). The Landlord's representative will re-install the cylinders in the locks when they have been re-pinned. Cylinders and keys are considered a part of the Tenant's leasehold improvements and must not be removed from the Tenant's premises without the prior written approval of the Landlord.

2.16 Tenant Security/Access

The building is equipped with security systems, controlling and monitoring perimeter doors, elevators, parking gates, some utility rooms and other secure areas; Tenants are strongly encouraged to tie into the building security system. Access is granted by programmable pass cards through proximity readers at each entrance. If Tenants build upon the base system work must be performed by the Landlord's Base Building Security Contractor.

2.17 Signage

All proposed Tenant signage must be reviewed and approved by the Landlord prior to fabrication. All Tenant signage visible from the public corridor is subject to Landlord review and written approval. The Landlord will provide the following signage, at the Tenant's cost, in accordance with the standards established for the project:

Multi-tenant Floor Signage -

The Landlord, at the Tenant's expense will provide the following Base Building signage:

- ◆ Directory Board signage in the elevator lobby and main floor lobby
- ◆ Tenant Suite door sign at main reception entrance door

No other signage or Tenant identification will be permitted outside of the Tenant's premises.

Single-tenant Floor Signage –

- ◆ The Landlord, at the Tenant's expense will provide the Tenant with directory board signage in the main floor lobby directory
- ◆ A signage proposal for the Tenant's floor signage must be submitted with the Tenant's design drawings for landlord review and approval

2.18 Window Coverings

Building standard window coverings are a roller blind, with the fabric m screen 5% open, pearl linen with hardware to match clear anodized. These must be mounted inside the mullions and the shades are to be mounted on the "beauty cap". These window coverings must not be removed. Tenants may not install any additional or alternate window coverings without the prior written approval of the Landlord. Each Tenant is responsible for the maintenance of window coverings and associated hardware; the Landlord at the Tenant's cost will perform all work pertaining to the base building window coverings.



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

3. MECHANICAL 3.1 Central System

The office tower is cooled from a central, high velocity system located in the penthouse mechanical room. Main supply air shafts, located in the NE and SW corners of the office tower, provide supply air to each office floor. Supply air is routed through the ceiling space of each floor via high velocity ductwork where it terminals at ceiling mounted VAV boxes. The ceiling space is utilized as a return air plenum where return air is routed back to the main return air shafts located in the NW and SE corners of each floor. The central system is controlled through a computerized system. The supply air temperature is raised as the cooling load decreases.

Heating is provided by a closed loop hot water heating system that terminates with reheat coils at each of the perimeter VAV boxes and interior constant volume boxes.

Perimeter offices are heated and cooled from variable air volume reheat boxes which supply air through floor mounted grilles. Each VAV reheat box is equipped with two floor mounted grilles. Each floor is equipped with 44 perimeter VAV reheat boxes. Perimeter VAV boxes are located in the ceiling space of the floor below. Coordinate all work, including but not limited to, cleaning, controls and balancing with the landlord and the affected tenant(s) in the floor below.

Interior areas are equipped with a total of 4 constant volume reheat boxes per floor ducted to light troffer style air diffusers. Return air into the ceiling return air plenum is provided through slots in the base building light fixtures.

The central system is controlled by a Trane Tracer Summit Direct Digital Control system. There are approximately 20 space sensors located on the 10th and 33rd floors that provided space temperature data to the central system.

The number of temperature control zones per floor varies with the number of Tenant thermostats installed on each floor. All base building VAV boxes are pneumatically controlled and have the capability to be independently controlled.

Chilled water risers are routed from the penthouse mechanical room down to the retail levels via a vertical shaft at the building core. Connections to the chilled water system, for tenant use, are available however not on every floor.

Design Conditions

The design supply air temperature is 12.7°C (55°F)

Chilled water supply temperature 5.6°C (42°F)

Perimeter systems

Air quantities are calculated assuming peak instantaneous solar gain with no storage factor. Solar loads are based on the following:

NE and NW Glass		
Shading coefficient	-	0.277
U value	-	0.37Btu/H*ft ² °F
SE and SW Glass		
Shading coefficient	-	0.277
U value	-	0.37Btu/H*ft ² °F

Interior Systems

The interior base building load is composed of the following:

 Lighting – approximately 1.2 watts/square foot

 Miscellaneous – 1 watt/square foot

 People – 1 person/100 square feet

 Heat gains are assumed instantaneous with 100% heat of the lights assigned to the space.



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

Air Quality Standards

Industry standards are met or exceeded.

Air Changes – Approximately 9 air changes per hour for the total floor area

Fresh Air – minimum 20% of the total supply air volume

Hours of Operation

The buildings' central fan system operates for the following hours:

Monday to Friday:	06:00 to 18:30 hours.
Saturday:	09:00 to 17:00 hours
Sunday:	Not Provided.

The building's chilled water system operates for the following hours:

Monday to Sunday	7:30 to 22:00 hours
------------------	---------------------

These hours are subject to change at the discretion of the Landlord.

3.2 Facility Management System

The management system for building automation is Trane Tracer Summit DDC.

All modifications to the DDC system shall be performed by the base building controls contractor.

We also use RealSuite for Tenant Services and On Cite for preventative maintenance.

3.3 Base Building Plumbing Systems

Domestic cold water, domestic hot water, vent and sanitary piping are available at the service core walls in the ceiling space of most floors for connection to in suite plumbing.

Domestic hot water and cold water risers, sanitary risers, vent risers and storm risers are routed through a central shaft located between the men's and women's public washrooms in the core of the office tower.

Domestic water heaters are not permitted.

Connection of tenant plumbing services to the base building plumbing risers shall be completed by the base building approved contractors only.

All domestic water piping shall be certified type L hard copper, all vent piping shall be D.W.V copper and all sanitary piping shall be DWV (up to 1 1/2") or cast iron (2" or larger).

Plastic piping or tubing shall not be permitted.

Contractor shall pressure test new piping systems to 1.5 times the maximum operating pressure or 150PSI whichever is greater for a continuous period of 24 hours. Complete log data to be signed by the testing contractor and a copy shall be submitted to the LL and consultant prior to occupancy. Include test reports in O&M manuals.

3.4 Supplemental Cooling

Areas requiring supplemental cooling should be cooled with chilled water fan coil units tied into the chilled water risers in an approved manner. Chilled water is not available 24/7. The landlord will not assume any responsibility for interruption of chilled water delivery to the Tenant space.

All areas unable to accept an interruption in chilled water service or require cooling outside of the normal operating hours shall be cooled by independent air cooled A/C units. The use of



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

independent air-cooled systems must be reviewed by the LL and BB consultant. The following documentation shall be submitted for review:

- Space plan indicating equipment locations
- Equipment shop drawings indicating manufacturer, model number, unit capacity and electrical requirements
- Service contractor.

All condensing units shall be mounted as close to the return air shafts as possible (NW and SE corners of each floor space) to ensure rejected heat is removed for the ceiling space.

The Tenant may be required to install water and power meters to monitor his consumption. The Tenant is responsible for all costs associated with the supply and installation of the metering equipment.

