365 Main Street
Portage & Main Underground Concourse
Facility Condition Assessment

May 29, 2019

City of Winnipeg
Corporate Finance Department
Materials Management Division
185 King Street, Main Floor
Winnipeg, MB R3B 1J1

SMS Project No.: 18-287-01

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EXECUTIVE SUMMARY

SMS Engineering Ltd. was commissioned by the City of Winnipeg to provide a facility condition assessment for the Portage and Main Underground Concourse (PMUC). The facility was opened to the public in 1979 and has remained largely unchanged since. The concourse floor elevation is approximately 21ft below grade and has an overall area of 17,545ft^2 connecting the four buildings on each corner of the intersection above. Within the concourse there are a number of retail spaces which open directly to the concourse. The scope of the project was to prepare a facility condition assessment report outlining the systems, types and configuration, observed condition and recommendation on repairs and upgrades including "opinion of probable cost" estimates.

The following summary of findings outlines the general conditions and recommendations of the various systems.

- The finishes are dated but largely in fair condition.
- Barrier-free access does not meet current barrier free standards and the City of Winnipeg Universal Accessibility Design Requirements.
    - Ramps in concourse do not meet current design requirements however are an existing condition which can remain.
- Way-finding has been an issue within the concourse for many years.
    - The signage should be updated to allow for easier navigation
- Water seepage is an on-going issue and has caused damage to finishes, structure and electrical systems.
    - Delamination of concrete from the structure requires repair as part of an on-going maintenance program.
    - The facility waterproofing membrane is beyond its theoretical service life and requires replacement.
    - The crawlspace is very humid and shows signs of corrosion on the metal framing members. It is recommended that a vapour separation, adequate ventilation and additional drainage be added to the crawlspace.
    - The skylight above the corridor between 200 and 220 Portage leaks during any major rain event and requires remediation and eventual replacement.
- The majority of the facility is sprinklered and has a standpipe system with hose valves located around the concourse.
    - The facility is not fully sprinklered as defined in the building code as some spaces are not sprinklered i.e. escalator machine rooms.
    - Deficiencies exist with respect to NFPA 13 standard.
- The mechanical systems are largely original.
    - Most systems are beyond their theoretical service life and replacement is recommended.
    - There are some minor code deficiencies related to current code requirements.
    - The current system is not energy efficient. Many options exist for a large overhaul of the mechanical system but have not been developed in this report.
- The electrical systems are largely original.

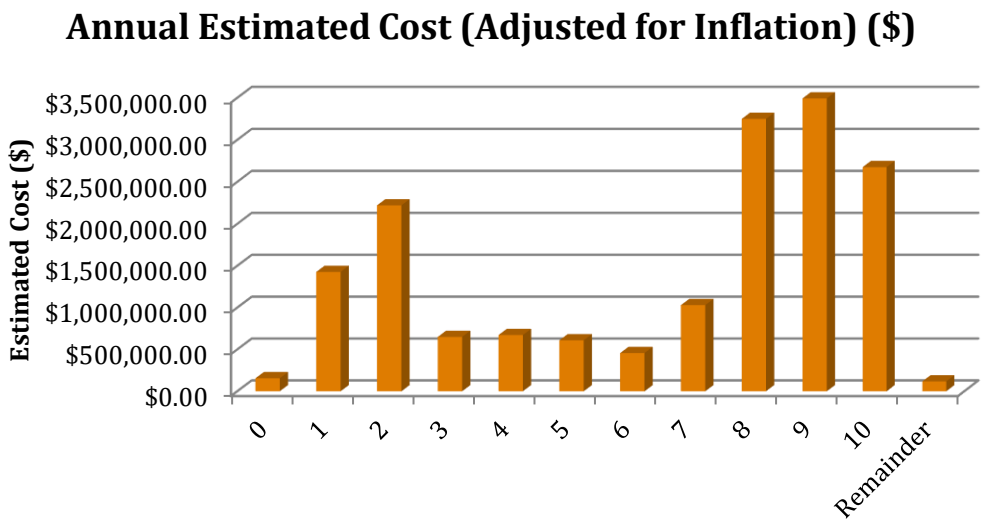
- Most systems are beyond their theoretical service life and replacement is recommended.
- The fire alarm and annunciation systems are obsolete and do not meet current code and life safety standards. Replacement of the entire fire alarm system is recommended.

The City of Winnipeg utilizes VFA Facility Condition Assessment software to prepare their Facility Condition Index (FCI) also known as the "10 year plan". VFA utilizes square foot costing data and applies corrective factors for the type of facility and included systems. Where applicable the unit pricing is applied. The existing VFA results provided a total budget for the facility of $11,995,171 including a 4.70% annual inflation rate.

Our opinion of probable costing indicated a higher estimated budget than VFA. The chart and graph below identifies the opinion of probable costs for the recommendations listed in this report based on the year the work is expected to be required. The estimate below does not include excavation of the paving surface and material above the concourse required to obtain access to the roof membrane as this scope of work was excluded within the request for proposal. A detailed study of this work would be required to provide an opinion of probable costs associated with the membrane access.

Cost Breakdown By Year (Adjusted for Inflation)		
Year	Cost Without Inflation	Cost With Inflation
0	$156,400.00	$156,400.00
1	$1,362,000.00	$1,426,014.00
2	$2,025,000.00	$2,219,823.23
3	$566,000.00	$649,615.65
4	$560,000.00	$672,937.54
5	$484,000.00	$608,945.98
6	$347,000.00	$457,098.26
7	$747,000.00	$1,030,261.27
8	$2,250,000.00	$3,249,046.83
9	$2,310,000.00	$3,492,465.42
10	$1,690,000.00	$2,675,183.16
Remainder	$118,200.00	$118,200.00
Total	$12,615,600.00	$16,755,991.33

NOTE: Assumption for inflation is based on VFA report at 4.70%



Our opinion of probable cost for the work is greater than the VFA report however does include a number of additional elements which require detailed studies to confirm the scope of work for the specific replacement. The opinion of probable cost without inflation is $12,615,600.00 and if the same inflation rate as used in the VFA report is applied, the estimate including inflation is $16,755,991.33. All surface work to access the roof membrane is excluded from this value however a rough estimate based on similar work in the downtown Winnipeg area and ranges from $15-20 million. If the surface work estimate is included, the total opinion of probable cost is $32,615,600.00 and utilizing the same inflation rate, the cost including inflation is $46,840,063.96. The opinion costing associated with access to the roof membrane is an opinion of probable cost and a formal pricing package would be required to confirm.

An underground facility below a prominent and busy intersection is the largest risk factor associated with any future projects. The existing municipal infrastructure, both surrounding and passing through the concourse, coupled with the 24/7 use of the facility and access requirements, are all items that require heavy consideration before any future projects proceed. Additionally, agreements with adjacent property owners must be reviewed to accomplish some of the life safety recommendations. Overall, the facility is in fair condition given the age, however, future projects will need to be aware of the applicable risk items.

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1 INTRODUCTION AND SCOPE OF REPORT

1.1 INTRODUCTION

The City of Winnipeg (COW) commissioned SMS Engineering Ltd. (SMS) along with their sub-consultants Number Ten Architectural Group (N10), Crosier Kilgour and Partners (CKP) and R.J. Bartlett Engineering (RJB) to prepare a facility condition report for the 365 Main Street, known as the Portage and Main Underground Concourse (PMUC) on August 9, 2018.

The concourse was an engineering accomplishment when originally constructed as the area required extensive modifications to major municipal and utility services below street level. This is evident by a 50” storm water main which runs through the middle of the concourse that could not be relocated. The facility has been in operation for 40 years and sees thousands of people pass through it each day.

1.2 GENERAL BUILDING DESCRIPTION

The Portage and Main Underground Concourse started construction in 1977 and formally opened to the public early in 1979. The PMUC is a subsurface link between the four corners of the historic intersection of Portage and Main. The facility floor sits approximately 21 feet below street level. The concourse is approximately 17,545 $ft^{2,}$ of which 5,700 ft^2 is retail space and the remainder is largely circulation space between the four towers on the corners of Portage and Main. The retail space currently consists of one restaurant, one coffee bar, two retail stores, one hair dresser and miscellaneous kiosks. There is a corridor between 220 Portage, 200 Portage and 360 Main which is also included in the scope of work.

The four buildings connected by the PMUC are 201 Portage Avenue, 360 Main Street, 1 Lombard (better known as the Richardson Building) and 335 Main Street (better known as the Bank of Montreal Building). The southwest corner also provides access to 220 Portage and 200 Portage which are free standing facilities. There are three at grade entrances into the concourse.

The facility is a single level structure with a crawlspace extending the entire area of the circular portion. Localized depressions, or elevation changes, occur to accommodate existing municipal and utility mains which run through the facility or just below.

The facility has remained largely unchanged from the original construction with the exception of some of the retail spaces changing tenants. Below is an overall plan of the concourse and interconnections to the neighbouring facilities.

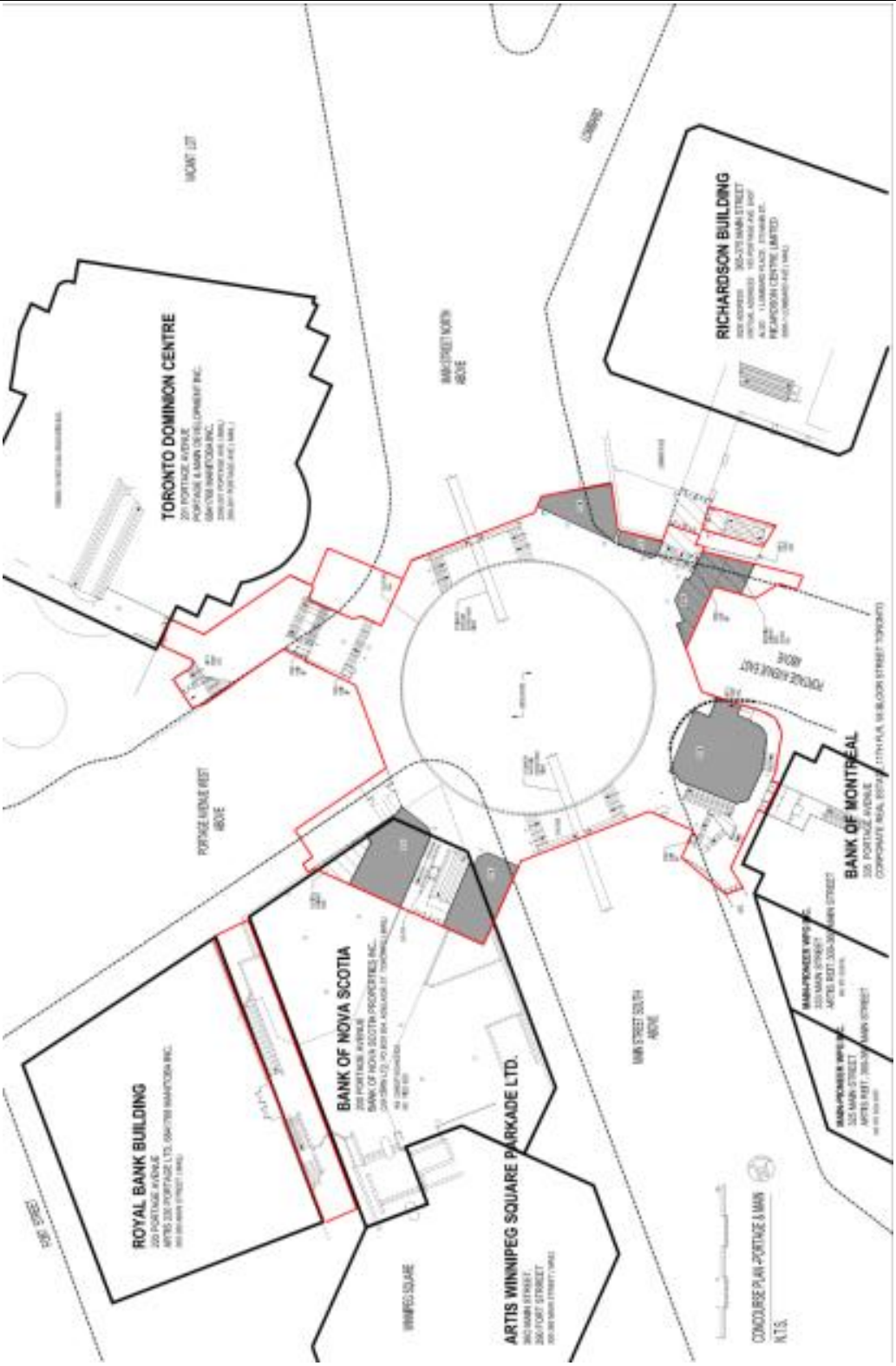


Figure 1: Overall Plan Portage and Main Concourse

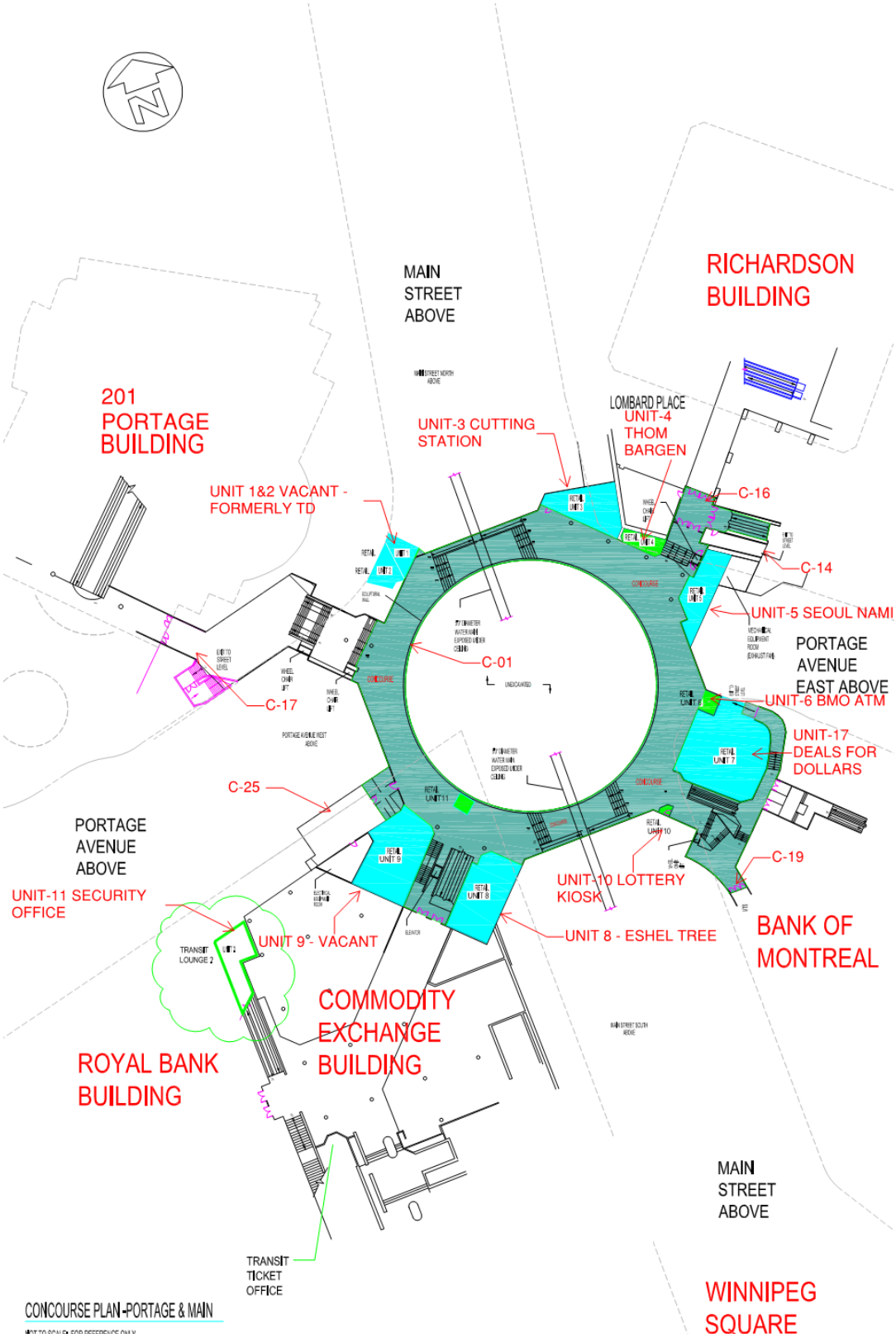


Figure 2: Unit Locations with Concourse.

The PMUC is of noncombustible construction with reinforced concrete structure throughout. The concourse roof structure consists of an 18” thick conventionally reinforced concrete slab. The slab is supported on 16” thick reinforced concrete walls which form the interior circle and exterior extents of the concourse or cast-in-place concrete beams.

The concourse floor structure consists of a 5” thick concrete slab supported on either 1 ½” or 3” composite metal deck. Typical reinforcing for the slab consists of #5 bars at 16” on-centre bottom and #5 bars at 12” on-centre top over supports. The slabs typically span between the exterior foundation walls and cast-in-place concrete beams that vary in size.

Foundations consist of cast-in-place concrete caissons and straight shaft friction piles.

Architectural drawings indicate that the roof structure incorporates a waterproofing membrane, however, specific details are not provided.

Figure 3: Portion of Circular Concourse

The PMUC is sprinklered and served by standpipe connection for hose cabinets located around the facility. The facility sprinkler system is largely original with sections of the fire water service being replaced. The sprinkler heads are original to the facility with a few areas being modified by current renovations.

Domestic water is provided by one domestic water connection to the municipal main below Portage Avenue. All sanitary drainage for the concourse goes to two sanitary pits and is discharged to the gravity sanitary mains. The crawlspace below the concourse is equipped with sump pumps for weeping tile systems.

The HVAC system is comprised of a dedicated outdoor air unit with electric heating coils, glycol reclaim system, and terminal electric reheats. This system has been

modified over the years as the original outdoor air supply unit used the central steam system, which is no longer in operation. Supply air is passed through two duct branches; one which pressurizes the plenum for the circular core and the second which is distributed to the various tenants.

Air is exhausted from the space through one exhaust fan which draws from each tenant space and the circulation core. The exhaust fan has a heat reclaim coil and exhausts air at grade through the northeast at grade entrance.

Cooling is provided by means of one chiller. The chiller appeared to be modified at one point to discharge heat to the supply air system for heat reclaim but this has subsequently been abandoned and capped. The chiller is domestic water cooled and appears to have had some components replaced but is largely original. The Direct Expansion (Dx) cooling coil for the air handler is fed from the chiller and utilizes refrigerant R-22.

The control system is a combination of pneumatic and digital controls. The pneumatic controls are original to the facility and the digital controls appear to have been installed in phases due to the different types of controllers used.

The majority of the electrical systems are original to the facility and are past their theoretical service life. The facility uses a combination of lighting including T12, T5HO and LED in some newly renovated areas. The emergency lighting is original and is fed by a generator and automatic transfer switch located in 360 Main Street. The facility is equipped with a single stage fire alarm system, served by an EST – Quickstart control panel. The fire alarm is not connected to the adjacent buildings and is considered to be an obsolete model.

Egress from the PMUC is via exits in the connected building complexes and three exit stairs (one of which are escalators) leading directly to grade. Emergency lighting (battery units) and exit signage are provided. An egress analysis was conducted by R.J. Bartlett Engineering Ltd earlier in 2018 related to the proposed removal of the Richardson Bunker. Refer to the letter dated January 11, 2018 attached in Appendix A of this report.

Fire department access is provided from Portage Avenue via the three exits. Fire hydrants are located on Main Street and Portage Avenue. A fire department connection serving the sprinkler and standpipe systems is located on Main Street at the southwest corner of the Portage and Main intersection.

1.3 SCOPE

The scope for this project consists of the following:

- Carry out a visual observation of the facility to assess the Architectural, Structural, Mechanical, Electrical, Life Safety and Building Code requirements. The membrane for the facility was reviewed at grade entrance areas during stair replacement. The area is is considered to be indicative of the entire membrane condition. The skylight had destructive testing performed and the results are included in the report.
- Review record information and prepare a written facility condition assessment report and include photographs to describe the conditions.
- Provide an inventory for all mechanical and electrical systems and their associated condition and estimated remaining service life.
- Identify areas that require destructive testing to perform a proper assessment.
- Estimate the deferred maintenance costs and update the Facility Condition Index.
- A description of potential energy reduction measures.
- Opinion of probable cost estimate for the maintenance and capital work outlined in the ten (10) year plan.
- Outline risks associated with the project and proposed capital expenditures.
- A hazardous assessment has already been complete for the facility by the City of Winnipeg Municipal Accommodations Division and has been reviewed and will form part of this report.

1.4 EXCLUSIONS

The following exclusions are applicable to this report:

- This report is based on a review of the available construction drawings and a visual observation of the sites to determine general quality of the systems and building structure components.
- No functional or operational checks were made on any systems or components other than the skylight base sealing.
- The performance levels of the systems were not verified and the references to system capacities are based on information from the original design documents.
- Further hazardous material assessment beyond that performed by the City of Winnipeg currently. It is assumed that the documents provided are current and accurate.
- The drawings reviewed are not considered as-built and site verification of the as-built condition is not included in this report.
- The membrane due to limited access was not reviewed over core area. The portions reviewed are believed to be in similar condition to the entire membrane.

- All Environmental Assessments have been excluded.
- Any work associated with above grade infrastructure and the Portage and Main intersection has been excluded. The extent of the project will end at the doors to the neighbouring facilities or the exterior doors to grade with the membrane on the roof as the upper limit.
- All feasibility studies associated with the redevelopment of the concourse are excluded. The scope of the report is for a condition assessment only. Feasibility will need to be assessed under a separate project.
- Assessment of the elevators, escalators and wheelchair lifts for operational purposes has been excluded. Assessments were completed as part of former report.
- Barrier free assessment of the facility has been included but all costing is excluded as the work associated with correcting the barrier free items requires a holistic concept to be developed for the entire concourse which is not within the scope of this report.

2 ASSESSMENT SUMMARY AND RECOMMENDATIONS

2.1 GENERAL

The structure of this facility condition assessment has been done in accordance with ASTM standard E1557-09, Standard Classification for Building Elements and Related Site Work. VFA utilizes the same formatting for assigning costs. Where sections are missing or not continuous they have been omitted intentionally.

All recommendations for building systems or components indentified in the following sections have been assigned a priority based on the following criteria. This criteria is intended to describe the urgency of each recommendation within the report.

Priority 1 - Short-Term (Year 0 to 1)

Definition: critical recommendations including code and regulatory issues to be addressed immediately (within year 1).

Priority 2 - Mid-Term (Year 1 to 5)

Definition: recommendations to be addressed between year 1 and 5.

Priority 3 - Long-Term (Year 5 to 10)

Definition: recommendations to be addressed between year 5 and 10.

Priority 4 - Recommendation (Not Time Critical)

Definition: non-critical recommendations for upgrades/improvements (i.e. energy efficient upgrades).

2.2 STRUCTURAL

A visual review of representative portions of the building structure which were exposed and readily accessible including common public areas such as entrance foyer, corridors, stairwells, and representative non-public areas such as accessible crawlspaces, and mechanical rooms.

- Recommendation: A202002.1 - Periodic leakage repairs for the foundation walls will be required as an interim measure to address nuisance leakage until a full replacement is completed. Repairs would likely consist of a combination of urethane and epoxy-injection similar to what has been completed previously.
  - Priority: 2 - Mid-Term (Year 1 to 5).
  - Opinion of probable cost: $50,000.
- Recommendation: A202002.2 - The foundation wall waterproofing is beyond its theoretical service life. Replacement of waterproofing is required. Since replacement of the foundation wall waterproofing will require excavation of the roadway, considerable planning will be required to phase the work in a manner that minimizes disruption to the intersection at Portage and Main.

Also, due to access difficulties, replacement of the roof waterproofing should be completed at the same time as the roof waterproofing. Refer to B301099.

- Priority: 3 - Long-Term (Year 5 to 10)
- Opinion of probable cost: $5,500,000
  - Note: The above cost includes excavation of the walls below the level of the roof slab but does not include access through existing roadway or reinstatement of finishes. Refer to Recommendation B301099.2.

- Recommendation: B101003.1 - Localized concrete repairs are required to address delamination due to corrosion of the reinforcing steel in the mechanical room.
  - Priority: 2 - Mid-Term (Year 1 to 5).
  - Opinion of probable cost: $10,000.
- Recommendation: B101003.2 - To address concerns of moisture infiltration and extend the life of the concrete repairs identified in B101003.1, installation of a waterproof coating on the mechanical room floor is recommended.
  - Priority: 2 - Mid-Term (Year 1 to 5).
  - Opinion of probable cost: $15,000.
- Recommendation: B101099.1 – There does not appear to be any immediate structural problem. Notwithstanding, corrosion of the structural steel framing and metal deck within the crawlspace is a potential structural concern. Further investigation is required to determine the extent, degree, and structural implication of corrosion and deterioration of the structural framing.
  - Priority: 1 - Short Term (Year 0 to 1).
  - Opinion of probable cost: $15,000.
- Recommendation: B101099.2 – The crawlspace is in poor condition. Water infiltration is causing deterioration of the floor structure and mechanical/electrical services. Remediation of the crawlspace is required including grading of the existing soil to direct water away from structural members, installation of a new drainage system and sump pits (if required, see mechanical), and installation of a vapour retarder and sand cover. Refer to mechanical and electrical sections for repairs and improvements to the mechanical and electrical services. Note: It is recommended that the investigative work in B101099.1 be completed prior to implementing these recommendations.
  - Priority: 2 - Mid-Term (Year 1 to 5).
  - Opinion of probable cost: $550,000.
- Recommendation: B102003.1 – Water seepage through the roof slab at Room C-14 is causing corrosion and delamination of the reinforcing steel. Areas of loose concrete are present that represent a safety concern. Removal of the loose concrete is required.
  - Priority: 1 - Short Term (Year 0 to 1).
  - Opinion of probable cost: $1,000.
- Recommendation: B102003.2 - Localized concrete repairs are required in Room C-14 to address delamination due to corrosion of the reinforcing steel.

    - Priority: 2 - Mid-Term (Year 1 to 5).
    - Opinion of probable cost: $10,000.
- Recommendation: B301006.1 - Primary Leakage Remediation for Skylight in corridor connecting 200 and 220 Portage: Repair waterproofing at skylight curb/deck interface.
    - Priority: 1 – Short Term (0 to 1 Year)
    - Opinion of probable cost: $25,000
- Recommendation: B301006.2 - Secondary Leakage Remediation for Skylight in corridor connecting 200 and 220 Portage: New pressure plates and gaskets, including face-sealing all penetrations.
    - Priority: 1 – Short Term (0 to 1 Year)
    - Opinion of probable cost: $35,000
- Recommendation: B301006.3 - Complete Remediation of Skylight in corridor connecting 200 and 220 Portage: Replacement of skylight system but constructed onto existing structural framing. New skylight to meet current Code requirements for air, water, and thermal resistance.
    - Priority: 2 - Mid Term (Year 1 to 5)
    - Opinion of probable cost: $150,000
- Recommendation: B301099.1 - Periodic leakage repairs will be required as an interim measure to address nuisance leakage until a full replacement is completed. Repairs would likely consist of a combination of urethane and epoxy-injection similar to what has been completed previously.
    - Priority: 2 - Mid-Term (Year 1 to 5).
    - Opinion of probable cost: $50,000.
- Recommendation: B301099.2 - The roof waterproofing is beyond its theoretical service life. Replacement of waterproofing is required. Since replacement of the roof waterproofing will require excavation of the roadway, considerable planning will be required to phase the work in a manner that minimizes disruption to the intersection at Portage and Main. Also, due to access difficulties, replacement of the foundation wall waterproofing should be completed at the same time as the roof waterproofing. Refer to A202002.
    - Priority: 3 - Long-Term (Year 5 to 10).
    - Opinion of probable cost: $350,000.
      Note: The opinion of probable cost includes replacement of the waterproofing membrane only. The cost does not include staging, access, excavation and replacement of the roadway, barriers, surface finishes, etc. Formal costing for this work has not been obtained and is beyond the scope of this report. For the purposes of discussion however construction costs are anticipated to be in the range of $15,000,000 to $20,000,000. A more detailed analysis of the scope of work and formal costing by a civil engineering consultant is recommended.

2.3 ARCHITECTURAL

A visual observation of the concourse was completed by Number Ten Architectural Group. The site observation consisted of visual review of the concourse and retail tenants. The focus of our site observation was for life safety, finish quality, way-finding and barrier-free requirements.

The primary architectural items and issues identified during the general observations and exploratory review are listed as follows:

- Water damage of building components and finishes due to water leakage from above.
- General wear and tear of interior finishes that are 40 years old.
- Some finishes are dated in appearance and a more current aesthetic refresh could be considered.
- Barrier-free access throughout the spaces is cumbersome and not in line with current code requirements.
- Pedestrian access from street level down into the concourse is difficult, not intuitive and includes several hidden corners.
- Wayfinding requires improvement.

As noted in the Introduction Section 1.2 of the report, the facility has remained largely unchanged from the original construction with the exception of some of the rental spaces changing tenants. Overall, the majority of interior finishes have proven to be durable and are currently in satisfactory/good condition. However, improvements should be considered in regards to barrier-free accessibility, way-finding, pedestrian access from ground level and quality of the indoor environment.

- Recommendation: 5.1.1 - Perform detailed wayfinding study and evaluate approach.
    - Priority: 1 – Short-Term (Year 0 to 1)
    - Opinion of probable cost: $10,000
- Recommendation 5.2.2 - Provide a new wayfinding signage package based on study findings. The opinion cost provided is for a standard package in a facility of this sizes and used as a place holder.
    - Priority: 1 – Mid-Term (Year 1 to 5)
    - Opinion of probable cost: $100,000
- Recommendation: 5.2 - B2030.1- Door hardware updates to all 8 exterior doors at the bunker locations.
    - Priority: 4- Recommendation (Not Time Critical)
    - Opinion of probable cost: $4,000
- Recommendation: 5.2 - C1010.1 - Repair water damage on interior circular concourse wall.
    - Priority: 1 - Short Term (Year 0 to 1)
    - Opinion of probable cost: $5,000

- Recommendation: 5.3 - C1010.1 - Removal of mould from the base of the walls in the lower level back room stair. Unit 1 and 2
    - Priority: 1 – Short Term (Year 0 to 1)
    - Opinion of probable cost: $5,000
- Recommendation: 5.13 - C1010.1 - Patch/repair wall between Mechanical room C-25 and Janitor room
    - Priority:1 - Short Term (Year 0 to 1)
    - Opinion of probable cost: $2,000
- Recommendation: 5.2 - C101099.1 - Construct 45 min fire-rated vestibules at each connection between the concourse and the building complexes. Two locations at C-18 and C-19 (Commodity Exchange Building and MTS Building). Interior finishes and egress path modifications are excluded from the are exclude from the opinion cost below
    - Priority: 3 - Long-Term (Year 5 to 10)
    - Opinion of probable cost: $10,000
- Recommendation: 5.13 - C1020.1 - Paint, install room name signage, and minor repair to doors as necessary for mechanical room C-25 and adjacent support areas.
    - Priority: 4 - Recommendation (Not Time Critical)
    - Opinion of probable cost: $1,000
- Recommendation: 5.13 - C102003.1 - Equip the door with a listed self-closer and cover the ventilation grille with a layer of drywall.
    - Priority: 1 – Short Term (Year 0 to 1)
    - Opinion of probable cost: $600
- Recommendation: 5.3 - C2010.1 - Replace the existing door and frame assembly with a listed fire door and frame assembly having a 45 min fire-protection rating equipped with listed self-closing and latching hardware.
    - Priority: 1 – Short Term (Year 0 to 1)
    - Opinion of probable cost: $1,500
- Recommendation: 5.2 - C102003.1 - New listed fire door and frame assemblies having 45 min fire-protection ratings equipped with listed self-closing and latching hardware are to be provided for the new vestibules.
    - Priority: 3 - Long Term (Year 5 to 10)
    - Opinion of probable cost: $30,000
- Recommendation Option #1: 5.3 - C2010.1 - Renovate the stair with proper handrails, increase stair width, isolate the plumbing access port out of the stairway, repair ceilings, and finishes. Unit 1 and 2. This is the recommended option to keep functionality.
    - Priority: 1 – Short Term (Year 0 to 1)
    - Opinion of probable cost: $25,000
- Recommendation Option #2: 5.3 - C2010.2 - Close up the stair with walls and convert to a building service space. Revise door hardware at tenant access. Unit 1 and 2
    - Priority: 1 – Short Term (Year 0 to 1)
    - Opinion of probable cost: $15,000