Under no circumstances shall Tenant owned equipment be connected to the base building automation system.

All air cooled A/C equipment shall be provided, installed and maintained by the Tenant at the tenants cost

All supplemental A/C equipment installed by the tenant shall be removed at the tenants cost upon termination of the lease agreement. Submit certification to the LL that the refrigerant has been removed and disposed of in accordance with local authorities and environmental guidelines.

The use of independent air-cooled systems may be used only with the written approval of the Landlord.

3.5 Demolition

The Tenant is responsible to demolish all redundant mechanical systems back to their connection point to the base building system where systems shall be capped and sealed. Locations of all capped and sealed services must be clearly marked on the Tenant's as-built drawings, copies of which shall be submitted to the landlord at project completion.

The Tenant is responsible to demolish and remove all abandoned/redundant equipment, piping, ductwork, associated hangers, seismic restraints, etc., serving the Tenant space and shall repair affected area to as new conditions. Precautions must be taken to protect the building and occupants during the demolition period. All unused base building light troffers shall be turned over to the Landlord.

The Landlord is committed to diverting waste generated by building alterations and additions from landfills and incineration facilities. As such, we have put a procedure in place to track this diversion for our projects.

The Landlord strongly supports Tenants taking the same measures. For more information on diverting construction waste from the landfills, please contact the Manager, Construction Services.

Protection of Central System from Construction Dust

Prior to the start of work the contractor shall install 2" filter media (MERV 8 or higher rated) over the return air intake shafts (NE and SW corners) for the duration of the demolition and construction of the project. The condition of the filters shall be regularly monitored and they shall be replaced when they become fouled or damaged. Floor grilles shall be covered with filter cloth to prevent construction dust from entering the ductwork. The contractor shall remove all of these temporary filters prior to occupancy. Floor grilles and the associated ductwork shall be vacuumed clean prior to air balancing.



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

Asbestos Containing Materials

Existing duct mastic applied to base building ductwork is known to contain asbestos. Where mechanical scope of work includes modification to base building ductwork the tenants contractor shall follow the Landlord's asbestos abatement procedures.

Outlets

Air distribution to interior HVAC zones are provided via light troffer diffusers mounted to the base building light fixtures. Disconnect outlets from light fixtures and suspend in ceiling space during demolition to protect from damage. Remove and turn over all unused light troffer diffusers to the landlord. Remove branch ductwork, cap and seal at connection to mains.

Local Pneumatic controls

Prior to removing thermostats the controls contractor shall cycle the thermostats through full cooling to full heating to verify all equipment controlled operates fully and correctly. Where deficiencies are found, prepare and submit a deficiency list to Brookfield Engineering department for investigation and repair.

Prior to demolition work remove all existing thermostats from walls designated as "to be demolished". Remove all pneumatic tubing from the wall cavities, reconnect thermostat. Coil up pneumatic tubing c/w thermostat and place in a sealed plastic bag. Hang sealed bag in the ceiling space, above t-bar, to prevent damage during demolition and construction. Label bag with VAV box(s) controlled. Plug or remove abandoned pneumatic control tubing to maintain correct systems control. All damaged thermostats shall be replaced at the tenants cost. All controls works shall be performed by base building approved contractor(s).

3.6 Construction

The Tenant is responsible to provide all modifications to and install of all existing and new equipment, ductwork, insulation, outlets, controls, accessories etc. to distribute the airflow within the tenant space to maintain design conditions, at the tenants cost. All existing equipment to be reused shall be repaired and reconditioned to the landlord's satisfaction.

The Tenant is required to exhaust all odours or substances that are determined by the Landlord to be objectionable. General exhaust is not provided. All kitchen odours shall be ducted toward the return air shafts located in the NW and SE corners of each floor. Washrooms Installed in the tenant space must be ducted to the central washroom exhaust risers located in the men's and women's core washrooms. Fire dampers and duct mounted access doors shall be installed where new washroom exhaust ductwork penetrates the exhaust riser shaft wall.

Ductwork

Ductwork shall conform to the latest SMACNA and ASHRAE standards and shall be constructed to seal class A. Flex duct shall be limited to 6'-0" maximum length and to the final connection to the outlet. All existing flexible ductwork in excess of 6'-0" long and not at final connection to outlet shall be removed and replaced with sheet metal ductwork. Support all flexible ductwork to prevent sagging. Pull flexible ductwork tight and ensure connections to diffusers are straight.

Outlets

All new supply air light troffers shall be EH Price model LTL-10 single side diffusers to match existing. Mount light troffer to light fixture and secure with one screw at each end through diffuser lip. Provide and install lockable volume dampers at runout to diffuser to permit balancing

Local Pneumatic controls

All new thermostats shall be Johnson Controls model T-4002-9008, two pipe, direct acting, single temperature with Celsius dial pneumatic thermostat c./w model T-4000-2141 beige plastic cover



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

VAV boxes

Where tenant's new office walls restrict access to ceiling mounted VAV boxes the following work shall be completed at the tenant's expense:

- Remove VAV box from its current location. Cap and seal high velocity duct takeoff. Shut off and disconnect hot water heating piping.
- Relocate VAV box to accessible location on tenant side of wall.
- Provide and install new high velocity duct takeoff and connect to relocated VAV box. Provide and install new discharge ductwork and connect to existing, modified to suit.
- Extend hot water heating piping to relocated VAV box.
- Clean VAV box and balance to design load.

All perimeter VAV boxes in this tenant's ceiling space serve the floor above. Coordinate all VAV box relocation work Landlord and tenant above as to time and duration.

HVAC System Cleaning

All existing VAV box regulators and heating coils serving the tenant space shall be thoroughly cleaned prior to system air balancing. All associated work shall be completed by the approved base building contractor at the tenant's cost. Cleaning contractor shall coordinate access with Landlord and the affected tenant(s) on the floor below. Vacuum clean all floor grilles and associated ductwork within tenant space. Mechanical contractor shall ensure air balancing is performed as soon as possible after cleaning is completed.

Ceiling plenums must be cleaned of all construction debris at the completion of the project.

Air/Water Balancing

All new and renovated mechanical systems shall be balanced or rebalanced to the new design requirements by the approved balancing contractor prior to occupancy. Submit one copy of the final balance report to the landlord for review and records.

See section 1 - General Information for additional requirements.

3.7 Tenant Installed Equipment

The Tenant will be solely responsible for the monitoring, repair and regular maintenance of all special equipment installed for their use. This includes, but is not limited to UPS systems, air conditioning systems and alarm systems.

Under no circumstances will Tenant owned equipment be connected to the base building automation system.

3.8 Structural Penetrations

The tenants contractor(s) is not permitted to cut, core, drill or chase openings of any description through the base building structure without the prior written consent of the Landlord and the base building structural engineer.

The size & location of all structural penetrations must be submitted to the base building structural consultant for review and written approval prior to commence the work. Structural penetrations must be scanned or x-rayed, reviewed & approved by structural consultant, prior to coring. All slab penetrations shall be water tight.