- Recommendation: 5.2 - C3010.1 - Repairs to walls, ceilings and floors where rated vestibules are to be added in circular concourse.
    - Priority: 3 – Long Term (Year 5 to 10)
    - Opinion of probable cost: $5,000
- Recommendation: 5.14 - C3010.1 - Repaint all drywall and concrete walls in mechanical room C-14
    - Priority: 3 - Long Term (Year 5 to 10)
    - Opinion of probable cost:$1,000
- Recommendation: 5.10 - C3020.1 - Remove carpet and clean off tile underneath. Unit 9.
    - Priority:4 - Recommendation (Not Time Critical)
    - Opinion of probable cost: $3,000
- Recommendation: 5.2 - C3030.1 - Repairs to ceilings with water damage in circular concourse
    - Priority: 1 - Short Term (Year 0 to1)
    - Opinion of probable cost: $5,000
- Recommendation: 5.3 - C3030.1 - Replace ceiling tiles where necessary in Unit 1 and 2.
    - Priority: 4 - Recommendation (Not Time Critical)
    - Opinion of probable cost: $1,000
- Recommendation: 5.8 - C3030.1 - In merchandise areas for Unit 7, replace ceiling tiles and patch/repair drywall ceiling where water damage has occurred. In back-of-house areas, replace old ceiling tiles with new. Any plumbing issues related to this have not been accounted for in the estimate below.
    - Priority: 2 - Mid Term (Year 1 to 5)
    - Opinion of probable cost: $50,000
- Recommendation: 5.9 - C3030.1 - Replace ceiling with new. Correct surrounding bulkhead ceiling at slider pocket for Unit 8
    - Priority: 4 – Recommendation (Not time Critical)
    - Opinion of probable cost: $3,000
- Recommendation: 5.10 - C3030.1 - Replace ceiling with new for Unit 9
    - Priority: 4 – Recommendation (Not Time Critical)
    - Opinion of probable cost: $5,000
- Recommendation: 5.13 - C3030.1 - Replace ceiling tile with new for service spaces by mechanical room C-25
    - Priority: 4 – Recommendation (Not Time Critical)
    - Opinion of probable cost: $1,000
- Recommendation: 5.14 - C3030.1 - Repaint ceiling in fan room C-14
    - Priority: 3 - Long Term (Year 5 to 10)
    - Opinion of probable cost: $1,000

- Recommendation: 5.15 - C3030.1 - Cleaning of water staining on concrete ceiling and beams for corridor connecting 200 and 220 portage.
    - Priority: 4 - Recommendation (Not Time Critical)
    - Opinion of probable cost: $10,000

2.4 MECHANICAL

A visual observation took place on August 24th, 2018 and subsequently on September 6th and 18th. These visual observations were made of the public spaces, support spaces, tenant spaces, the ceiling and the skylight roof area. Our recommendations are based on a number of factors and published standards related to equipment life and condition. The American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE) publish expected service life data for various HVAC and Hydronic equipment. All service life expectations have been based on this standard.

- Recommendation: D201001.1– Replace water closets with high efficiency equivalents.
    - Priority: 4 - Recommendation (Not Time Critical).
    - Opinion of probable cost: $5,000.
- Recommendation: D201002.1– Replace urinal with high efficiency equivalent.
    - Priority: 4 - Recommendation (Not Time Critical).
    - Opinion of probable cost: $2,000.
- Recommendation: D201003.1– Replace lavatories with high efficiency equivalent.
    - Priority: 4 - Recommendation (Not Time Critical).
    - Opinion of probable cost: $3,000
- Recommendation: D201004.1– Replace mop sink and service faucet
    - Priority: 4 - Recommendation (Not Time Critical).
    - Opinion of probable cost: $2,000
- Recommendation: D202001.1– Repair domestic water insulation in various locations. Repair to be done as part of maintenance or when major renovations occur.
    - Priority: 2 – Mid-Term (Year 1-5)
    - Opinion of probable cost: $8,000
- Recommendation: D202002.1– Replace domestic water valves as part of an on-going maintenance program.
    - Priority: 3 – Long Term (Year 5 to 10)
    - Opinion of probable cost: $15,000
- Recommendation: D202003.1– Replace hot water heater with similar capacity model.
    - Priority: 2 – Mid-Term (Year 1 to 5)
    - Opinion of probable cost: $3,000
- Recommendation: D203001.1– Replace existing sanitary cast iron pipe with new plastic pipe. Replacement can be done in sections as part of a replacement plan.

  - Priority: 3 – Long Term (Year 5 to 10)
  - Opinion of probable cost: $70,000
- Recommendation: D203001.2– Replace combustible pipe installed in ceiling plenum with new fire resistant piping.
  - Priority: 1 – Short Term (Year 0 to 1)
  - Opinion of probable cost: $10,000
- Recommendation: D203001.3 - Replace ABS piping in mechanical rooms with acceptable material listed in current code.
  - Priority: 1 – Short Term(Year 0 to 1)
  - Opinion of probable cost: $1,000
- Recommendation: D203004.1 - Provide additional sump pits for new weeping tile and grade crawlspace as recommended under the structural section.
  - Priority: 2 - Mid-Term (Year 1-5)
  - Opinion of probable cost: $60,000
- Recommendation: D203004.2 - Provide grease interceptor for sushi restaurant
  - Priority: 2 - Short-Term (Year 0-1)
  - Opinion of probable cost: Tenant provided.
- Recommendation: D303002.1 - Replace chiller with new energy efficient model and provide new air cooled condenser located on the roof of the link between 220 Portage and 200 Portage.
  - Priority: 2 - Mid-Term (Year 1-5)
  - Opinion of probable cost: $450,000
- Recommendation: D304001.1 - Replace air handler with one that is of similar capacity, operation and includes a re-claim heat coil, electric heating coils and Dx coil.
  - Priority: 2 - Mid-Term (Year 1-5)
  - Opinion of probable cost: $450,000
- Recommendation: D304001.2 - Replace missing slates in metal ceiling to improve pressurized plenum distribution.
  - Priority: 2 - Mid-Term (Year 1-5)
  - Opinion of probable cost: $20,000
- Recommendation: D304001.3 - Replace distribution ductwork and electric coils serving tenant spaces
  - Priority: 2 - Mid-Term (Year 1-5)
  - Opinion of probable cost: $240,000
- Recommendation: D304001.4 - Provide vestibule pressurization to the existing vestibules and the proposed new vestibules which would be required to meet current building code.
  - Priority: 3 – Long-Term (Year 5 to 10)
  - Opinion of probable cost: $590,000
- Recommendation: D304001.5 - Add crawlspace ventilation systems to the concourse
  - Priority: 2 – Mid Term (Year 1 to 5)
  - Opinion of probable cost: $175,000

- Recommendation: D304001.6 - Replace all existing fire dampers with new ones conforming to ULc standards.
    - Priority: 1 - Short-Term (Year 0 to 1)
    - Opinion of probable cost: $65,000
- Recommendation: D304001.7 - Provide new fire dampers on ductwork currently not protected entering and leaving mechanical room C-25 and Janitor room C-26
    - Priority: 1 - Short-Term (Year 0 to 1)
    - Opinion of probable cost: $20,000
- Recommendation: D304005.1 - Replace glycol heat reclaim system including all piping, pumps and provide proper fill controls.
    - Priority: 2 – Mid Term (Year 1 to 5)
    - Opinion of probable cost: $190,000
- Recommendation: D304007.1 - Replace general exhaust system and glycol reclaim coil
    - Priority: 2-Mid-Term (Year 1 to 5)
    - Opinion of probable cost: $140,000
- Recommendation: D3050.1 - Replace all vestibule heaters and controls. Remove unit heaters and provide supplemental heat in a cabinet style heater to improve ceiling clearance.
    - Priority: 3 - Long-Term (Year 5 to 10)
    - Opinion of probable cost: $100,000
- Recommendation: D3060.1 - Replace pneumatic and obsolete digital controls as part of ongoing system maintenance and major upgrades.
    - Priority: 2 - Mid-Term (Year 1 to 5)
    - Opinion of probable cost: $250,000
- Recommendation: D40.1 - Replace fire service shut-off valve in street and replace full service into the building
    - Priority: 2- Mid-Term (Year 1 to 5)
    - Opinion of probable cost: $450,000
- Recommendation: D401001.1 - Replace the standard response sprinklers in corridor to 201 Portage with quick response sprinklers.
    - Priority: 1 – Short Term (Year 0 to 1)
    - Opinion of probable cost: $5,000
- Recommendation: D401001.2 - Replace all standard response sprinkler heads with quick response sprinkler heads and split escutcheons for the entire facility.
    - Priority: 3 – Long Term (Year 5 to 10)
    - Opinion of probable cost: $35,000
- Recommendation: D401001.3 - Provide sprinkler coverage in the escalator machine rooms and IT room to make the facility fully sprinklered.
    - Priority: 1 – Short Term(Year 0 to 1)
    - Opinion of probable cost: $50,000
- Recommendation: D401001.4 - Replace wet sprinkler heads at vestibule entrances with dry type head.

    - Priority: 1 – Short Term(Year 0 to 1)
    - Opinion of probable cost: $25,000
- Recommendation: D401002.1 - Replace sprinkler system piping throughout facility
    - Priority: 3 – Long Term (Year 5 to 10)
    - Opinion of probable cost: $160,000
- Recommendation: D402001.1 - Replace standpipe hose valves, hoses and cabinets along with the piping from the main header.
    - Priority: 3 – Long Term (Year 5 to 10)
    - Opinion of probable cost: $100,000

The above recommendations are based on a similar replacement system incorporating some energy efficiency measures to bring some of the dated equipment up to current design standards. The mechanical system could be given a complete overhaul and system concept re-design to provide further energy efficiency. The matrix below provides a rough list of the potential replacements, reduction in capacity and modifications to the system from a heavy energy user to a very energy efficient system. The proposed options assume that all modifications below, are made to achieve an energy efficient system. Costing presented in this report is not reflective of the energy efficiency measures.

	Direct Replacement	**Energy Efficient Replacement**
Ventilation Air	Replace the existing air handler with a built-up 19,000cfm outdoor air unit.	Provide reduced ventilation air flow to meet the space minimum code requirements. Supply air through a high efficiency heat recovery ventilator.
Chiller	Replace with energy efficient model complete with an air cooled condenser to reduce the domestic water consumption of the facility	Reduce the capacity of the chiller to match the reduced ventilation load.
Heating	Provide electric heating for the supply air with electric re-heat coils as replacements to those currently installed	Provide central hot water heating loop through a variable refrigerant flow (VRF) unit.
Air Distribution	Provide system to replace the current ducted air system	Provide distributed VRF fancoils to provide circulation air. Units connected back to central water loop for heat rejection and absorption.

2.5 ELECTRICAL

A visual observation took place on August 24th, 2018 and subsequently on September 6th and 18th. These visual observations were made of the public spaces, support spaces, tenant spaces, the ceiling and the skylight roof area. Our recommendations are based on a number indicating factors and published standards related to equipment life and condition.

- Recommendation: D501003.1- Replace circuit breakers in main switchboard
  - Priority: 2- Mid Term (Year 1 to 5)
  - Opinion of probable cost: $50,000
- Recommendation: D501003.2- Replace circuit breakers in “Heating” Switchboard .

  - Priority: 2 – Mid Term (Year 1 to 5)
  - Opinion of probable cost: $75,000
- Recommendation: D501003.3 - Bus Duct Condition Report
  - Priority: 3 – Long Term (Year 5 to 10)
  - Opinion of probable cost: $20,000
- Recommendation: D501003.4 - Infra-Red Scan and Re-torque Switchboards
  - Priority: 3 – Long Term (Year 5 to 10)
  - Opinion of probable cost: $7,000
- Recommendation: D501003.5 – Produce Single Line Diagram
  - Priority: 3 – Long Term (Year 5 to 10)
  - Opinion of probable cost: $5,000
- Recommendation: D501004.1 - Replace transformer including primary and secondary feeders and maintenance work.
  - Priority: 1 – Short Term (Year 0 to 1)
  - Opinion of probable cost: $8,000
- Recommendation: D501005.1 - Replace CDP's and feeders to each panel and maintenance work.
  - Priority: 1 – Short Term (Year 0 to 1)
  - Opinion of probable cost: $50,000
- Recommendation: D501005.2 - Replace all original panelboards.
  - Priority: 2 – Mid Term (Year 1 to 5)
  - Opinion of probable cost: $55,000
- Recommendation: D501005.3 - Provide each lease space with dedicated panelboard
  - Priority: 4 – Recommended (Not Time Critical)
  - Opinion of probable cost: $56,000
- Recommendation: D501007.1 - Replace Motor Control Centre c/w Starters
  - Priority: 2 – Mid Term (Year 1 to 5)
  - Opinion of probable cost: $48,000
- Recommendation: D502001.1 - Perform Megger Testing on main feeders
  - Priority: 1 – Short Term (Year 0 to 1)
  - Opinion of probable cost: $10,000
- Recommendation: D502001.2 - Replace all feeder wires
  - Priority: 1 – Short Term (Year 0 to 1)
  - Opinion of probable cost: $590,000
- Recommendation: D502002.1 - Replace all Light fixtures except new fixture in corridor to 201 Portage
  - Priority: 3 – Long Term (Year 5 to 10)
  - Opinion of probable cost: $150,000
- Recommendation: D502002.2 - Replace lighting control system for energy efficiency.
  - Priority: 3 – Long Term (Years 5 to 10)
  - Opinion of probable cost: $120,000
- Recommendation: D502002.3 - Replace damaged light fixtures

    - Priority: 1 – Short Term (Year 0 to 1)
    - Opinion of probable cost: $1,500
- Recommendation: D503001.1 - Replace Fire Alarm System.
    - Priority: 1 – Short Term (Year 0 to 1)
    - Opinion of probable cost: $75,000
- Recommendation: D503001.2 - Connect Fire Alarm System to Connected Buildings
    - 1 – Short Term (Year 0 to 1)
    - Opinion of probable cost: 15,000
- Recommendation: D503001.3 - Provide visual signal devices throughout concourse.
    - Priority: Included in Recommendation D503001.1
    - Opinion of probable cost: Included in Recommendation D5003001.1
- Recommendation: D503008.1 - Replace CCTV Monitors
    - Priority: 3 – Long Term (Year 5 to 10)
    - Opinion of probable cost: $2,000
- Recommendation: D503008.2 - Perform CCTV Coverage Study
    - Priority: 3 – Long Term (Year 5 to 10)
    - Opinion of probable costs: 4,000
- Recommendation: D509002.1 - Replace Failed Battery Pack
    - Priority: 1 – Short Term (Year 0 to 1)
    - Opinion of probable cost: $800
- Recommendation: D509002.2 - Replace Battery Packs
    - Priority: 2 – Mid-Term (Year 1 to 5)
    - Opinion of probable cost: $3,200
- Recommendation: D509002.3 - Provide Additional New Battery Packs
    - Priority: 1 – Short Term (Year 0 to 1)
    - Opinion of probable cost: $3,000 per pack. Total $18,000
- Recommendation: D509002.4 - Replace the red “EXIT” type exit signs with green running person graphic type exit signs.
    - Priority: 1 – Short Term (Year 0 to 1)
    - Opinion of probable cost: $2,000 per pack. Total $40,000
- Recommendation: D509002.5 - Perform Emergency Lighting Test Report
    - Priority: 4– Recommended (Not Time Critical)
    - Opinion of probable cost: $4,000
- Recommendation: D509002.6 - Replace Emergency Generator and ATS. Replacement includes all mechanical ventilation and exhaust piping.
    - Priority: 1 – Short Term (Year 0 to 1)
    - Opinion of probable cost: $310,000
- Recommendation: D509002.7 – Perform generator building load test
    - Priority: 1 – Short - Term (Year 0 to 1)
    - Opinion of probable costs: $4,000
- Recommendation: D509002.8 - Perform study to investigate the possibility of a dedicated generator and ATS’ within the concourse.

    - Priority: 1 – Short Term (Year 0 to 1)
    - Opinion of probable costs: $24,000
- Recommendation: D509002.9 – Provide electrical distribution as part of the pressurized vestibule smoke control recommendation.
    - Priority: 1 – Short Term (Year 0 to 1)
    - Opinion of probable costs: $110,000
- Recommendation: D509003.1 - Replace Grounding System pending grounding study as per recommendation D509003.2
    - Priority: 1 – Short Term (Year 0 to 1)
    - Opinion of probable cost: $30,000
- Recommendation: D509003.2 - Perform Grounding Study
    - Priority: 1 – Short Term (Year 0 to 1)
    - Opinion of probable costs: $6,000

2.6 BUILDING CODE AND LIFE SAFETY

The PMUC has a number of deficiencies with respect to the 2011 Manitoba Building Code (MBC). These deficiencies can be sub-divided into those related to the Code in effect at the time of design (1972 or 1975 National Building Code of Canada (NBC)) and those related to the MBC. It is noted that compliance with the MBC is only mandated if the PMUC is altered or repaired.