Areas prone to water leakage are to be water proofed prior to installation of floor coverings.

The proposed water proofing method shall be submitted to the landlord for review and approval prior to proceeding with construction.

Cutting, coring and drilling may be required to be carried out after normal business hours at the discretion of the Landlord.

See section 3.24 – Noise for additional information.



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

3.9 Tenant Kitchen Equipment

Tenants requiring baffling in the ceiling space must obtain approval from the Landlord and, where feasible, baffling will be permitted at the Tenant's expense. Baffling must not interfere with the efficient operation of the ceiling space as a return air plenum. No lead, combustibles or unprotected fibreglass insulation will be allowed in the ceiling space. If required, demising walls shall have a drywall plenum barrier constructed of 2'1/2" steel stud with one layer of 1/2" drywall to each side with staggered joints, drywall to be taped and sanded. Adequately sized and located openings through all plenum barriers must be provided for return air purposes. Directions to be given by the Base Building Mechanical Engineer to avoid disruption of the return air system.

3.10 Tenant Supplied Plumbing Equipment

All new tenant supplied equipment, including but not limited to, water filters, chillers/coolers, coffee machines, ice makers, etc. shall be plumbed in copper pipe or tube. Plastic pipe is not permitted. Where necessary install pressure regulators and safety relief valves shall be connected to drain in an approved manner to a suitable source.

Ceiling mounted plumbing equipment is not permitted.

All installations shall be reviewed by WPM or its representative prior to occupancy.

3.11 Metering

All DCW and DHW services to each tenant space shall be metered. The Tenant is responsible for all costs associated with the supply and installation of the metering equipment.

All new water meters shall be Neptune Model T10 complete with E3 digital pulse transmitter.

3.12 Waterproofing

The Landlord may require the Tenant to waterproof all or a portion of the slab including slab penetrations in their premises to avoid leakage into the Premises below. The Landlord will review the Tenant's proposed waterproofing specifications.

3.13 Firestopping

All penetrations through fire rated assemblies shall be fire stopped to meet the assembly's fire resistance rating. Fire stopping must be installed by a licensed applicator. Listings of the fire stop assemblies used shall be submitted for review. The Tenant's Contractor is responsible to ensure that all penetrations through fire rated assemblies are immediately sealed in accordance with approved building standards.

3.14 Environmental/Energy Initiatives

Tenant improvements shall be installed to maintain or upgrade the environmental standards of the complex. Environmental standards include:

- ◆ Non-hazardous materials
- ◆ Energy efficient lighting
- ◆ Minimize use of supplemental lighting
- ◆ Individual room and office switching
- ◆ Occupancy sensors to control lighting in low use rooms
- ◆ MERV 8 or higher filter media during construction/renovations
- ◆ Low Flow Fixtures
- ◆ Energy Star rated electronic equipment such as televisions, refrigerators, microwaves, monitors, projectors and computers.

All tenant improvement shall conform to the current edition of the Vancouver Building Bylaw and adopted edition of the ASHRAE Standard 90.1 – "Energy Standard for Buildings Except Low Rise Residential Buildings".



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

3.15 Interruption of Service

While work is in progress continuity of service shall be maintained to all existing systems. Interruptions shall be co-ordinated with the Landlord as to time and duration. The Tenant shall be responsible for any interruption to services and shall repair any damages to existing systems caused by his operations

3.16 Chemical Cleaning

Where new chilled water or heating water piping is to be connected to the base building piping Obtain the services of an approved contractor to flush and degrease new pipe before final connection is made. The contractor may use "pickled" pipe in lieu of chemical cleaning and degreasing. The contractor is responsible for replenishing any chemicals lost through leaks, drawing downs, etc.

3.17 Hanging Equipment

All mechanical equipment shall be supported with rods and inserts. Install supports of strength and rigidity to suit loading without stressing the building. Locate adjacent to equipment to prevent undue stresses in piping and equipment.

All mechanical equipment shall be supported with vibration isolation. Provide seismic restraints as required by code and local authorities having jurisdiction.

3.18 Landlord's Use of Tenant Ceiling Space

The Landlord maintains the right to allow approved parties to route utility lines, pipes, drainage pipe, ductwork and other related facilities within the ceiling space of the Tenant's Premises. These facilities will be maintained in a manner that does not interfere with the Tenant's use of the Premises.

3.19 Pipe Fittings

Valves and fittings for the chilled water and hot water heating systems shall be sized for a minimum 250psig.

3.20 Maintenance Manuals

Maintenance manuals shall be submitted in 3-ring binders and shall consist of the following information:

- ◆ Description of equipment operation
- ◆ Shop drawings of all equipment
- ◆ Extended warranties
- ◆ Maintenance and operating instructions
- ◆ List of manufacturers and trade names
- ◆ List of supply sources for maintenance
- ◆ Balance reports
- ◆ As-built drawings
- ◆ Name of engineer and contractors
- ◆ Permits, licences and inspection reports
- ◆ Test reports
- ◆ Fire stop listings
- ◆ Fire damper drop test certificates

Submit two copies of the maintenance manuals to the Landlord immediately upon completion of the project.



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

3.21 Rules, Regulations and Standards

All work and materials shall be installed as shown and herein specified in accordance but not limited to approved editions of:

- ◆ National Building Code of Canada (current edition)
- ◆ Canadian Standards Association
- ◆ Vancouver Building Bylaws (current edition)
- ◆ Worksafe BC
- ◆ Factory Mutual Fire Insurance Companies
- ◆ ASHRAE Standards
- ◆ SMACNA Standards

3.22 Special Conditions

The mechanical contractor shall co-ordinate work of this section with that of other trades to avoid conflicts. The contractor shall also co-ordinate the working hours and use of elevators with the building management and shall comply with all security measures as required.

3.23 Standard of Workmanship & Materials

All work by the Tenant, their contractor and sub-contractors shall be completed with new materials and all workmanship shall be performed in accordance with the very best standards of practice. Interior materials and workmanship that does not meet with the Landlord's approval or conform to governing codes shall be replaced at the Tenant's expense. For Tenants who are interested in Green practices, a copy of Brookfield's Green Purchasing Policy is available by contacting the Manager of Operations at 604-602-4800.

3.24 Noise

Cutting, coring, drilling and other noisy work shall be performed after normal business hours, unless otherwise permitted, in writing, by the Landlord. Violation of this standard will result in the work being limited to 18:00 to 06:00 hours only.

3.25 Public Washrooms

Where tenant improvement work includes the men's and women's washrooms located in the building core the following work must be completed by Base Building Contractor's Arid Mechanical, Latham's, Total Energy System or Pacific Flo Mechanical:

- Removal of all existing water closets, urinals, associated flush valves, lavatory faucets and lavatory soap dispensers. Fixtures shall be carefully and safely stored off site and made ready for reinstallation.
- Removal of existing lavatories.
- All work to remove and replace domestic cold water and domestic hot water within the washroom, including all necessary valves, insulation, labeling and fire stopping.
- All necessary adjustments to rough-in piping to accommodate plumbing fixtures.
- Reinstallation of existing water closets, urinals, associated flush valves, lavatory faucets and lavatory soap dispensers including connection to services.
- Installation of new Kohler lavatory including sanitary piping and connections to existing services.

Where the tenant requires additional DCW and/or DHW to accommodate their in suite requirements, Arid Mechanical shall provide and install a new valved connection to existing risers within the pipe chase between the washrooms. The tenants' plumbing contractor shall be responsible for the installation of all necessary piping down stream of this valved connection. All such connections shall be submitted to the landlord for review and written approval prior to the start of work.



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

4. ELECTRICAL 4.1 Tenant Responsibilities

Tenants shall be responsible to supply and install the following:

- ◆ Additional panelboards and breakers.
- ◆ Metering.
- ◆ Light fixtures.
- ◆ Lighting controls.
- ◆ Power outlets and receptacles.
- ◆ Conduit and wiring.
- ◆ Electrical connections to HVAC loads.
- ◆ Fire alarm devices, voice communication speakers, conduit, and wiring.
- ◆ Emergency lighting.
- ◆ Exit lighting.
- ◆ Communication cable tray.
- ◆ Communication raceways and outlet boxes.
- ◆ Security systems, including door access, intrusion, CCTV.

4.2 ELECTRICAL STANDARDS

Electrical and communication systems must comply with applicable standards:

- ◆ British Columbia Electrical Code Regulations.
- ◆ City of Vancouver Building Bylaws.
- ◆ ASHRAE 90.1-2010 Energy Standards for Buildings Except Low Rise Residential Buildings.
- ◆ All equipment supplied and installed shall be built in accordance with EEMAC or NEMA Standards and shall be CSA approved.

4.3 DESIGN CAPACITIES

Power capacity for tenant 120 volt loads is 3.0 watts/ft².

Power will be fed from 120/208 volt, 3 phase, 4 wire panelboards. Panelboard will be supplied from each floor's electrical room.

If 120 volt load capacities provided by the base building are not adequate, the Tenant shall inform the Landlord of the required capacity. The Tenant will pay for the increased costs to the Landlord to provide the additional capacity

4.4 ENVIRONMENTAL / ENERGY CONSIDERATIONS

Tenant design and installation shall incorporate environmental and energy considerations such as:

- ◆ Non-hazardous materials
- ◆ Energy efficient lighting
- ◆ Minimize use of supplemental lighting
- ◆ Individual room and office switching
- ◆ Occupancy sensors to control lighting in low use rooms



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

4.5 BASE BUILDING CONTRACTORS

Additions or alterations to base building electrical systems must be performed by the Base Building Contractor for the associated system.

These include:

- ◆ Fire Alarm and Voice Communication
- ◆ Security System
- ◆ Metering System
- ◆ Electrical Power:
 - High voltage connections
 - Power risers
 - Electronic shutdowns

4.6 DEMOLITION

The Tenant is responsible for the removal of abandoned and redundant architectural elements, mechanical, electrical, communication, security, and life safety systems within and associated with their leased premises.

Removal shall include all devices, conduit, and wiring back to base building source, in a manner acceptable to the Base Building Consultants.

The Tenant is responsible for the removal of all unused communication cabling (conduit and wiring) in its entirety. Removal shall include conduit and wiring from outlet box to termination panel. Demolition shall include removal of any abandoned systems interconnecting the Tenant with the other floors.

All abandoned through-floor outlets shall be removed, including associated conduit and wiring. Floor openings shall be repaired and through-floor openings firestopped to maintain required floor-floor fire ratings.

Removal of any fire alarm initiating devices, voice communication speakers, or wiring, must be coordinated with and performed by Base Building Fire Alarm Contractor.

Base building light fixtures, removed but not being reinstalled, shall be turned over to the Landlord.

The Landlord reserves the right to assess the impact of proposed demolition on building systems And request additional protection as required. Please be advised that the Tenant's Contractor may be required to complete a Safety Work Permit prior to starting any demolition work

4.7 METERING

The Tenant shall provide metering for:

- ◆ Lighting
- ◆ 120/208 volt power loads
- ◆ Domestic cold water (DCW)
- ◆ Domestic hot water (DHW)

All metering shall be to Royal Centre Metering Standards utilizing Schneider Electric metering systems.

Metering shall be supplied and installed by Royal Centre Metering Contractor:



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

Corporate Electric Ltd.
2233 Quebec Street
Vancouver, BC
V5T 3A1

Contact: Bryan Killins
Telephone: 604 879-0551
Email: bkillins@corpelec.com

Lighting shall be metered from 347/600 volt lighting panel and pro-rated based on Tenant areas. Meter shall be Powerlogic ION 6200.

120/208 volt power loads shall be metered at each floor's 120/208 panelboards. Meter shall be Powerlogic ION 6200.

Domestic cold water and domestic hot water meters shall be supplied and installed by Mechanical. All metering shall be connected to Royal Centre Metering Network, programmed, and commissioned to interface with the existing building metering system.

4.8 POWER DISTRIBUTION

Base building power distribution consists of:

- a) Lighting
 - ◆ 347/600 volt, 3 phase, 4 wire.
 - ◆ Lighting panelboard is located every alternate floor.
- b) Power Outlets
 - ◆ 120/208 volt, 3 phase, 4 wire.
 - ◆ Tenant area panelboard located in each floor's electrical room, and/or within Tenant area.

Additional panelboards and breakers must match base building panels with bolt-on breakers. Panelboard tubs shall be minimal 42 circuits, Square 'D'.

Panelboards shall be clearly labelled with:

- ◆ Panelboard identification – lamicoid label
- ◆ Panelboard directory – typewritten directory identifying 'as-built' conditions.

If the Tenant requires branch circuits in addition to existing panelboards, the Base Building Electrical Engineer must be retained by the Tenant to determine the location and connection details

4.9 EMERGENCY POWER

Emergency power is available from the building's emergency generator for the following tenant loads:

- a) Emergency Lighting
 - ◆ 347 volts up to maximum of 1,000 watts/floor.
- b) Exit Lighting
 - ◆ 347 volts from an existing exit light circuit.

Emergency power is not available from the building for any other tenant loads.



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

4.10 BASE BUILDING LIGHTING

Base building lighting consists of a custom 12" x 58" recessed T-bar with integral 12" x 48" fluorescent fixture with 32 watt, T8 3000°K fluorescent lamps. Ballasts are to be 347 volt, electronic program start.

Alterations or additions to base building lighting are the responsibility of the Tenant.

Any alterations greater than 4,000ft² shall include reconfiguring of base building lighting to incorporate two lamp fixtures with alternate spacing to match current lighting layout arrangement (every alternate tile).

Additional base building light fixtures may be obtained from the Landlord. Fixtures removed and not reinstalled shall be turned over to the Landlord.

All fixtures shall be seismically secured to building structure.

Light fixtures and lenses shall be cleaned at the end of the construction period. Lenses are fragile and must be handled carefully. A charge will be levied for replacement of damaged fixtures or lenses.