The recommendations and cost associated with these life safety items are included in the sections above but are identified here for clarity.

Recommendations to address the priority 1 deficiencies with the National Building Code (NBC) are classified as:

Fire Separations

- Room C-26 is to be upgraded with a self-closing type door.
- Replace the existing door and frame assembly with a listed fire door and frame assembly having a 45 min fire-protection rating equipped with listed self-closing and latching hardware.
- The 1 hr fire separation to the storage areas C-41 serving Lombard Place is to be upgraded.

Egress

- Emergency lighting throughout the concourse is to be upgraded (refer to Electrical).
- Exit signage throughout the concourse is to be upgraded (refer to Electrical).

Sprinkler System

- Sprinkler protection is to be provided in the Escalator Machine Rooms and the Telecom Room adjacent to area C-13 (refer to Mechanical).

- Replace the standard response sprinklers in this corridor with quick response sprinklers. (refer to Mechanical)

Recommendations to address the priority 3 deficiencies with the Manitoba Building Code (MBC) are classified as:

Fire Separations

- Vestibules enclosed by 45 min fire-rated separations are to be provided at each connection between the concourse and the building complexes in order to isolate the high-rise buildings from one another.

Smoke Control

- The vestibules noted above are to be either mechanically pressurized or vented to the exterior. These systems will require emergency power, connections to fire alarm systems, and fire-rated conductors (refer to Mechanical and Electrical).

Sprinkler System

- All standard response sprinklers are to be replaced with quick response sprinklers (refer to Mechanical).

Fire Alarm System

- Visual signals are to be provided throughout (refer to 3.5 Electrical).

2.7 HAZARDOUS MATERIAL ASSESSMENT

The City of Winnipeg Accommodations Division has performed extensive asbestos testing in the PMUC. A thorough list has been developed related to the locations of known asbestos. The scope of this project did not further any of the work currently performed.

It was observed that a portion of the former TD bank office, unit C-06 had mould on the wall due to a leak in the roof above. The mould was fairly extensive and will need to be reviewed by the City for further remediation.

3 OPINION OF PROBABLE CONSTRUCTION COSTS

4.1 INTRODUCTION

Part of the scope of this report was to provide "opinion of probable costing" for the recommendations found above. The costing has been presented above with a breakdown as follows below.

The following are the exclusions and clarification for the costing presented.

- All estimates exclude GST
- The estimates do not include any contingencies
- All estimates do not include contractor overhead and profit
- All estimates do not include consulting fees.
- The costing is an "opinion of probable cost" for budget purposes only. The scope of the report does not allow for more accurate costing as concepts and plans on implementing the recommendations are not developed. When comparing to the City of Winnipeg Cost Estimate Classification System we would envision the costing to fall between Class 5 and 4 due to the limitations of this report. Based on the classifications would estimate -40% and plus 80%.
- Where a recommendation is multi-disciplinary, the costs of the various disciplines will be captured under their respective sections.
- The costing was produced with little review of the current budget for the facility as to not provide pre-existing biases. The costing is reviewed under this section for comparison purposes.
- Costing has been developed using a number of different sources, some of which include historic project values for similar projects, local manufacturers and representatives, contractor input on proposed costing and published manuals for constructions costs (i.e. RS Means).

Reviewing the existing 10 year Facility Condition Index, or better know as a "10-year capital plan", produced using VFA software developed by Accruent resulted in different results than our opinion costing. A snap shot of the 10-year plan produced in VFA is attached below. The full report can be found in Appendix B.

Year	Renewal Requirements	Non-Renewal Requirements	Total
2018	2,641,494	523	2,642,017
2019	39,953	0	39,953
2020	3,105,539	0	3,105,539
2021	491,527	0	491,527
2022	197,622	0	197,622
2024	100,289	0	100,289
2025	17,408	245,736	263,144
2026	4,026,774	0	4,026,774
2027	1,991	0	1,991
Total	**10,622,595**	**246,259**	**10,868,854**

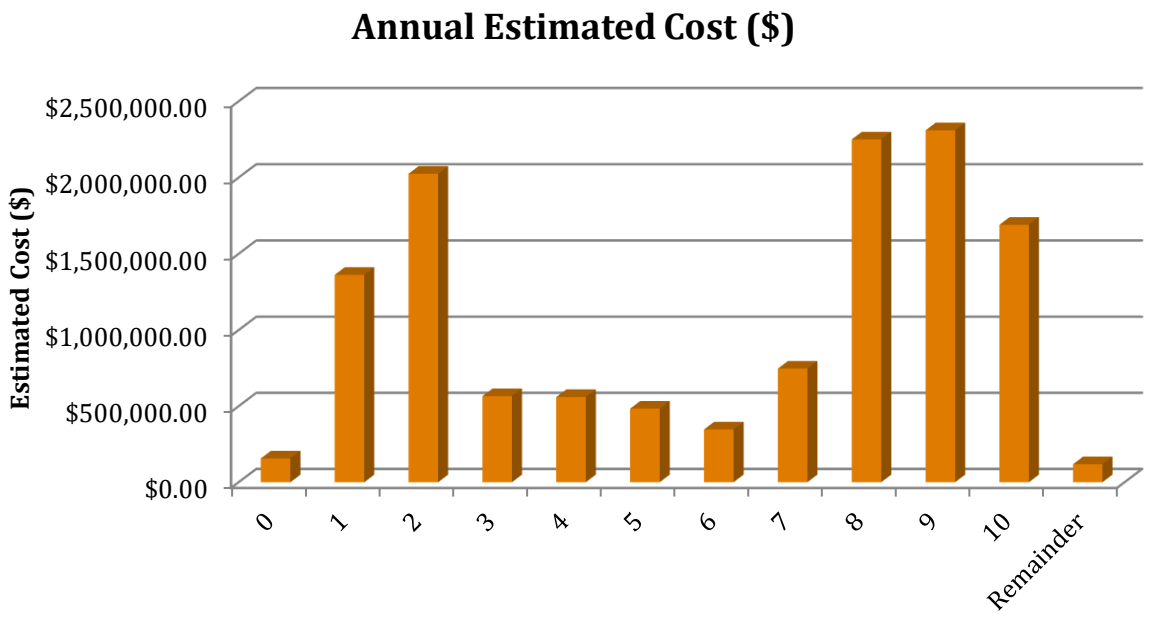
Figure 4: Current VFA Plan

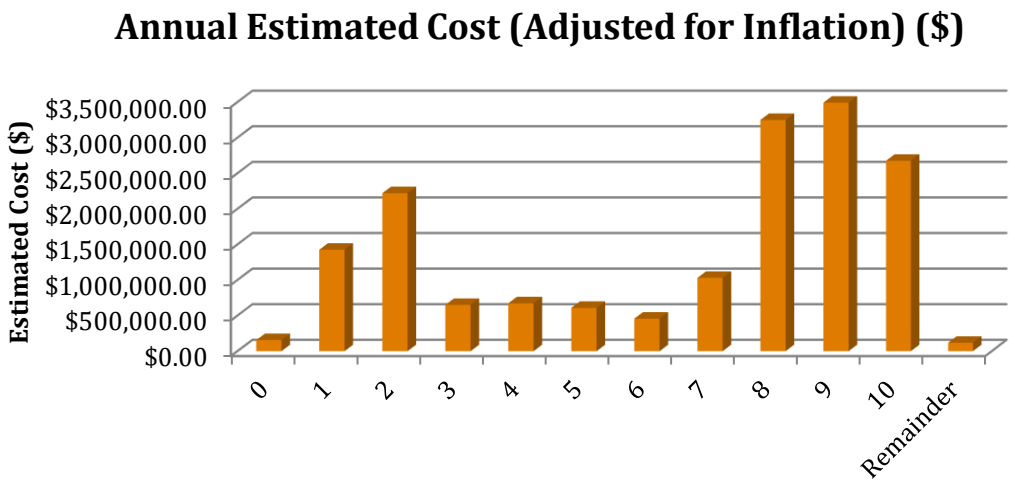
The current VFA also uses a cost of inflation of 4.7% and estimates a replacement cost of $11,995,171.

From our analysis we yield the following results using the same inflation rate.

Cost Breakdown By Year (Adjusted for Inflation)		
Year	Cost Without Inflation	Cost With Inflation
0	$156,400.00	$156,400.00
1	$1,362,000.00	$1,426,014.00
2	$2,025,000.00	$2,219,823.23
3	$566,000.00	$649,615.65
4	$560,000.00	$672,937.54
5	$484,000.00	$608,945.98
6	$347,000.00	$457,098.26
7	$747,000.00	$1,030,261.27
8	$2,250,000.00	$3,249,046.83
9	$2,310,000.00	$3,492,465.42
10	$1,690,000.00	$2,675,183.16
Remainder	$118,200.00	$118,200.00
Total	$12,615,600.00	$16,755,991.33

The following two graphs also illustrate the trend with and without inflation.





The two charts above illustrate a similar trend that can be found in VFA. Immediate capital expenditures followed by a slower period with some larger expenditure towards the end of the review period. The opinion estimates above do not include surface work to access the roof membrane. This scope of work is specifically excluded from the request for proposal. The total project estimate without inflation and excluding surface work to access the roof membrane is expected to be $12,615,600.00. If an inflation rate of 4.7% is used to match that value in the VFA report the total estimated cost is $16,755,991.33. An estimate for the surface work and access opinion cost of $15-20 million dollars was used based on other similar projects in downtown Winnipeg. The total project estimate if access is included would be substantially higher at $32,615,600.00 without inflation and $46,840,063.96 using the same inflation rate as VFA. In our opinion, the large variance between the two 10 year plans, comes from the life safety upgrades and the costs associated with the membrane renewal.

The membrane renewal for the roof and walls of the facility is involved given the location of the facility. VFA doesn't account for unique exterior conditions seeing as most prices are based on quality or square foot costs. The cost outlined in the VFA report for a new membrane is ~$167,000. This value would be adequate if the facility was above grade or easily accessible, but due to the nature of the location, the requirements to close and dig-up portions of the major intersection above make this portion of the project much more difficult.

The life safety upgrades also play a role in the overall costing. The facility is dated and has a number of grandfathered conditions. These conditions are required to be rectified should major renovation be commenced.

Below are a few charts which represent the distribution of funds within the opinion of probable cost estimate.

Priority Cost (No Inflation)		
Category	Time Frame	Total Cost
1	0-1 Years	$1,478,400.00
2	1-5 Years	$3,684,000.00
3	5-10 Years	$7,345,000.00
4	Not Time Critical	$108,200.00

Priority Cost (With Access Estimate and no Inflation)		
Category	Time Frame	Total Cost
1	0-1 Years	$1,478,400.00
2	1-5 Years	$3,684,000.00
3	5-10 Years	$27,345,000.00
4	Not Time Critical	$108,200.00

The majority of the cost for the 5-10 year range comes from envelope upgrades. All estimates noted here do not include an annual inflation rate.

Capital Verse Maintenance Costs (No Access or Inflation)	
Category	Cost
Capital	$12,416,200.00
Maintenance	$199,400.00

The life safety costs are associated with many disciplines but are allocated separately for clarity. All estimates noted here do not include annual inflation rate.

Cost by Discipline (No Access Estimate or Inflation)	
Discipline	Cost
Architectural	$217,100.00
Structural	$701,000.00
Envelop	$6,060,000.00
Mechanical	$2,979,000.00
Electrical	$1,440,700.00
Life Safety	$1,202,300.00

Maintenance costs are items such as leakage repair and phased replacement of systems. All estimates noted here do not include an annual inflation rate.

Maintenance Cost by Year	
Year	Cost
0	$12,400.00
1	$56,000.00
2	$30,000.00
3	$68,000.00
4	$0.00
5	$1,000.00
6	$8,000.00
7	$0.00
8	$0.00
9	$0.00
10	$0.00
Remainder	$24,000.00

Capital Cost by Year	
Year	Cost
0	$144,000.00
1	$1,306,000.00
2	$1,995,000.00
3	$498,000.00
4	$560,000.00
5	$483,000.00
6	$339,000.00
7	$747,000.00
8	$2,250,000.00
9	$2,310,000.00
10	$1,690,000.00
Remainder	$94,200.00

When reviewing the values above, if the added cost for the membrane replacement due to location is removed, the total costs for the project come more into line with the VFA estimate. Surface work to access the membrane of the facility will be the largest cost associated with the project and is estimated to be in the neighbourhood of $15 - 20 million but a formal review of the surface work requirements is needed along with a formal pricing exercise to determine a more accurate estimate.

4 STRUCTURAL SYSTEMS

A SUBSTRUCTURE

A10 FOUNDATIONS

A1020 SPECIAL FOUNDATIONS

The existing foundations consist of cast-in-place concrete caissons and friction piles. There was no evidence of structural distress. No repairs/maintenance should be required within the timeframe considered by this report.

A20 BASEMENT CONSTRUCTION

A2020 BASEMENT WALLS

A202001 BASEMENT WALL CONSTRUCTION

The perimeter basement walls are 16” thick conventionally reinforced cast-in-place concrete. The walls are typically covered with architectural finishes and not visible except in non-public areas such as utility rooms, storage rooms, and within ceiling spaces.

The basement walls around the inner concourse circle are exposed concrete with the architectural mural cast into the surface. Vertical cracks were observed periodically in the wall. The cracking is consistent with normal shrinkage. Evidence of water seepage was observed at one location (Photo: A202002.1).

There was no evidence of structural distress. No repairs/maintenance should be required within the timeframe considered by this report.

A202002 MOISTURE PROTECTION

Water seepage was observed at several locations corresponding to construction joints between the foundation wall and roof slab including 2 locations along the perimeter foundation walls within the concourse, 1 location along the centre circle (Photo: A202002.1), Room C-03, and Room C-14 (Photo: B102003.1).

Water seepage through joints and cracks in the foundation walls indicate that the waterproofing is no longer functioning and/or at the end of useful life expectancy.

Localized repairs of epoxy injection of cracks have been complete to address areas of leakage. It was reported that the repairs have been successful, and no active leakage is presently occurring.

The presence of seepage indicates that the basement wall waterproofing is no longer functioning. The waterproofing is presumably original construction and over 40 years old. The waterproofing is well beyond its theoretical service life, which is typically about 25 years.

In the short term, we expect that the existing waterproofing will continue to provide adequate service for some period of time, however, its performance will continue to deteriorate, and greater instances of leakage will occur over the short term and accelerate over the long term. Although localized areas of leakage may be perceived by some as only a nuisance, there is a greater concern that the intrusion of moisture will result in deterioration of the concrete structure. In areas of steel reinforcing, long term moisture and chloride penetration can cause corrosion of the embedded reinforcing steel within the concrete, causing deterioration, and making future repairs more difficult and much more costly.

Recommendation: A202002.1
Periodic leakage repairs will be required as an interim measure to address nuisance leakage until a full replacement is completed. Repairs would likely consist of a combination of urethane and epoxy-injection similar to what has been completed previously.

Photo: A202002.1 – Signs of former water leakage.

Recommendation: A202002.2
The foundation wall waterproofing is beyond its theoretical service life. Replacement of waterproofing is required in the mid to long term. Since replacement of the foundation wall waterproofing will require excavation of the roadway, considerable planning will be required to phase the work in a manner that minimizes disruption to the intersection at Portage and Main. Also, due to access difficulties, replacement of the roof waterproofing should be completed at the same time as the roof waterproofing. Note: The cost includes excavation of the walls below the level of the roof slab but does not include access through existing roadway or reinstatement of finishes. Refer to Recommendation B301099.2.

B SHELL

B10 SUPERSTRUCTURE

B1010 FLOOR CONSTRUCTION

B101003 FLOOR DECKS AND SLABS

Cracking and delamination of the concrete floor slab was observed within the mechanical room at the southwest quadrant adjacent to Room C-04. The delamination appears to be related to a leakage onto the floor from existing mechanical equipment.

Recommendation: B101003.1
Localized concrete repairs are required to address delamination due to corrosion of the reinforcing steel in the mechanical room.

Photo: B101003.1 – Damaged concrete floor

Recommendation: B101003.2
To address concerns of moisture infiltration and extend the life of the concrete repairs identified in B101003.1, installation of a waterproof coating on the mechanical room floor is recommended.