4.11 LIGHTING CONTROLS

Lighting controls and switching for all light fixtures including base building fixtures must comply with ASHRAE 90.1-2010 Standards.

Royal Centre has a General Electrical master low voltage lighting control system. It controls all 347 volt lighting circuits and may be programmed to turn off base building lighting circuits to suite tenant occupancy. Master low voltage switching shall not be utilized for switching lights 'on'.

Offices, meeting rooms, open areas, storage, and service rooms shall be switched in compliance with ASHRAE 90.1-2010 Standards.

Documentation must be provided for the City of Vancouver to show compliance with ASHRAE Standards. A copy of ASHRAE Compliance documentation shall be provided to the Landlord.

4.12 EMERGENCY LIGHTING

Emergency lighting shall be provided to illuminate all 'means of egress' in compliance with City of Vancouver Building Bylaws. Emergency lighting may be provided by connecting base building light fixtures to emergency generator power circuit up to a maximum of 1,000 watts/floor.

4.13 EXIT LIGHTS

Exit lights shall be LED, 2.5 watt green pictogram 'running man' exit lights. Connect to 347 volt emergency power exit light circuit.

4.14 WIRING METHODS

All 120 volt and 347 volt power wiring shall be RW90X copper conductor wiring installed in EMT conduit.

Conduits shall run parallel to building lines and shall be installed tight to building structure as high above suspended ceiling as possible.



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

The only exceptions are:

- ◆ Light fixture feeds from outlet boxes dropping down to individual light fixtures. Fixture drop wiring may be armoured cable 'bx', maximum length 2 metres.
- ◆ Branch circuit feeds down from top of wall to new outlet boxes mounted in existing walls.
- ◆ Horizontal branch circuit runs between outlet boxes in new walls, maximum 3 boxes.

Teck cable shall not be used.

Communication cable trays and conduit raceways shall be provided for communication, security, and low voltage systems.

4.15 FIRE ALARM

Royal Centre fire alarm is a Simplex 4100U multiplexed, addressable, modified single stage system. The building is classified as a high rise.

Fire detection is provided by sprinkler system monitoring with smoke detectors and heat detectors in storage and specialty rooms. Detection should be provided in special use tenant rooms with high density or sensitive equipment.

Alarm signals and voice communication are provided through flush mounted 8" square ceiling mounted speakers. Voice communication speakers shall be installed throughout all Tenant and common areas to provide adequate audible coverage.

All fire alarm work, including demolition, shall be provided by Base Building Fire Alarm Contractor.

On completion of construction, and prior to occupancy, all fire alarm devices within tenant area (as a minimum) shall be verified by Simplex Grinnell.

4.16 COMMUNICATIONS

Prior to proceeding with any proposed data and communications installations, the Tenant is required to contact Royal Centre Property Management.

Communication systems shall include, but not necessarily be limited to:

- ◆
- ◆ Data (computer) network wiring
- ◆ Telephone wiring
- ◆ Wifi transceivers
- ◆ Audiovisual systems
- ◆ Sound masking systems
- ◆ Cablevision
- ◆ Cell phone boosters

Communication system wiring must be installed in a wire management system consisting of one or more of the following:

- ◆ Communication cable tray installed in suspended ceiling
- ◆ EMT conduit
- ◆ Metal wireway, ie. 4 $\frac{3}{4}$ " x 1 $\frac{3}{4}$ "

Exposed communication wiring on J-hooks or laid in ceiling space is not accepted.



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

Communication and low voltage wiring shall be plenum rated FT6.

For communication conductors between floors, such as telephone, data, or fibre risers, the Tenant shall obtain approval from the Landlord. A 'Cable Facilities Request' shall be submitted to the Landlord for any communication riser cabling installation or removal.

Base building telephone risers consist of up to 200 pair riser per floor.

Base building electrical rooms are not available for installation of tenant communication equipment. The Tenant is responsible to construct a Communication Room or closet within their premises for the installation of tenant communication equipment.

Telephone conductors from the Electrical Room to the Tenant's Communication Room is the responsibility of the Tenant.

All communication cabling contractors must be approved by the Landlord.

Communication risers and communication wiring shall be installed by a Base Building Electrical Contractor.

All communication wiring shall be installed with an Electrical Permit from the City of Vancouver.

Cablevision (CATV) service for cable TV or data transmission is available to tenants from Shaw Cable.

Connection point for cablevision shall be the Tenant's floor Electrical Room. Coordination of installation and monthly charges from Shaw Cable are the Tenant's responsibility.

4.17 SEISMIC REQUIREMENTS

The Tenant must supply and install seismic restraints from the building structure for lighting fixture and other electrical equipment in accordance with the requirements of the City of Vancouver Building Bylaws.

Lighting fixtures that are in or on T-bar or other similar suspended ceilings shall be supported at ends of the fixture independently from the ceiling.

4.18 FIRESTOPPING

The Tenant's Contractor is responsible to ensure that all penetrations through fire rated assemblies are immediately sealed in accordance with approved building standards.

4.19 ELECTRICAL SYSTEM DOCUMENTATION

i. Shop Drawings

Submit three (3) sets of Shop Drawings and/or Manuals of all new electrical equipment to the Landlord upon completion of the projects. Manuals shall include list of suppliers, replacement parts, and maintenance instructions. At least one manual shall contain original manufacturer's literature.

ii. Project Record Documents

On completion of the work, submit one set of CAD updated electrical drawings to Royal Centre Property Management for their records



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

iii. Electrical Testing

The electrical installation shall be completely tested demonstrating the equipment and system installed is capable of performing in the manner intended.

After move-in and occupancy by the Tenant, measure phase current to panelboards with normal load operating. Adjust branch circuit connection as required to obtain best balance of current between phases. Circuit changes to occur at a time convenient to the Tenant.

iv. Panelboard Directories

On completion of the work, submit a copy of the updated panelboard directories.

v. Fire Alarm Verification

Submit a copy of the Fire Alarm Verification and Fire Alarm Test Report for all fire alarm and voice communication devices within the Tenant area.

vi. Seismic Certification

Submit a copy of the Structural Engineer's certification for all electrical work, including light fixture seismic support.

4.20 TENANT SECURITY SYSTEMS

The following requirements pertain to the design and installation of Tenant security systems:

- ◆ Any security installations outside the norm that are visible from the lobby or outside the Tenant space must adhere to the quality aesthetic appearance of the building in general and any unsightly installations of this nature may not be permitted.
- ◆ All wiring practices shall conform to the guidelines as set out in the Design Criteria Manual as it relates to electrical installations.
- ◆ All door and lock installations must adhere to local building and safety codes and must adhere to the Design Criteria Manual.
- ◆ Tie-in to the base building security system may be performed only by authorization of the Operations Manager.
- ◆ System installations, repairs, and changes are to be performed by the building Electrical and Systems Contractors only, unless approved by the Operations Manager.

Typical installations include:

- ◆ Standard door access set, including reader, request to exit, and locking device(s).
- ◆ Standard key access doors equipped with a monitoring input.
- ◆ A card reader installed as a security register.

Any non-typical field installations to the base building security system must be approved by the Operations Manager.

Non-typical installations include, but are not limited to the following:

- ◆ Interlocking man-traps
- ◆ Turnstiles
- ◆ Revolving doors
- ◆ Trace setups for mustering (entry/exit)
- ◆ Duress alarms and other security alarms



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

- ◆ Environmental alarms

Use of electromagnetic lock devices:

- ◆ Electro-magnetic locking devices (EMLs) must be tied into the base building fire alarm system and MUST release in the event of a building fire alarm.
- ◆ Work areas/rooms utilizing EML(s) as locking devices shall have either one of the following in place:
 - The room/area protected will have, within reasonable proximity, an alternate form of egress not utilizing EMLs such as a standard keyed door or a door utilizing an electric strike.
 - A clearly marked, visible emergency door release pullstation located within a reasonable distance from the door mounted on the inside of the protected space, typically mounted above the request to exit button. The emergency pullstation's colour can vary unless stated by Code, but cannot be red in colour.
 - A fire alarm pullstation mounted beside the door within the protected space.

Field wiring practices:

- ◆ Panels are to be mounted within a designated riser room on or near the floor of the installation. All wiring is to be in concealed conduit as specified in the Electrical Design Criteria Manual. All field wiring must meet manufacturer specifications for the specific devices installed. Wiring must be shielded and shields must be isolated and insulated at device end. Panel end shields to be drained to quiet earth ground.
- ◆ Wiring to the base building communication trunk must be consistent with installations throughout the building with respect to gauge, strands, twists, and shielding. See wiring schedules.

CEMF and Arcing Protection:

- ◆ All switched electromagnetic devices on the card access system must be equipped with counter electro motive force suppression. Where no suppression is installed in the device, DC equipment may be fitted with a diode and AC equipment may be fitted with a metal oxide varistor.

4.21 CCTV

Any CCTV installations within the Tenant space must comply with the guidelines as specified in the Electrical Design Criteria Manual. Systems tied in for monitoring by the base building Control Room must be approved the Operations Manager and installation must be performed by the base building Electrical and CCTV Contractors.

4.22 ENVIRONMENTAL / ENERGY INITIATIVES

Tenant improvements shall be installed to maintain or upgrade the environmental standards of the complex. Environmental standards include:

- ◆ Non-hazardous materials
- ◆ Energy efficient lighting
- ◆ Minimize use of supplemental lighting
- ◆ Individual room and office switching
- ◆ Lighting controls in compliance with ASHRAE 90.1-2010



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

5. CONSTRUCTION RULES AND REGULATIONS

5.1 Inquiries

The following Rules and Regulations have been created by Royal Centre (KREC) Inc. and govern construction in the Complex. Please contact the Management Office directly at (604) 689-1711 with any inquiries.

5.2 Pre-Construction Approvals

Tenant construction will not be permitted to start until the Tenant has received the written approval of the Landlord.

5.3 Construction Trades

The Landlord reserves the right to approve the Tenant's Contractors, subcontractors and Consultants. Please be advised that certain work is limited to mandatory trades. Refer to Item 1.10 for a list of Base Building Contractors.

5.4 Construction Documentation

Prior to the start of construction the following documentation must be provided to the Landlord by the Tenant's approved Contractor(s):

- ◆ Certificate of Insurance in the amount of five million dollars (\$5,000,000.00) per occurrence of liability insurance. **Kuehne, Real Estate Canada Ltd., Warrington PCI Management, Royal Centre (KREC) Inc., and The Great-West Life Assurance Company**, added as Additional Insureds. under the contractor's general liability policies;
- ◆ WSIB clearance letter;
- ◆ Building Permit;
- ◆ Construction schedule;
- ◆ List of all contractors requiring access;
- ◆ Executed Prime Contractor Agreement;
- ◆ COR certification or equivalent;
- ◆ Workplace Hazard Assessment

The contractor shall provide, at its expense, Commercial General Liability Insurance of not less than \$5,000,000 per occurrence including non-owned car coverage, contractual liability and containing severability of intents, cross liability clauses. Coverage shall include loss, damage or personal injury (including death) the contractor may cause to any independent work, building, equipment or structure on the Owner's property. The insurance shall contain a deductible clause not to exceed \$5,000.

The contractor shall carry a full employee's liability insurance for the whole of the work in accordance with the Workplace Safety and Insurance Board.



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

5.5 Access Request Form

The Access Request Form (the "Request") is used to control and co-ordinate access to the Complex while maintaining building security and safe working conditions, as well as to transmit information between Tenants, Building Management, Building Operations and Security. Contact the Management Office or Security desk to obtain an Access Request Form. If you require access to another Tenant's premises a separate Request needs to be issued.

The process itself to get into the Complex starts with the 'Access Request Form'. The permit is co-ordinated through the WPM office or the security desk in the office tower lobby. This form is created when either the Tenant or a department within RPM wishes to have some form of work or service completed. For different departments, different types of information are requested to satisfy internal reporting and record keeping requirements.

Once all information is verified and approved, the Tenant and/or WPM department and RC Security receive copies of the permit.

Contractors then arrive at the security desk in the tower lobby, to gain access to the Building. Security will deny access to any contractor employee who does not meet the access requirements, who fail to adhere to building rules, who fails to follow building staff instructions or staff who are considered verbally abusive to the building staff.

5.6 Keys and Identification Tags

Only authorized workmen named on the Request will be allowed to sign out badges as well as keys and/or access cards in exchange for a piece of photo identification in the Security Desk in Tower Lobby. The identification posted as security will be returned when badges, keys and access cards are surrendered to building security at the end of each day. The badges must be worn in plain view while on site. Any workman on site without a badge will be escorted to the Security Desk.

The Contractor assumes full responsibility for all keys, access cards and badges signed out and shall be responsible for all costs associated with the replacement of such keys and the re-keying of any locks necessitated by the loss.

Access cards remain the property of the Landlord. No markings or defacing of any kind will be permitted. Cards will be returned at the end of each workday.

In the case of recurring lost cards/keys, access privileges may be suspended.

It must be noted that there are occasions when Tenants issue keys and cards directly to a contractor. When a contractor requires access to a secured Tenant Premise the contractor may obtain a key or security card directly from the Tenant. For example, a Tenant may have an arrangement with a photocopier technician.

The process for contractors to obtain keys and cards is as follows. When the contractor arrives on site at the designated location for keys and cards, they are required to provide the following information to security staff:

- ◆ Tenant or company name;
- ◆ Location of work;
- ◆ Name of the general contractor and sub-contractor;
- ◆ Type of work being performed; and
- ◆ Whether or not the fire system will be affected

This information is required to facilitate quick entry to the Complex. Please remember that the Security Department is co-ordinating hundreds of permits on a regular basis and the less information that is provided the longer the delay while security personnel look for authorization. Keys and cards are then signed over to workers.

In the case where no work permit is in place, entry will be denied until appropriate permits are completed and approved.



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

5.7 Safety Work Permit

A Safety Work Permit is a 24-hour permit that authorizes certain types of work that may be potentially dangerous to building occupants or disruptive to building services.