B101007 INCLINED AND STEPPED FLOORS

The exposed concrete stairs in the northwest quadrant at 201 Portage from the concourse to the exterior doors are in good condition.

The stairs in the northeast quadrant at Lombard Place from the concourse to the exterior doors are in good condition.

The stairs in the southeast quadrant at the Bank of Montreal from the concourse to the exterior doors are covered in architectural finishes. No evidence of deterioration was noted. Although outside of the scope of this report, the exterior stairs are in poor condition and represent a safety hazard. It is our understanding that repairs are scheduled to be completed by the City of Winnipeg in 2018

The interior stairs from the concourse to Winnipeg Square are covered in architectural finishes. No evidence of deterioration was noted.

B101099 OTHER FLOOR CONSTRUCTION

A crawlspace is located below the concourse. Access to the crawlspace is provided by way of four access hatches located in the concourse floor slab.

Site personnel indicated that the access hatches were not original to construction but were added in the mid to late 1990's. The access hatches were cut through the existing concrete slab and 3" metal deck. The perimeters of the openings are not reinforced.

The crawlspace at all four hatch locations is very humid with condensation visible along the underside of the composite metal deck. Corrosion was also visible along the metal deck and steel framing (Photo: B101099.1). The metal deck acts as structural reinforcement for the concrete slab. Excessive corrosion could result in a significant reduction in the structural capacity of the floor slab.

The original structural drawings indicate that the concourse slab includes conventional reinforcement typically consisting of #5 reinforcing bars at 16" on-centre bottom and #5 reinforcing bars at 12" on-centre top over beams. Cut top steel was visible at a hatch location which approximately matched that size and spacing shown on drawings (Photo: B101099.2). Bottom reinforcement was not visible within the exposed areas. A cursory design check indicates that there is sufficient internal reinforcement within the slab to support the design loads without contribution of the steel deck. Notwithstanding, further investigation and analysis is recommended to confirm existing reinforcement details and structural capacity.

The existing grading within the crawlspace did not permit access to the crawlspace beyond the area immediately around the hatches, preventing a close-up visual review of the concrete beams. At locations where the concrete beams were visible, no obvious visual evidence of delamination due to corrosion of the embedded reinforcing steel was observed.

No evidence of vapour retarder was observed covering the ground within the crawlspace. The exposed ground also appeared to be damp which is contributing to the high humidity. The condition of the crawlspace represents a significant concern for long term durability.

Rust staining was observed on the carpet within Room C-03 where a filing cabinet was located. The conditions are indicative of moisture transmission from the crawlspace.

> <u>Recommendation: B101099.1</u>
> Despite moderate to severe corrosion of the composite steel deck, there does not appear to be an immediate structural concern. This is due in large part to the fact that the original structural drawings show conventional reinforcement within

the concourse slab. Notwithstanding, corrosion of the structural steel framing and metal deck within the crawlspace is a potential structural concern. Further investigation is required to determine the extent, degree, and structural implication of corrosion and deterioration of the structural framing. The investigation would include, confirmation of existing reinforcing layout, concrete testing for compressive strength, and a detailed structural analysis of representative areas.

Photo: B101099.1 – Corroded structure in crawlspace.

Photo: B101099.2 – Deck cross-section showing top reinforcement.

<u>Recommendation: B101099.2</u>
The crawlspace is in poor condition. Water infiltration combined with a lack of effective vapour barrier is causing deterioration of the floor structure and mechanical/electrical services. Remediation of the crawlspace is required including grading of the existing soil to direct water away from structural members, installation of a new drainage system and

sump pits (if required, see mechanical), and installation of a vapour retarder and sand cover. Refer to mechanical and electrical sections for repairs and improvements to the mechanical and electrical services. Note: It is recommended that the investigative work in B101099.1 be completed prior to implementing these recommendations. The cost estimate does not include structural repairs which may be identified during the crawlspace investigation.

B1020 ROOF CONSTRUCTION

B102003 ROOF DECKS AND SLABS

The underside of the roof structure was accessed within Room C-04, mechanical room adjacent to Room C-04, Room C-14, and at 3 locations within the concourse corresponding to areas of leakage.

Delamination due to corrosion of the embedded reinforcing steel was observed on the underside of the roof slab within Room C-14.

The concourse roof slab was accessed at 3 locations corresponding to areas with evidence of moisture seepage through the slab. In each location, evidence of water seepage was observed through cracks or joints in the structure. At 2 locations, epoxy injection was completed to address areas of leakage (see A202002). It was reported that the repairs have been successful, and no active leakage is presently occurring.

The roof structure was accessed within the corridor to 201 Portage Avenue where repairs are being completed to the ceiling finishes. Minor surface corrosion was observed on the exposed steel beams. No repairs are required.

<u>Recommendation: B102003.1</u>
Water seepage through the roof slab at Room C-14 is causing corrosion and delamination of the reinforcing steel. Areas of loose concrete are present and represent a safety concern. Removal of the loose concrete is required.

Photo: B102003.1 – Loose concrete on ceiling.

Recommendation: B102003.2
Localized concrete repairs are required in Room C-14 to address delamination due to corrosion of the reinforcing steel.

B30 ROOFING

B3010 ROOF COVERINGS

B301006 ROOF OPENINGS AND SUPPORTS

The skylight system at the Portage and Main Concourse is located at the junction between the Bank of Nova Scotia Building and the Royal Bank Building. The structural system consists of a structural steel frame on a curb which is in turn supported on a cast-in-place concrete structural slab. Photo B301006.1 shows the interior view while Photo B301006.2 shows the exterior view of the skylight. The glazing system appears to consist of Kalwall opaque glass panels, structural glass panels which provide an inherent thermal resistance due to closed form fabrication. Typically, the panels are rated for structural loads, including fall-out protection. However, in the absence of drawings, no load check on the system was feasible.

Photo B301006.1 - General interior view of skylight system showing Kalwall glazing panels. Note water stains from flood test on concrete.

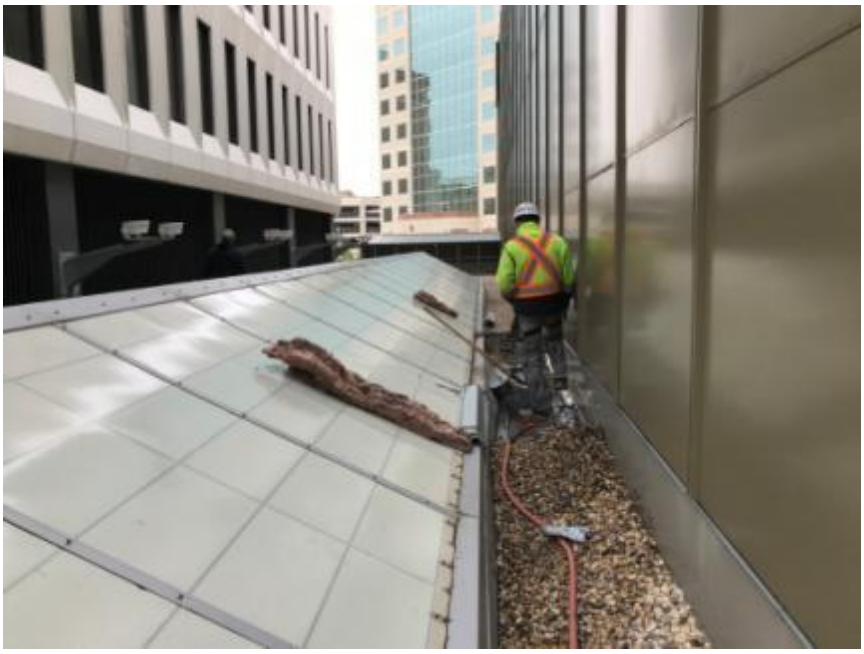


Photo B301006.2 - General view of exterior of skylight.

We understand that leakage has been a long-term problem at the skylight, thus, in addition to a visual review, invasive inspection recesses were completed, combined with flood testing to identify the cause(s) of the leakage. The following section summarizes our findings and recommendations with relevant photographs are appended.

Review:

The initial component of our investigation consisted of visual observation of the assembly during a period of heavy precipitation to identify active leakage locations. The identified locations were then accessed by a glazing contractor to facilitate our inspection of the components. The following summarizes in point form our significant findings:

- During our review, water was applied to the roof, which created prompt leakage into the interior of the entry lobby area. Photo B301006.1 shows the leakage occurring during our inspection. The point of leakage is where the skylight curb meets the concrete deck.

- The waterproofing system consists of a protected membrane system, PMR or often referred to an inverted roof. A hot-rubberized asphaltic membrane has been applied to the concrete which is then covered with XPS insulation, about 4", filter cloth and gravel ballast. Due to the lack of slope, water accumulates on the deck. Photo B301006.3 shows the membrane upturn at the curb while Photo B301006.4 shows the ponding water below the insulation.

Photo B301006.3 - Close-up of hot rubberized asphalt membrane along curb for skylight.

Photo B301006.4 - Ponding water along roof due to lack of drainage.

- Photo B301006.5 shows a close-up of the interface between the skylight framing and the curb. A membrane has been applied to provide an air and water seal; however, the membrane is debonded in many areas, as shown in Photo B301006.6.

Photo B301006.5 - Skylight/curb interface, note membrane strip and water staining. Discoloured insulation is indicative of considerable air leakage.

Photo B301006.6 - Discontinuity in membrane stripping at skylight

- The Kalwall panels are secured with a pressure plate, clamping gaskets onto the surface of the glass. From Photo B301006.7, the gaskets are missing and or displaced. The pressure plate was partially removed, and the throat is exposed in Photo B301006.8. From the photograph, debris build-up from water penetration is present, indicating that water penetrates the assembly.

Photo B301006.7 - Missing and displaced gaskets along pressure plate.

Photo B301006.8 - Close-up of throat for pressure plate securement and debris along surface indicative of water penetration under pressure plate.

Analysis:

Our investigation indicates that there are primary and secondary points of leakage at the skylight assembly. The primary point of water penetration appears to be the interface of the roof curb to the concrete deck. Discontinuities in the waterproofing allow water to penetrate the failure in the waterproofing continuity where it flows along the top surface of the slab and deposits into the lobby below.

Close examination of the dried water stains along the interior indicate that water penetration has occurred at the framing and joint interfaces in the skylight framing. The skylight is relatively sheltered from the effects of wind-driven rain. However, under sufficient volume of precipitation, a proportion will enter the system and be directed to the interior versus the exterior.

The discolouration in the batt insulation also shows that considerable air leakage through the skylight occurs. Due to the stack effect of 360 Main, infiltration during winter conditions would be present. The inflow of cold exterior air will cool the framing components to below the dew point, creating conditions conducive to condensation. Thus, secondary points of water penetration are likely precipitation penetration through the skylight assembly, and moisture dripping from condensation on the framing components.

Primary Leakage: Curb/Deck Interface.

The priority for addressing the skylight leakage is to remove the curb base flashing assembly to access the waterproofing of the curb/deck interface. Existing waterproofing should be removed and cut-back 12” to facilitate installation of a new bridge membrane at the curb/deck interface.

Secondary Leakage: Skylight Components

Replacement of the pressure-plate and gasket assembly is required to reduce the water penetration accessing the skylight. The skylight is predominantly face-sealed, thus, restoring the face-seal assembly should address the clear majority of the precipitation leakage but is unlikely to provide a long-term fix to all leakage nor address leakage from condensation. The effective service life to address the leakage should be in the five year range, excluding periodic maintenance.

If the City of Winnipeg intends to retain the asset as a long-term hold, then complete replacement of the skylight assembly should be considered to address the deficiencies in the design and construction of the system. The new skylight assembly would be constructed on the existing stick-framing, but custom dies would be designed to accommodate a higher performing glazing system and the incorporation of drainage tracks to reduce moisture from condensation dripping onto the floors during winter design conditions.

Recommendation:

The investigation of the skylight confirmed multiple points of leakage. The primary point of leakage appears to be the skylight curb/deck interface. The assembly however, also needs significant intervention to address the water penetration and air leakage. Replacement of pressure plates and gaskets, in combination with face sealing should provide three to five effective years of service life. However, if the asset is intended as a long-term hold, complete replacement of the system but re-using the structural framing is recommended. Costing for each of the recommendations is provided herein.

Recommendation: B301006.1
Primary Leakage Remediation for Skylight: Repair waterproofing at skylight curb/deck interface.

Recommendation: B301006.2
Secondary Leakage Remediation for skylight: New pressure plates and gaskets, including face-sealing all penetrations.

Recommendation: B301006.3
Complete Remediation of Skylight: Replacement of skylight system but constructed onto existing structural framing. New skylight to meet current Code requirements for air, water, and thermal resistance.

B301099 OTHER ROOFING

The underside of the roof structure was accessed within Room C-04, mechanical room adjacent to Room C-04, Room C-14, and at 4 locations within the concourse corresponding to areas of leakage.

The main concourse roof slab was accessed at 3 locations corresponding to areas with evidence of moisture seepage through the slab. In each location, evidence of water seepage was observed through cracks or joints in the structure. At 2 locations, epoxy injection was completed to address areas of leakage (Photo: B101099.1). It was reported that the repairs have been successful, and no active leakage is presently occurring.

Evidence of moisture seepage through the concrete structure was observed adjacent to Room C-06 in the concourse entrance to 201 Portage Avenue. The location appears to correspond to an existing planter. Urethane injection ports were visible indicating that repairs were completed to address moisture seepage (Photo: B101099.2). Drip pans were also present. Site personnel indicated that repairs had been made from the exterior and have addressed the leakage.

Water seepage through the roof slab at Room C-14 is causing corrosion and delamination of the reinforcing steel (see B102003).

Leakage was reported through the roof structure above the Dollar Store.

Although outside of the main concourse roof, a limited review of the existing waterproofing membrane at the exterior stairway to the Richardson Building Plaza was completed during a recent repair project. The cross-section in the area of investigation consists of, from top down, cast-in-place concrete stair, rigid insulation, waterproofing membrane, and concrete slab (Photo B301099.3)

The existing waterproofing is asphalt-based and applied directly to the concrete surface. The membrane is still pliable but has very little elongation; that is, the membrane easily cracked and tore within itself under minimal bending. The membrane did not have any significant bond to the substrate and was easily removed by hand. Evidence of moisture was also observed between the membrane and concrete surface indicating that water is circumventing the membrane. The conditions observed suggest that the membrane has exceeded its useful service life. Also note that the existing rigid insulation was saturated. A saturated insulation will have limited insulating value.

A section of the membrane was removed to expose the concrete deck. The concrete surface was sound with no evidence of deterioration however this is a small area relative to the entire concourse roof.

The presence of leakage indicates that the roof waterproofing is no longer functioning. In addition, cursory review of a representative area of the waterproofing indicates it is in poor condition. Since the waterproofing is presumably original to construction and over 40 years old, it is well beyond its theoretical service life, which is typically about 25 years.

In the short term we expect that the existing waterproofing will continue to provide adequate service for some period of time, however, its performance will continue to deteriorate, and greater instances of leakage will occur over the short term and accelerate over the long term. Although localized areas of leakage may be perceived by some as only a nuisance, there is a greater concern that the intrusion of moisture will result in deterioration of the concrete structure and damage interior finishes or building systems. In areas of steel reinforcing, long term moisture and chloride penetration can cause corrosion of the embedded reinforcing steel within the concrete, causing deterioration, and making future repairs more difficult and much more costly. Repairs would require a phased installation and extended lane closures.

> Recommendation: B301099.1
> Periodic leakage repairs will be required as an interim measure to address nuisance leakage until a full replacement is completed. Repairs would likely consist of a combination of urethane and epoxy-injection similar to what has been completed previously.

Photo: B301099.1 – Ceiling concrete damage and water infiltration.

Recommendation: B301099.2

The roof waterproofing is in poor condition and beyond its theoretical service life. Replacement will be required within the mid to long term. Since replacement of the roof waterproofing will require excavation of the roadway, considerable planning will be required to phase the work in a manner that minimizes disruption to the intersection at Portage and Main. Also, due to access difficulties, replacement of the foundation wall waterproofing should be completed at the same time as the roof waterproofing. Refer to A202002.

Photo: B301099.2 – Urethane injection ports for concrete repairs previous complete.

Photo: B301099.3 – Typical cross-section showing existing waterproofing membrane at exterior stair to Richardson Building Plaza.