The Landlord is committed to providing a safe and healthy work environment and will meet or exceed the requirements of the Health and Safety Act, WHMIS Regulations and all other related legislation. While working in the Complex, all Contractors are required to follow the same philosophy and put the utmost importance on the safety of their crew, building Tenants and Landlord employees.

All construction work involving, but not limited to the following requires a Safety Work Permit:

- ◆ Hot Work
- ◆ X-raying
- ◆ Coring
- ◆ Lock-out or Disabling of Base Building Systems (Note: Sprinklers and Smoke detectors cannot be disabled at the same time)
- ◆ Fire Alarm Systems
- ◆ Sprinkler System Modification
- ◆ Dust Producing Activities
- ◆ Confined Space Entry
- ◆ Any Testing or Verification of any Life Safety System in the Complex.

All contractors and Tenants must be aware that both the Sprinkler and Fire Alarm systems, such as smoke detectors, cannot be simultaneously disabled or bypassed in a single work area at any one time during Tenant construction. The Tenant and their contractor are responsible to schedule their work in such a way that only one of these systems will be affected at any one time, and shutdowns will be scheduled accordingly.

Any contractor failing to adhere to the above will be subject to their work being shut down until such time as the proper safety measures are put in place.

5.8 Fire Alarm System

The building fire alarm system is sensitive to more than just smoke and heat. Painting, grinding dust, drywalling, sanding, coring, smoking, flame, etc. could cause the building to go into alarm. Please be aware that your activities could induce alarms and act accordingly.

5.9 Nuisance Fire Alarm Fees

A fee is now being charged to Building Owners whenever the Fire Department personnel respond to an alarm that has been determined to be a 'nuisance alarm'.

We define a nuisance alarm as the activation of a fire alarm system directly, or by an emergency system monitored through the fire alarm system, or one of the following:

- ◆ Equipment malfunction or failure;
- ◆ Improper, or inadequate, installation or maintenance;
- ◆ Work taking place on system, or system activation as part of a fire drill, where the fire department has not been notified; or
- ◆ Negligent or intentional misuse including building activities such as, but not limited to, construction, maintenance or cooking

A nuisance fire alarm does not include activation of a fire alarm system under circumstances that would cause a careful and prudent person to believe that a fire-related emergency was in progress in the Complex served by that system.



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

If it is determined that the fire alarm was caused by actions of Tenants or their contractors, the fee will become the Tenant's responsibility. The Tenant will be invoiced \$500 per event, plus a 15% administration fee, plus GST.

Contractors who have not taken steps to prevent nuisance alarms will be shut down until such time as the proper precautions are put in place.

5.10 Smoke Heads

The smoke heads in the Complex play an important role in the life safety systems. As such, they must be maintained to perform optimally. Due to the dust created during various phases of construction, the Tenant will be responsible for the cost of replacement of heads directly affected by their construction.

WPM will run Smoke Head Sensitivity reports on a monthly basis. As long as the device sensitivity percentages are below 60%, no immediate action will be required. Devices above 60% must be replaced by the Base Building Electrical Contractor. WPM will be responsible to make these arrangements.

If the Landlord determines that the Tenant's recently completed construction has caused the smoke head sensitivity percentage to increase, the Tenant will be charged back the cost of the smoke head replacement.

If requested, the Landlord will provide a report to the Tenant prior to the start of construction

5.11 Pre-Construction Inspection/Start-up Meeting

Once the requirements specified in this document have been met to the Landlord's satisfaction, the Contractor must contact the Tenant Construction Manager to arrange a pre-construction start-up meeting with all subcontractors, Building Services, the Tenant Construction Manager and the Safety Advisor. At this meeting an inspection of the Tenant's premises and any common areas affected by construction will be conducted and a report issued detailing any deficiencies or damaged materials in that area. Failure to complete the inspection prior to the start of construction will result in the contractor being fully responsible for the cost of remedial action deemed necessary by the Landlord.

5.12 Worksite Security

The Contractor is solely responsible for the security of the leased premises during the construction period; the Landlord shall have no liability for loss or damage howsoever caused.

Contractors are NOT allowed to remove any item for personal or other use, whether it is labelled garbage or not, unless authorized to do so. Please note that authorization must be approved by the Security Manager and either the Tenant or the Landlord, depending upon the Premises where the work is being performed.

5.13 Hoarding

From time to time during the course of construction, the Landlord may deem it necessary to require the Tenant to hoard off portions of their work. Please consult with the Tenant Construction Manager for clarification.

5.14 Damage

The Contractor is responsible to protect all base-building elements from damage during the Tenant's construction. Any damage to the base building elements as a result of the Tenant's construction will be repaired by the Landlord and charged back to the Contractor. The Contractor is responsible to ensure that all workmanship to the public corridor side of the Tenant's premises is of a standard that is equal to or higher than the existing construction.



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

5.15 Freight Elevator

Three freight elevators are available for the use of moving tools, equipment and materials. The dimensions and weight restrictions are as follows:

	Low Rise	High Rise	Retail
Door			
Height	83.75"	83"	95"
Width	42"	42"	80"
Cab			
Height	101" / 137"	101" / 126"	97"
Width	87"	83"	79"
Depth	55"	55"	81"
Weight Allowance	3498.74lbs	3498.74lbs	

The freight elevator cannot be locked off during normal working hours from 7:30am to 6:00pm Monday to Friday. All after hour's bookings must be made through the Management Office and will require a minimum 48 hour's notice. Any damage caused by or cleaning necessitated by the Contractor's use of the freight elevator will be rectified by the Landlord and charged back to the Contractor.

5.16 Parking

The Contractor is responsible for locating adequate parking. Under no circumstances are vehicles to congest courier parking or block access to the loading dock facilities. The loading dock is for loading/unloading of materials only; parking in the loading dock is strictly prohibited at all times. Any Contractor exceeding the 20 minute loading/unloading time will be ticketed and towed at the contractor's expense.

5.17 Working Hours

Regular working hours are from 6:00am to 6:00pm Monday to Friday. If the Landlord determines any construction-related noise is too loud or disruptive during normal working hours the contractor will be instructed to cease the activities immediately.

The Contractor shall perform all noisy, dusty and odorous work, or any other work that, in the Landlord's opinion, would disrupt other Tenant's daily operations before 6:00am or after 6:00pm and only after receipt of written authorization from the Landlord.

5.18 Cleanliness

Construction materials and waste are not to be stored in the public areas of the building or adjacent to any vacant areas unless prior written approval is obtained from the Landlord. The Contractor is responsible for ensuring that the construction site, as well as all adjacent areas affected by the construction site, is kept clean. If the Contractor fails to do this, the Landlord will arrange to have the area cleaned and charge the cost back to the Contractor. The Contractor is responsible to supply their own bin and ensure the regular removal of all garbage from their worksite. Under no circumstances will the Contractor use the Landlord's compactor. With the prior approval of the Landlord, the Contractor may place a garbage container in the loading dock temporarily.

The Contractor shall provide a damp piece of carpet of 10 sq.yd. (minimum) at the entrance to the construction area as a dust absorber.