5 ARCHITECTURAL SYSTEMS

5.1 GENERAL ASSESSMENTS

5.1 .1 BARRIER FREE ASSESSMENT

This section of the report specifically assesses the condition of elements required for barrier-free access. The study area is limited to the area within the boundaries as indicated on the attached plans. The scope of this study does not include the development of design solutions nor costing.

The main barrier–free access points to the concourse are provided at the following locations:

- C-16 Concourse Access at Richardson Building (365 Main St)
- C-17 Concourse Access at Canwest Place (201 Portage Ave)
- C-18 Concourse Access at Commodity Exchange Building (360 Main St)
- C-19 Concourse Access at MTS Building (333 Main St)
- C-20 Concourse Access at Bank of Montreal Building (335 Main St)
- C-21 Public Corridor Between 200 and 220 Portage Avenue

The scope of analysis includes:

A) <u>General Review:</u>
- General Access and Circulation
- Doors and Door Hardware
- Stairs, Ramps, and Escalators
- Platform Lifts and Elevators
- Interior Lighting
- Signage, Wayfinding & Information Systems

B) <u>Summary Observations - Best Practice Compliance</u>
Confirmation if the above elements meet current Building Code and City of Winnipeg Accessible Design Standards (CWADS) and if not, why.

C) <u>Key Considerations</u>

<u>A: General Overview</u>

The underground concourse has remained relatively unchanged since its inception and as such a no upgrades have been provided to the barrier-free access requirements of the concourse. The synergistic operation of the concourse as an underground public right-of-way is continually dependent on mutually beneficial agreements and shared responsibilities between the City of Winnipeg and adjacent property owners. Without those agreements public barrier-free access into the

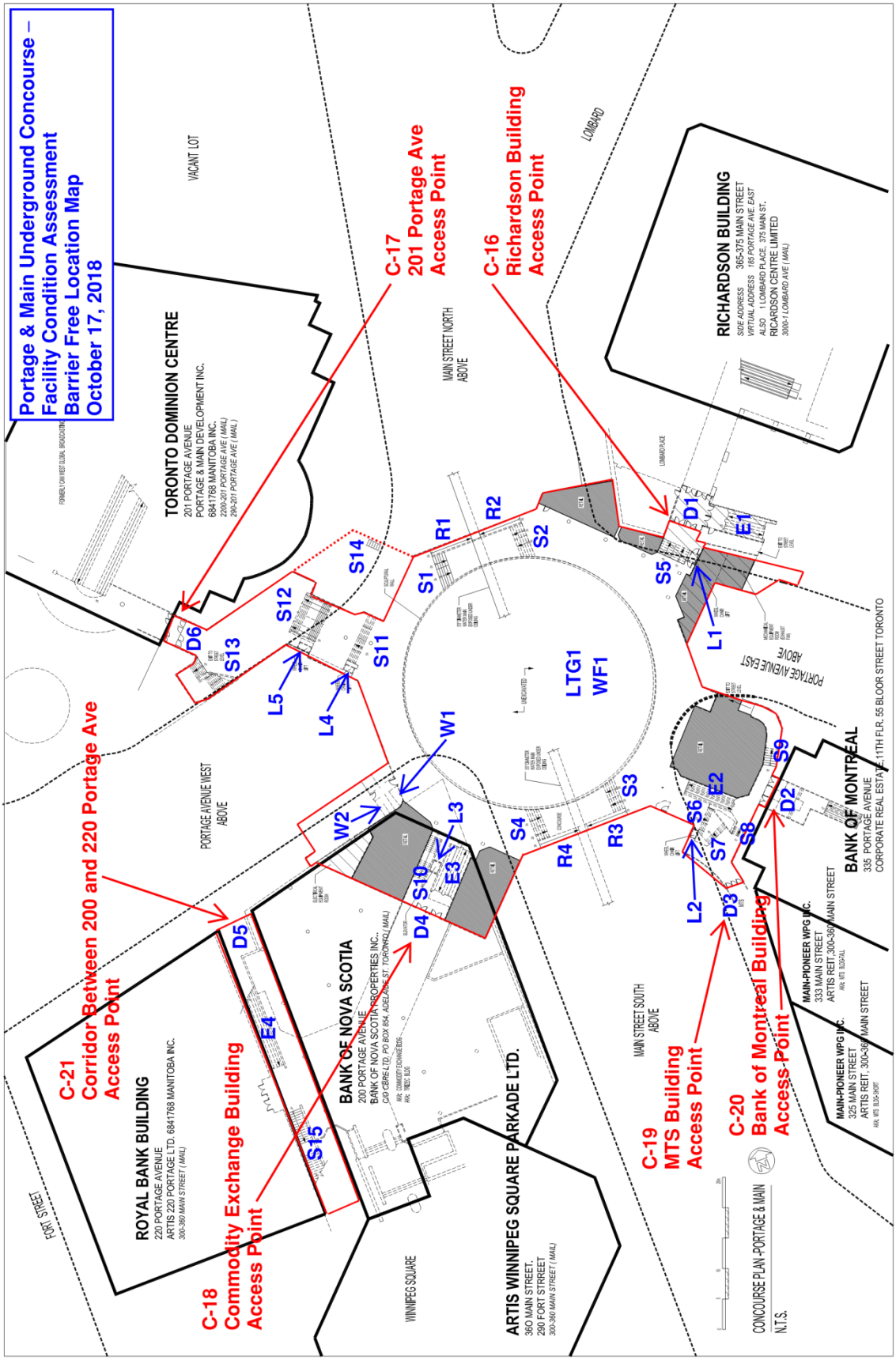
concourse may have been considerably more limited. It will not be a part of this study to comment or the form or type of those agreements.

Exterior Access Limitations:

One aspect of the concourse that has persisted since first opening in 1979 is the absence of direct barrier-free access to the underground concourse by way of a public elevator.
All existing exterior entry points to the underground concourse from sidewalk level are by way of, one or another, series of exterior and interior stairs and/or an escalator.
All elevator access to the underground concourse is accomplished during business hours through one of the four adjacent commercial properties bordering the Portage and Main intersection. The business hours only access to elevators connected to the concourse is one of the key impediments to classification of the facility as entirely publicly accessible or barrier-free compliant.

Internal Navigation Limitations:

Original conveyance equipment installed within the Concourse which were included to enable wheelchair access between the varying different levels within the Concourse, such as platform lifts and elevators, have been included to supplement typical stair, ramp, and escalators. The equipment has not been suitably upgraded, may be nearing the end of service life, and have proven difficult to maintain. More recently, were some upgrades to physical appearance and barrier-free access standards. Further improvements regarding functionality of platform lifts forms part of a renovation and would require a detailed concept to be developed. As such, the concept and associated costing has been deferred.


Portage & Main Underground Concourse – Facility Condition Assessment Barrier Free Location Map October 17, 2018
VACANT LOT
TORONTO DOMINION CENTRE
201 PORTAGE AVENUE
PORTAGE & MAIN DEVELOPMENT INC.
6841768 MANITOBA INC.
220-201 PORTAGE AVE (MAIL)
200-201 PORTAGE AVE (MAIL)
C-17
201 Portage Ave
Access Point
C-16
Richardson Building
Access Point
LOMBARD
RICHARDSON BUILDING
SIDE ADDRESS 365-375 MAIN STREET
VIRTUAL ADDRESS 185 PORTAGE AVE. EAST
ALSO 1 LOMBARD PLACE, 375 MAIN ST.
RICARDSON CENTRE LIMITED
3000-1 LOMBARD AVE (MAIL)
MAIN STREET NORTH
ABOVE
PORTAGE AVENUE WEST
ABOVE
PORTAGE AVENUE EAST
ABOVE
C-21
Corridor Between 200 and 220 Portage Ave
Access Point
C-18
Commodity Exchange Building
Access Point
C-19
MTS Building
Access Point
C-20
Bank of Montreal Building
Access Point
ROYAL BANK BUILDING
220 PORTAGE AVENUE
ARTIS 220 PORTAGE LTD. 6841768 MANITOBA INC.
300-360 MAIN STREET (MAIL)
BANK OF NOVA SCOTIA
200 PORTAGE AVENUE
BANK OF NOVA SCOTIA PROPERTIES INC.
C/O CBRE LTD. PO BOX 954, ADELAIDE ST. TORONTO (MAIL)
ARK. COMMODITY EXCHANGE BDG.
ARK. THREE BLDG
ARTIS WINNIPEG SQUARE PARKADE LTD.
360 MAIN STREET.
290 FORT STREET
300-360 MAIN STREET (MAIL)
WINNIPEG SQUARE
MAIN STREET SOUTH
ABOVE
MAIN-PIONEER WPG INC.
333 MAIN STREET
ARTIS REIT, 300-360 MAIN STREET
ARK. MTS BUSINAL
MAIN-PIONEER WPG INC.
325 MAIN STREET
ARTIS REIT, 300-360 MAIN STREET
ARK. MTS BUS-NORT
BANK OF MONTREAL
335 PORTAGE AVENUE
CORPORATE REAL ESTATE, 11TH FLR. 55 BLOOR STREET TORONTO
FORT STREET
CONCOURSE PLAN-PORTAGE & MAIN
N.T.S.
LTG1
WF1
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
S11
S12
S13
S14
S15
R1
R2
R3
R4
W1
W2
L1
L2
L3
L4
L5
D1
D2
D3
D4
D5
D6
E1
E2
E3
E4

B: Summary Best Practice Compliance

With regard to compliance with locally sanctioned standards for universal design and safety, such as the 2010 Manitoba Building Code (MBC) and the 2015 City of Winnipeg Access Design Standards (CWADS), the Portage and Main Underground Concourse is largely non-compliant with current Winnipeg Codes and guidelines. The attached chart itemizes the specific barrier-free elements and the areas of non-compliance.

Barrier–free Design Standards

The City of Winnipeg utilizes a prescriptive accessible design guideline for all new pedestrian circulation systems within the public realm. The City of Winnipeg Accessible Design Standards (CWADS) are *"applicable to all newly constructed and retrofitted facilities owned, leased or operated by or a member organization affiliated with the City of Winnipeg"* which are required to be adhered to by the Winnipeg Zoning by-law for Pedestrian Connections where applicable. The guidelines encompass all design parameters involving aspects of public urban space planning - from sidewalks and crosswalks, to washroom, corridor and room signage.

If the Portage and Main Underground Concourse were a newly constructed project today, the scope and application of The City of Winnipeg Accessible Design Standard would provide the standard of performance the project would be expected to meet.

Possible Grand-fathering of Existing Elements

Part of this report's mandate is to comment on whether the existing conditions would be "grand-fathered". Typically in renovation projects, one must assess the extent to which an existing building is being redeveloped/renovated in order to determine whether certain existing conditions, which do not meet current codes or standards, can be considered for acceptance by the authority having jurisdiction.

Should considerable new construction be undertaken to correct and repair failing electrical, mechanical, or plumbing system infrastructure - it is outlined by CWADS that interior surfaces and modes of transportation do not necessarily require upgrading to meet current best-practice standards.

The CWADS policy states, *"If the alteration work is limited solely to the electrical, mechanical, or plumbing system, or to hazardous material abatement, or automatic sprinkler retrofitting and does not involve the alteration of any elements or spaces required to be accessible under the* (CWADS) *guidelines, then the* (CWADS) *manual does not apply (except for alarms, and assistive listening systems)".*
It is not our intent to contradict the CWADS policy. However, we have provided our opinion as to which elements should be considered for grand-fathering, with the notion that all considerations be reviewed in further detail with the authorities having jurisdiction as part of any renovation project. Refer to the Barrier Free Matrix.

Element:	Location (Refer to Map):	Code Compliant (Yes/No):	City of Winnipeg Accessibility Design Standards Compliant (Yes/No):	Comments of Non-Compliant Items:
Stairs	S1	No	No	Detectable warning surfaces at landings, rise to tread run ratio, colour contrasting risers/treads/ nosings, handrail size and shape, handrail extensions.
	S2	No	No	Same as above.
	S3	No	No	Same as above.
	S4	No	No	Same as above.
	S5	No	No	Same as above.
	S6	No	No	Same as above.
	S7	No	No	Same as above.
	S8	No	No	Same as above.
	S9	No	No	Same as above.
	S10	No	No	Same as above.
	S11	No	No	Same as above.
	S12	No	No	Same as above.
	S13	No	No	Same as above.
	S14	No	No	Same as above.***
	S15	No	No	Same as above.
Ramps	R1	Yes	No	Detectable warning surfaces at landings, colour contrast at change of slope, intermediate height guard for wheelchair.
	R2	Yes	No	Same as above.
	R3	Yes	No	Same as above.
	R4	Yes	No	Same as above.
Lifts/Elevators	L1	No	No	General access clearances, call button locations and clearances, tactile/braille signage and buttons, minimum door and cab sizes.
	L2	No	No	Same as above.
	L3	No	No	Same as above.
	L4	No	No	Same as above.
	L5	No	No	Same as above.

Escalators	E1 (Richardson)	Yes	No	Detectable warning surfaces, colour contrasts, and tactile/braille signage.
	E2 (Bank of Montreal)	Yes	No	Same as above.
	E3 (Commodity Exchange)	Yes	No	Same as above.
	E4 (Corridor between 200 and 220 Portage)	Yes	No	Same as above.
Washrooms	W1 (Women)	No	No	Barrier Free WC stall size and clearances, and power door operator.*
	W2 (Men)	No	No	Same as above.*
Door Operators	D1	No	N/A	Power door operators.
	D2	No	N/A	Power door operators.
	D3	No	N/A	Power door operators.
	D4	No	N/A	Power door operators.**
	D5	No	N/A	Power door operators.
	D6	Yes	Yes	-
Lighting	LTG1	No	No	Minimum lighting levels, and coordination with using colour contrasting materials.
Way Finding/ Signage	WF1	Yes	No	Consistent, easy to read and understand wayfinding signage throughout the concourse.

Matrix Notes:
* These washrooms are used solely for building maintenance staff and tenants (not public).
** This door location has power operators, but they are non-compliant due to specific paddle size, mounting height, etc.
*** This internal tenant stair (in the currently empty former TD Bank space) has many issues, primarily due to its limited configuration within the existing building structure. Bringing this stair up to Code or CWADS compliance may be impractical due to the surrounding building constraints.

Summary Observations

It should be noted that, whereas adjacent underground areas such as the 201 Portage Food Court and the interconnecting concourse have recently incorporated many aspects of universal design best-practices, much of the underground concourse has not yet incorporated similar improvements. The following are high-level recommendations that would integrate best practices throughout the facility.

Photo 5.1.1. (1) - Circular Concourse under Main Street, south side:

Existing accent lighting for the concrete relief scultpture work contributes indirect lighting to the Concourse, but at times can seem insufficient. Such low light levels result in poor colour rendition, low contrast between wall and flooring materials, which amount to less than ideal spatial perception which is challenging to all concourse users particular those that are visual impaired. Visual differentiation of wall surfaces from floor finishes, stair treads and nosings, and top and bottom landings of ramps are requirements of universal design best practices.

Photo 5.1.1.(2) - Concourse vestibule and connection to adjacent development property with adjacent access to the plaza above (at left):

Inadequate lighting often interferes with wayfinding legibility and clarity, making these relationships less obvious. Concourse Escalators, Elevators, and Stairs provide level changes to connections with adjacent development properties. In general, additional location signage is necessary to clarify wayfinding between destinations as existing wayfinding cues are not always self-evident.

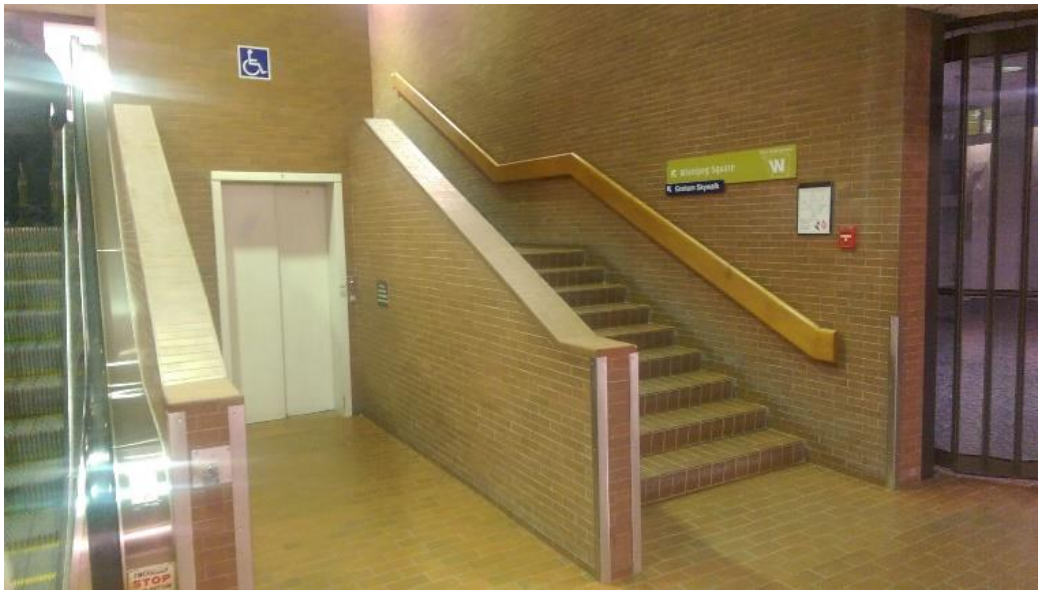


Photo 5.1.1.(3) - Elevator and Platform Lift call-button locations:

Lift locations and lift controls could be better identified. Barrier-free access clearances and clearer equipment operating instructions are required.