5.19 Tenant Contractor Garbage Bin Information

The following regulations must be followed at all times:



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

- ◆ Tenant contractors must notify the Royal Centre Operations Manager or Engineering Lead Hand at least 24 hrs. in advance of their needs
- ◆ Monday – Friday - Tenant contractors can place bins in the loading dock from 6:00 p.m. to 6:00 a.m. (removed by 6:00 a.m. – AT THE LATEST).
- ◆ Weekends and Holidays - they can keep the bins coming and going, as often as required.
- ◆ The bins must be dropped straight and between the lines. Any contractor bin that does not comply with this instruction will be required to either reposition their bin or remove it from the loading lock.
- ◆ The Operations Manager or Engineering Lead Hand will determine where the container will be located on the loading dock.
- ◆ The Tenant's contractor is responsible to keep the area around their garbage bin swept clean. If the area is not kept clean the Landlord will perform the cleaning and charge back the contractor for all costs incurred.
- ◆ The garbage bin must be covered with a tarp before it is removed from the site, in order to prevent garbage from spilling onto the dock and street.
- ◆ The largest garbage bin that can reasonably be placed on the loading dock is a 30 cu. yd. bin. The dimensions of the 30 cu. yd. bin are 8' wide, 17' long and 6' - 10" high. The empty weight of the bin is 6,500 lbs. and may accommodate 8 metric tons of waste.
- ◆ The Landlord's preferred contractor is Wasteless Environmental. Please contact the Brookfield Operations Manager or Engineering Lead Hand to arrange containers.
- ◆ Any cleaning or damage caused by the Tenant's contractor will be rectified by the Landlord and charged back to the Tenant.

5.20 Worksite Conduct and Safety

No smoking is permitted in the complex.

The use of illegal substances, consumption of alcoholic beverages and the use of profane language on the work site are strictly prohibited. Moreover, the Contractor must ensure that workers are not under the influence of drugs or alcohol at any time while working. Violation will result in all work being stopped.

Whas determined that wooden ladders will not be allowed in our properties, due to safety concerns. Please ensure that all ladders used on the worksite conform to this procedure and are in good repair.

5.21 Slab Openings & Penetrations

Tenants Contractors are not permitted to drill, cut or chase openings of any description in any part of the base building structure without prior written approval of the Landlord and the Landlord's structural engineers. Once the proposed work is deemed necessary and acceptable, it will be carried out after regular working hours by the Tenant's Contractor at the Tenant's cost under the supervision of the structural engineer. Any floor penetrations shall be adequately fire stopped in accordance with applicable codes. Any work of this type will require an x-ray inspection of the slab prior to drilling, at the Tenant's expense. Any damage to cast-in electric wiring will have to be repaired by the Landlord's Contractor at the Tenant's expense.

5.22 Fastenings

No mechanical fasteners or screw penetrations will be permitted to window mullions, convector cabinets or T-bar ceiling components. Use of Powder Actuated fasteners into the ceiling to support any suspended load will not be permitted.

5.23 Plumbing

Prior to the start of Tenant construction, the Operations Supervisor will dispatch the appropriate person who will determine and advise the Contractor of any valves that need to be shut off and identify the locations for any tie-ins. Running plumbing lines through the electrical rooms of the building is strictly prohibited. The base building mechanical contractor must perform all base building shut-off and tie-in work at the Tenant's expense.



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

Any Tenant Contractors connecting air conditioning units to the Base Building condenser system will be required to complete a pressure test on the Tenant piping for 24 hours at a pressure greater than our system pressure. Please be advised that the Tenant's Contractor is responsible to contact the Operations Supervisor to arrange to have a member of the Landlord's staff look at the pressure at the start of the test and again after the test. Once this is completed to the satisfaction of the Landlord the Tenant's Contractor will be required them to contact Betz Dearborn to arrange to have the piping cleaned and the water tested by a water treatment company to confirm that the pipe is clean of all oil's, contaminates and cleaners. Once this has been done a copy of the report must be forwarded to the Landlord. The Tenant's Contractor must contact the Operations Supervisor prior to filling the Tenant's system as the Operations Supervisor must arrange for a member of the maintenance staff to be present.

5.24 Electrical

All base building electrical work including, but not limited to, high voltage connections, riser room connections and electrical shutdowns must be performed by the base building electrical contractor. Demolition will not be permitted to start until the contractor has received written confirmation from a certified electrician that all power has been disconnected from the area to be demolished.

5.25 Pre-Occupancy Inspection

The Tenant Improvement Checklist will be used by the Landlord to ensure completion of all pertinent items relating to Tenant occupancy. A copy of this checklist is available through the Tenant Construction Manager.

5.26 Pre-Occupancy Cleaning

Prior to occupancy the Tenant's Contractor(s) must remove all construction debris, equipment and tools from the premises. A final cleaning must be performed including, but not limited to the following:

- ◆ All floor coverings
- ◆ Light fixtures and lenses;
- ◆ All glass including the inside of exterior windows;
- ◆ Window frames and mullions;
- ◆ Window coverings;
- ◆ Public areas and service areas affected by the Tenant's work;
- ◆ Ensure that radiators and ceiling space are clean of all construction dust and debris.
- ◆ The Landlord reserves the right to retain the base building cleaning staff, at the Tenant's expense, to complete a thorough cleaning if the quality of the cleaning completed by the Contractor's forces is not higher than or equivalent to the quality of the building cleaning staff.

5.27 Completion & Occupancy

Upon completion of the Tenant's work, prior to occupancy of the premises for the purpose of carrying on business, the Contractor must submit to the Landlord:

- ◆ Certificate of Substantial Completion from designer;
- ◆ Sprinkler verification;
- ◆ Final Electrical Inspection Certificate
- ◆ Fire Alarm verification;
- ◆ Final inspection and sign-off from Building Inspector

No later than 30 days from the Tenant's occupancy of the premises the following must be submitted to the Landlord:

- ◆ Air balancing reports (3 copies)
- ◆ As-built drawings

6. LEGAL DESCRIPTION



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL

"Building Lands" means the lands located in Vancouver, British Columbia legally described as:

- (a) Parcel Identifier: 002-486-199
LOT 1, BLOCK 3, DISTRICT LOT 185, PLAN 14002
- (b) Parcel Identifier: 002-485-150
LOT 2, BLOCK 3, DISTRICT LOT 185, PLAN 14002
- (c) Parcel Identifier: 002-487-594
THE EAST 1/2 OF LOT 13, BLOCK 3, DISTRICT LOT 185, PLAN 92
- (d) THAT PART OF MELVILLE STREET LYING BETWEEN THURLOW AND BURNARD STREETS AND BEING ADJACENT TO LOT 6, DISTRICT LOT 185, PLAN 18929 AND LOT 2, DISTRICT LOT 185, PLAN 14002;
DESIGNATED AS:
PARCEL N (EXPLANATORY PLAN 18945).



ROYAL CENTRE OFFICE TENANT DESIGN AND CONSTRUCTION MANUAL