Photo 5.1.1.(4) Photo 5.1.1.(5) - Platform Lift controls and users control instructions:

Adequate signage for all users, and adequate barrier-free clearances are required. Handrail dimensions, clearances and spacing are inconsistent throughout the concourse.

Photo 5.1.1.(7) – Stair Riser Height

Stair riser heights vary on many stairs with many not having visual or tactile detectable warning demarcation. A consistent and uniform Code application throughout a facility promotes legibility and safety for users.

Photo 5.1.1.(8) - Recently renovated portions of the Concourse stair connection with 201 Portage Avenue

Newly incorporated contrasting material colours with improved lightening of spaces optically brighten interior spaces to enhance spatial perception and legibility.

Photo 5.1.1.(9) – Lift in newly renovated 201 Portage Area.

Photo 5.1.1.(10) – Top of newly lift – 201 Portage.

Code compliant handrails, detectable warning demarcation have improved improve user safety.

Even with recent upgrades some level change equipment (such as platform lifts) have remained unchanged. Operator controls remain confusing, with noncompliant barrier free clearances complicating ease-of-use by operators.

C: Key Considerations

It is our recommendation that if it is decided to upgrade non Code/CWADS compliant elements, that a holistic approach be taken. For instance, if one stair is upgraded but adjacent stairs are not, then this isolated improvement will not be of much benefit. Some of the considerations mentioned below may seem like individual tasks which would provide code compliance which is not the intent. The considerations below align with best practices for universal design and would provide improvements but may not yield full compliance.

- Improve the concourse signage, ensuring that it is consistent throughout the walkway system in all development properties. It should be noted that the City of Winnipeg has recently taken steps above and below ground to provide improved direction but a thorough provision of wayfinding signage at barrier-free accessible height, include tactile signage (such as braille) has not been completed. Refer to recommendation in this section of the report.

- Replace handrails in all ramp and stair locations throughout concourse walkway system to meet 2015 City of Winnipeg Accessibility Access standards.

- Install colour contrasting horizontal and vertical stair nosings and detectable warning surfaces at all ramp and stair locations through concourse walkways system. This recommendation does not render all stairs code/CWADS compliant as many have geometry issues which form part of a larger project.

- Replace automatic door operator devices that are operable at both standard and lower heights above finished floor, or door sensors, where clearances are not accessible.

- In conjunction with improved lighting levels throughout (50 Lux minimum throughout) consideration should be given to use colours and contrasting materials to improve general visibility, spatial perception and aid directional orientation and basic wayfinding throughout the system.

- All specific code compliance items do not address lack of barrier-free access for the 24/7 facility beyond normal operating hours of the adjacent buildings.

Further assessment during future renovation projects regarding the scope and extent of new work to provide barrier-free compliance should include discussion with Authorities Having Jurisdiction, City of Winnipeg Plan Examination, and Universal Design Coordinator to review possible grandfathered items for consideration.

5.2 C-1 – CIRCULAR CONCOURSE

5.2.1 GENERAL

The circular concourse is the primary space in the Portage and Main underground for pedestrian movement and belongs to the City of Winnipeg. The cylindrical concrete wall, filled with art relief by artist Bruce Head, provides a point of reference for pedestrians to identify where the middle of the intersection sits above. Materials around the circular space are primarily hard-surfaced and continuous and include a brown/earth colour tile brick floor, brick faced perimeter walls, and a lineal aluminum ceiling. A large storm drain pipe runs directly through the middle of the concourse and creates two depressed locations in the concourse where steps and ramps occur to allow people to pass underneath. Most of the finishes are from original construction, and for the most part, are in reasonably good condition. Parts of the west side near the 201 Portage access point have recently been improved with new brighter materials and modern updates to the stairs in this location. On the perimeter of the concourse are a number of rental tenants that operate almost exclusively during weekday, daytime business hours; they provide some activity to what is essentially a large pass-through circulation space.

Photo 5.2.1(1) - Circular Concourse under Main Street, south side

At the perimeter of the concourse are access points that cross over horizontally into the neighboring properties:

- C-16 Concourse Access at Richardson Building (365 Main St)
- C-17 Concourse Access at Canwest Place (201 Portage Ave)
- C-18 Concourse Access at Commodity Exchange Building (360 Main St)
- C-19 Concourse Access at MTS Building (333 Main St)
- C-20 Concourse Access at Bank of Montreal Building (335 Main St)

Photo 5.2.1(2) - C-16 Concourse Access

Photo 5.2.1(3) - C-18 Concourse Access, with Escalators, Elevators, and Stairs

Additionally, at the perimeter of the concourse are 3 exterior access points (often referred to as "bunkers" due to their sunken elevation from grade and undecorated concrete construction) which allow vertical access to and from street level:

- Richardson Bunker
- 201 Portage Bunker
- BMO Bunker

The bunkers endure a harsh corrosive outdoor environment specifically because of their proximity to the adjacent streets which produce regular salt and sand from winter road maintenance. In addition, due to visual exposure and 24-hour public access, the bunkers are abused by intermittent vandalism.

Photo 5.2.1(4) – Entrance at Richardson Bunker

Photo 5.2.1(6) – Entrance at RBC Bunker

Wayfinding within the concourse has been identified by the City of Winnipeg as an issue which needs to be addressed. Wayfinding, and directional signage in general, has undergone a few iterations with some being successful and others not having the desired effect. The shape of the concourse makes navigating and orientating difficult as there are no visible landmarks and the access points often require multiple turns to descend down to the concourse. It is recommended that a detailed study be performed on how to improve wayfinding followed by a full upgrade of the wayfinding signage and approach.

Recommendation: 5.2.1
Perform detailed wayfinding study and evaluate approach.

Recommendation 5.2.2
Provide a new wayfinding signage package based on study findings. The opinion cost provided is for a standard package in a facility of this sizes and used as a place holder.

B SHELL

B20 EXTERIOR ENCLOSURE

B2030 EXTERIOR DOORS

The eight (8) exterior aluminum entrance doors, frames and glazing at the 3 exterior bunker locations are in variable condition. Visible damage is minimal, but the hardware and components have been repaired and replaced often over the years causing the doors to near the end of their service life. A large factor that contributes to their breakdown is their surrounding walls which show considerable deterioration – water penetration, rust stains, exposed rebar, broken concrete, etc.

Recommendation: 5.2 - B2030.1
Door hardware updates to 8 exterior doors at the bunker locations.

C INTERIORS

C10 INTERIOR CONSTRUCTION

C1010 PARTITIONS

Interior walls are from original construction and are in fair to good condition. There are 3 ceiling leak locations along the edge of the cylindrical concrete wall that have contributed to wall damage.

Recommendation: 5.2 - C1010.1
Repairs water damage on interior circular concourse wall.

C101099 OTHER PARTITIONS (FIRE SEPARATIONS)

Fire-rated vestibules are not currently provided at each connection between the concourse and the building complexes with high buildings (TD-RBC Building, Richardson Building, MTS Building, Royal Bank Building and Scotia Bank) for smoke control purposes. This is a

requirement of MBC 3.2.6.3. (1). The purpose of this requirement is to limit smoke movement between high buildings and other buildings to which they are connected particularly in winter when stack effect is most pronounced.

Recommendation: 5.2 - C101099.1
Construct 45 min fire-rated vestibules at each connection between the concourse and the building complexes. Two locations. Interior finishes are excluded from the estimate.

C102003 FIRE DOORS

Fire-rated vestibules are not currently provided at each connection between the concourse and the building complexes with high buildings (TD-RBC Building, Richardson Building, MTS Building, Royal Bank Building and Scotia Bank) for smoke control purposes. This is a requirement of MBC 3.2.6.3.(1). The purpose of this requirement is to limit smoke movement between high buildings and other buildings to which they are connected particularly in winter when stack effect is most pronounced.

Recommendation: 5.2 - C102003.1
New listed fire door and frame assemblies having 45 min fire-protection ratings equipped with listed self-closing and latching hardware are to be provided for the new vestibules.

C1030 FITTINGS

Space contains a few fittings such as fire hose cabinets, signage, cameras, and lighting. All fittings appear to be in good condition.

C20 STAIRS

C2010 STAIR CONSTRUCTION

The tile brick stair with wooden handrails at C-18 appear to be in good condition.

C2020 STAIR FINISHES

In spite of good solid aesthetics, Accessibility Design Standards may trigger the need to update the stair at C-18.

C30 INTERIOR FINISHES

C3010 WALL FINISHES

Interior walls consist of various construction and finish, and appear to be in fair to good condition.

Repairs to finishes in the four (4) Concourse Access points are required where the 45 minute rated vestibules are recommended to be added.

> Recommendation: 5.2 - C3010.1
> Repairs to walls where rated vestibules are to be added in circular concourse.

C3020 FLOOR FINISHES

Brown colour tile brick floor finish appears to be in good condition.

C3030 CEILING FINISHES

Ceiling finishes appear to be in fair to good condition. There are 3 ceiling leak locations along the edge of the cylindrical concrete wall that have contributed to damage.

> Recommendation: 5.2 - C3030.1
> Repairs to ceilings with water damage in circular concourse

Photo 5.2 - C3030.1 – Ceiling water damage

Photo 5.2 - C3030.2 – Ceiling water damage

5.3 UNIT 1 AND 2 – FORMER TD BANK UPPER AND LOWER OFFICES

5.3.1 GENERAL

This tenant space was formerly occupied by TD Canada Trust Bank, and consists of both upper and lower level open work areas with closed offices. In general, while the spaces exhibit the bank's dated branding style, colours, finishes, and floor plan layout, the spaces are generally in good condition, and apart from some isolated repairs, could function almost immediately as tenant rental space for any office type of work. The primary areas of concern appear to be some mould located at the base of the walls in the lower level back room stair, and a number of water stains on the ceiling tiles in a couple of the upper level closed-in rooms. These two areas of concern may present former one-time isolated water leaks that have occurred within the wall and ceiling spaces behind, or they may be indicative of reoccurring water leak problems. If it is the former, it is simply cosmetic and repairable (new drywall patching and replacing ceiling tiles); but if it originates from unresolved reoccurring water problems, then the repairs could become much more extensive - extending into major structural and/or plumbing repairs.

Photos 5.3.1(1) and 5.3.1(2) – Former TD bank rental space

Photos 5.3.1(3) and 5.3.1(4) – Stairwell in former TD retail space.

C INTERIORS

C10 INTERIOR CONSTRUCTION

C1010 PARTITIONS

Interior walls consist of drywall with either paint or wallpaper finish. The upper level contains high quality glass/wood partitions that create 3 closed offices. The lower level contains some glass/aluminum partitions which also make up the dividing wall between tenant and adjacent public corridor of the concourse. Except for the water damage and potential water issues mentioned above, overall the interior walls appear to be in good condition.

Recommendation: 5.3 - C1010.1
Removal of mould from the base of the walls in the lower level back room stair. Unit 1 and 2

C1020 INTERIOR DOORS

Internally, the space contains a combination of 3 high quality sliding glass/wood doors, 1 sliding glass/aluminum door, and 3 hollow metal doors and frames. Door hardware appears to be in good working condition.

Externally, at the dividing wall between tenant and adjacent public corridor, there is 1 glass/aluminum door at the lower level, and 1 sliding glass/aluminum door at the upper level which appears to be permanently closed shut. All doors appear to be in good working condition.

C1030 FITTINGS

Space contains some casework, tack boards, and shelving. It is anticipated that a new tenant would remove these items and patch/repair the floors and walls where these components would be demolished. For anticipated costs, refer to the finishes section noted herein.

C20 STAIRS

C2010 STAIR CONSTRUCTION

The stair that connects the upper to lower level is usable but DOES not meet current code requirements. It is partially unfinished, contains water damage at walls, floors and ceiling, is narrow in width, does not have handrails, contains a crawlspace plumbing access port, and may contain mould in walls. This stair should either be (Option #1) overhauled to become a properly functional stair that connects the upper and lower tenant spaces, or it should be (Option #2) closed up and function exclusively as a building service space with access from only one of the two levels.

Recommendation Option #1: 5.3 - C2010.1
Renovate the stair with proper handrails, increase stair width, isolate the plumbing access port out of the stairway, repair ceilings, and finishes. Unit 1 and 2

Recommendation Option #2: 5.3 - C2010.2
Close up the stair with walls and convert to a building service space. Revise door hardware at tenant access. Unit 1 and 2

C30 INTERIOR FINISHES

C3010 WALL FINISHES

It is anticipated that a new tenant would patch/repair damaged wall finishes from previous tenant.

C3020 FLOOR FINISHES

It is anticipated that a new tenant would patch/repair damaged floor finishes from previous tenant.

C3030 CEILING FINISHES

It is anticipated that a new tenant would provide new finishes but the repair of some ceilings may be the responsibility of the City

Recommendation: 5.3 - C3030.1
Replace ceiling tiles where necessary in Unit 1 and 2.

5.4 UNIT 3 – CUTTING STATION

5.4.1 GENERAL

This tenant space is currently occupied by Cutting Station, and consists of glass/aluminum sliders that open directly onto the public corridor of the concourse. This space has been fit-out by the tenant, and in general is in quite good condition. In speaking with the tenant who has been there for 8 years, there appears to be no apparent water, or door security issues that are of any concern.

Photo 5.4.1(1) – Cutting Station from concourse

Photo 5.4.1(2) – Interior of Cutting Station

C INTERIORS

C10 INTERIOR CONSTRUCTION

C1010 PARTITIONS

Interior walls consist of drywall with paint finish and overall appear to be in very good condition. It appears that some electrical conduit and/or plumbing lines are surface mounted, which is less desirable than if hidden within the walls. All fit-out requirements are the responsibility of the tenant and therefore no recommendation is made.

C1020 INTERIOR DOORS

Sliding glass/aluminum doors are located at the dividing wall between tenant and adjacent public corridor. These doors appear to be in very good working condition.

C1030 FITTINGS

Space contains a number of fittings provided by the tenant, including casework, various furniture, art work, special lighting, movable shelving, and a small washing machine.

C30 INTERIOR FINISHES

C3010 WALL FINISHES

It is anticipated that a new tenant would patch/repair damaged wall finishes from previous tenant.

C3020 FLOOR FINISHES

Floor tile finish, same as public concourse, appears to be in very good condition.

C3030 CEILING FINISHES

Ceiling tile appears to be in good condition.

5.5 UNIT 4 – THOM BARGEN COFFEE & TEA

5.5.1 GENERAL

This tenant space is currently occupied by Thom Bargen Coffee & Tea, and consists of two custom swing up-and-down metal lattice awnings that opens directly onto the public corridor of the concourse. This space has been recently fit-out by the tenant which included some plumbing services, and in general is in very good condition. The public is served over the counter, and customers do not enter into the tenant space proper, but stay in the public corridor. In speaking with the tenant who has been there for just 1 month, there appears to be no issues that are of concern.

Photo 5.5.1(1) – Thom Bargen Coffee

C INTERIORS

C10 INTERIOR CONSTRUCTION

C1010 PARTITIONS

Interior walls consist of drywall with paint finish and overall appear to be in very good condition.

C1020 INTERIOR DOORS

Custom swing up-and-down metal lattice awnings are located at the dividing wall between tenant and adjacent public corridor. These awnings appear to be in very good working condition.

Photo 5.5 - C1020.1 – Tom Bargen Entrance

C1030 FITTINGS

Space contains a number of fittings provided by the tenant, including front and back bar casework, tile backsplash, shelving, and installed coffee preparation equipment. All are new and appear in good condition.

C30 INTERIOR FINISHES

C3010 WALL FINISHES

It is anticipated that a new tenant would patch/repair damaged wall finishes from previous tenant.

C3020 FLOOR FINISHES

Floor tile finish, same as public concourse, appears to be in very good condition.

C3030 CEILING FINISHES

Tenant has provided custom metal ceiling panels, and appears to be in very good condition.

5.6 UNIT 5 – SEOUL NAMI

5.6.1 - GENERAL

This tenant space is currently occupied by Seoul Nami, a sit down and take-out sushi restaurant, that consists of a perforated aluminum sliding grille that opens directly onto the public corridor of the concourse. This space has been fit-out by the tenant, and in general is in good condition. In speaking with the tenant occupant who has been there for 10 years, there appears to be no issues that are of any concern.

Photo 5.6.1(1) - Seoul Nami Sushi Restaurant

Photo 5.6.1(2) – Seoul Nami Sushi Restaurant

C INTERIORS

C10 INTERIOR CONSTRUCTION

C1010 PARTITIONS

Interior walls consist of drywall with paint finish and overall appear to be in very good condition.

C1020 INTERIOR DOORS

A perforated aluminum sliding grille is located at the dividing wall between tenant and adjacent public corridor. This slider appears to be in very good working condition.

C1030 FITTINGS

Space contains a number of fittings provided by the tenant, including casework with sinks for food preparation, 3 cooler displays, 2 upright refrigerators, tables and chairs furniture and a bar counter for customers, art work, special lighting, wall mounted shelving, tack boards, and various food heating equipment.

C30 INTERIOR FINISHES

C3010 WALL FINISHES

It is anticipated that a new tenant would patch/repair damaged wall finishes from previous tenant.

C3020 FLOOR FINISHES

A custom floor tile finish provided by the tenant, appears to be in very good condition.

C3030 CEILING FINISHES

Ceiling tile appears to be in good condition

5.7 UNIT 6 – BANK OF MONTREAL (BMO) ATM

5.7.1 GENERAL

This tenant space is currently occupied by two (2) built-in ATM machines for the Bank of Montreal. This space has been fit-out by the tenant, and in general is in very good condition. There does not appear to be any issues of concern that affect this space.

Photo 5.7.1(1) – Bank of Montreal ATMs

C INTERIORS

C10 INTERIOR CONSTRUCTION

C1010 PARTITIONS

Interior walls consist of drywall with blue panel finish and overall appear to be in very good condition.

C1030 FITTINGS

Space contains a recessed area with two built-in ATM machines with special lighting, signage, and side access door to the secure space behind the machines provided by the tenant.

C30 INTERIOR FINISHES

C3010 WALL FINISHES

It is anticipated that a new tenant would patch/repair damaged wall finishes from previous tenant.

C3020 FLOOR FINISHES

Floor tile finish is the same as adjacent Unit 7 tenant and is in very good condition.

C3030 CEILING FINISHES

Ceiling tile in recessed space is in very good condition.

5.8 UNIT 7 – DEALS FOR DOLLARS

5.8.1 GENERAL

This tenant space is currently occupied by Deals For Dollars, and consists of glass/aluminum slider doors that open directly onto the public corridor of the concourse. This space has been fit-out by the tenant, and in general is in fair to good condition. During the day, merchandise is set out on tables in the adjacent public corridor of the concourse. Of particular to note, there appears to be a number of water leaks at the ceiling in the merchandise area. Back-of-house contains two washrooms, a cluttered electrical room, and extra storage space for the tenant's merchandise. Many areas of the back-of-house appear to be showing signs of general wear-and-tear and neglect.

Photo 5.8.1(1) – Glazing at front of Deals for Dollars

Photo 5.8.2(2) – General Space and Ceiling Layout

Photo 5.8.1(3) – Back of house hallway

Photo 5.8.1(4) – back of house storage

C INTERIORS

C10 INTERIOR CONSTRUCTION

C1010 PARTITIONS

Interior walls consist of drywall with paint finish and overall appear to be in fair to good condition. A feature wall along the south that divides between tenant and adjacent public corridor contains glass block, and appears to be in good condition.

C1020 INTERIOR DOORS

Sliding glass/aluminum doors are located at the dividing wall between tenant and adjacent public corridor. These doors appear to be in very good working condition.

Back-of-house areas contain 5 hollow metal doors and appear to be in fair to good working condition.

C1030 FITTINGS

Space contains a number of fittings provided by the tenant, including extensive shelving and pegboards, cashier casework, some furniture, special lighting, ceiling fans, and numerous stands to display merchandise.

C30 INTERIOR FINISHES

C3010 WALL FINISHES

It is anticipated that a new tenant would patch/repair damaged wall finishes from previous tenant.

C3020 FLOOR FINISHES

Merchandise areas contain tile floor finishes and appear in good condition. Back-of-house areas contain vinyl floor finishes and appear to be in fair condition.

C3030 CEILING FINISHES

Ceiling tile and drywall bulkheads appears to be in poor to fair condition. Tenant showed five (5) locations of repeated ceiling water leaks. Two (2) of these locations have holding drain pans inserted in the ceiling space by the City of Winnipeg to collect the water, which the tenant has to monitor and manually empty on a regular basis. Furthermore, many areas of the ACT ceiling are both broken or falling apart, some of the drywall bulkheads need significant repair, and the lighting for merchandise is not very functional. The recommendation for this ceiling is to replace it all and include proper lighting. The nature of the space and having to work during off-business hours for replacing the ceiling has been included in the estimate. Leaks are addressed in the structural portion of the report.

Recommendation: 5.8 - C3030.1
In merchandise areas for Unit 7, replace ceiling tiles and patch/repair drywall ceiling where water damage has occurred. In back-of-house areas, replace old ceiling tiles with new. Any plumbing issues related to this have not been cost accounted for in the estimate below.

Photo 5.8 - C3030.1 and 5.8 - C3030.2 - Ceiling damage in Unit 7

5.9 UNIT 8 – ESHEL TREE

5.9.1 GENERAL

This tenant space is currently occupied by Eshel Tree, a convenience store that consists of a perforated aluminum sliding grille that opens directly onto the public corridor of the concourse. This space has been fit-out by the tenant, and in general is in fair to good condition. In speaking with the tenant occupant who has been there for many years, there appears to be a number of issues that are of concern, in particular a lack of apparent electrical power, nearby water leaks in the concourse that affect his tenant space, and a broken hot water tank up in the ceiling space in the past which caused ceiling tile damage.

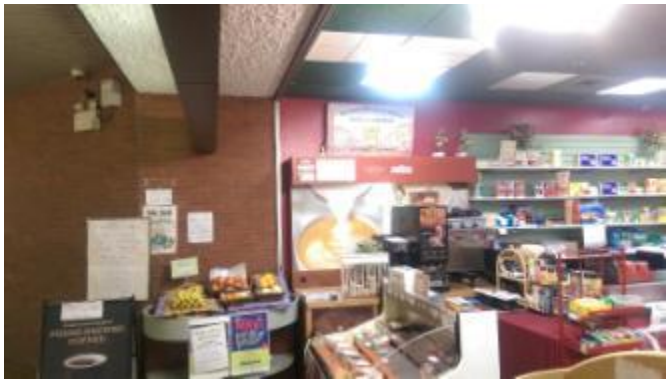


Photo 5.9.1(1) – Overview of tenant space

Photo 5.9.1(2) – Overview of Tenant Space

C INTERIORS

C10 INTERIOR CONSTRUCTION

C1010 PARTITIONS

Interior walls consist of drywall with paint finish and overall appear to be in fair to good condition.

C1020 INTERIOR DOORS

A perforated aluminum sliding grille is located at the dividing wall between tenant and adjacent public corridor. This slider appears to be in very good working condition.

C1030 FITTINGS

Space contains a number of fittings provided by the tenant, including extensive shelving, some slat-wall, cashier casework, numerous stands to display merchandise, a low display cooler, four (4) upright

coolers, a large built-in stainless steel wash-up sink, a freezer, coffee makers, etc.

C30 INTERIOR FINISHES

C3010 WALL FINISHES

It is anticipated that a new tenant would patch/repair damaged wall finishes from previous tenant.

C3020 FLOOR FINISHES

Floor tile finish, same as public concourse, appears to be in good condition.

C3030 CEILING FINISHES

Ceiling tile appears to be in poor to fair condition. Store area tile has been painted a black/green colour. Some tiles are missing along with some light diffusers.

An exposed cable or flexible piping appears to be protruding out of the bulkhead ceiling near the sliding grille pocket area. This is outside the tenant area but is noted here because it connects into the tenant sliding grille pocket space

It is anticipated that a new tenant would replace ceiling finishes from previous tenant. In addition, some surrounding bulkhead ceiling finishes need updating.

> Recommendation: 5.9 - C3030.1
> Replace ceiling with new. Correct surrounding bulkhead ceiling at slider pocket for Unit 8

Photo 5.9 - C3030.3 – Wires un-supported at entrance for Unit 8

5.10 UNIT 9 – EMPTY SPACE (FORMERLY STEWART'S HOROLOGY)

5.10.1 GENERAL

This tenant space, previously Stewart's Horology, is currently sitting empty, and consists of a glass/aluminum sliding grille that opens directly onto the public corridor of the concourse. This space contains some remnants from the previous tenant, and in general is in fair to good condition. Overall, the space appears to have a worn-out carpet floor and old ceiling.

Photo 5.10.1(1) – Sliding security door.

Photo 5.10.1(2) – Interior of Unit 9

C INTERIORS

C10 INTERIOR CONSTRUCTION

C1010 PARTITIONS

Interior walls consist of drywall with paint finish and overall appear to be in good condition. Slat-wall covers approximately 40% of the wall faces. Surface mounted electrical conduit and plugs.

C1020 INTERIOR DOORS

A glass/aluminum sliding grille is located at the dividing wall between tenant and adjacent public corridor. This slider appears to be in good working condition.

C1030 FITTINGS

Space contains a number of left-over fittings provided by previous tenant, including drop down power poles, slat-wall, shelving, display track lighting, and a mirror covered column.

C30 INTERIOR FINISHES

C3010 WALL FINISHES

It is anticipated that a new tenant would patch/repair damaged wall finishes from previous tenant.

C3020 FLOOR FINISHES

Worn-out, very dated carpet currently sits overtop of the floor tile, which is the same tile as in the public concourse. It is unknown if carpet glue could be completely removed. New carpet may have to be installed for the future tenant floor finish.

Recommendation: 5.10 - C3020.1
Remove carpet and clean off tile underneath.

C3030 CEILING FINISHES

Ceiling tile appears to be in poor condition. Despite no traces of water leakage observed in this ceiling, it appears dated old and dirty looking.

It is anticipated that a new tenant would replace ceiling finishes from previous tenant but this replacement is assumed to partially include the City.

Recommendation: 5.10 - C3030.1
Replace ceiling with new for Unit 9

D SERVICES

D10 CONVEYING

D1010 ELEVATORS & LIFTS

The review of these items is for code compliance and not for condition of the specific equipment. A study of the escalators and elevators was done in 2015 and addresses these items.

At the back of this tenant space are rooms that contain the service areas for the elevator. Although maybe a bit untidy, no water leakage was observed anywhere. It is assumed the spaces where code compliant at the time of construction. Modifications to these rooms would require a full code analysis.

D1020 ESCALATORS & MOVING WALKWAYS

The review of these items is for code compliance and not for condition of the specific equipment. A study of the escalators and elevators was done in 2015 and addresses these items.

At the back of this tenant space are rooms that contain the service areas for underneath the escalators. Although maybe a bit untidy, no water leakage was observed anywhere. It is assumed the spaces where code compliant at the time of construction. Modifications to these rooms would require a full code analysis.

5.11 UNIT 10 – LOTTERY KIOSK NEAR BANK OF MONTREAL

5.11.1 GENERAL

This tenant space is currently occupied by free standing casework for a Lottery Kiosk. The kiosk stands within the public concourse and includes a selling counter, side stand, electronic cashier and digital monitor connections, and advertising displays. In general, it is in very good condition.

Photo 5.11.1(1) – Overview of kiosk

Photo 5.11.1(2) – Overview of kiosk

C INTERIORS

C10 INTERIOR CONSTRUCTION

C1010 PARTITIONS

A wood door leads into a small storage room off the side for storing tenant merchandise and computers for safe night time keeping. Both door and room walls appear to be in good condition.

C1020 INTERIOR DOORS

A wood door leads into a small storage room off the side for storing tenant merchandise and computers for safe night time keeping. Both door and room walls appear to be in good condition.

C1030 FITTINGS

Space contains the casework, cashier machine, a digital monitor, special track lighting, and various displays provided by the tenant. Overall components appear in very good condition.

C30 INTERIOR FINISHES

C3010 WALL FINISHES

Brick tiled wall finish, same as public concourse, appears to be in good condition.

C3020 FLOOR FINISHES

Floor tile finish, same as public concourse, appears to be in good condition.

C3030 CEILING FINISHES

Drywall ceiling finish in this specific location, same as public concourse, appears to be in good condition.

5.12 UNIT 11 – SECURITY OFFICE

5.12.1 GENERAL

This tenant space located below the escalators is currently occupied by security services for the concourse and link between 200 and 220 Portage. The space appears to be good condition.

C INTERIORS

C10 INTERIOR CONSTRUCTION

C1010 PARTITIONS

Interior walls consist of drywall with paint finish and overall appear to be in good condition.

C1020 INTERIOR DOORS

The hollow metal room entry door appears to be in good working condition.

C1030 FITTINGS

Space contains minimal fittings provided by the tenant, which are in good condition.

C30 INTERIOR FINISHES

C3010 WALL FINISHES

It is anticipated that a new tenant would patch/repair damaged wall finishes from previous tenant.

C3020 FLOOR FINISHES

Floor finish appears to be in good condition.

C3030 CEILING FINISHES

Ceiling finish appears to be in good condition.

5.13 C-25 – MECHANICAL AND SERVICE ROOMS

5.13.1 GENERAL

Mechanical Room C-25, Janitor C-26, Fire Panel Room C-27, and the adjacent Men's and Women's washrooms on the southwest side of the concourse, belong to the City of Winnipeg, and are spaces not accessible to the public. As such, it is reasonable to have these spaces with minimal finishes that focus more on function rather than aesthetic value.

The Mechanical Room provides the supply air for the concourse. In general, this room architecturally fulfills its function, but as the years have gone by, it now requires some concrete floor repair and wall paint.

The Men's and Women's washrooms appear to contain original wall, floor and ceiling finishes. The toilet partitions, and some of the plumbing fixtures, also look original.

All doors and frames to these rooms are black painted hollow metal, with working hardware. Refer to fire separation and door hardware in this report for all doors and door hardware updates to meet fire and safety requirements.

In general, despite being over 40 years old, these spaces are in fair condition.

Photo 5.13.1(1) – Portion of mechanical room

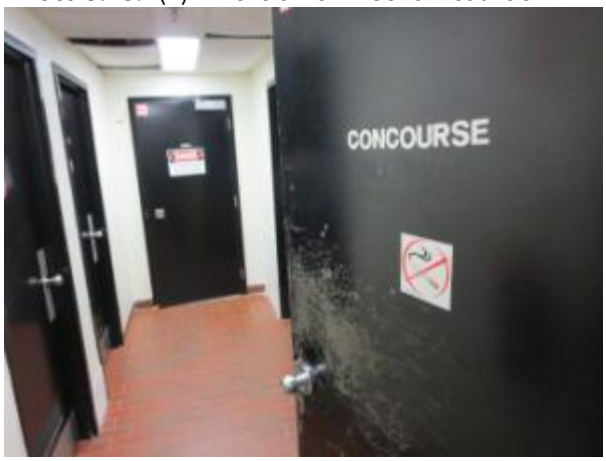


Photo 5.13.1(2) – Entrance from concourse into service corridor.

Photo 5.13.1(3) – Concourse washrooms. Typical.

C INTERIORS

C10 INTERIOR CONSTRUCTION

C1010 PARTITIONS

Interior walls consist of a mix of drywall or concrete with paint finish, and overall appear to be in fair condition. A large 2x2 ft clear opening in the Janitor to Mechanical Room dividing wall needs to be filled in with a rated assembly.

Recommendation: 5.13 - C1010.1
Patch/repair wall between Mechanical room C-25 and Janitor room

C1020 INTERIOR DOORS

All doors and frames to these service rooms are black painted hollow metal, with working hardware, and appear to be in fair condition. Clear room name signage could be put on the various doors to clearly identify room use. Refer to door hardware review in this report for all doors and door hardware updates to meet fire and safety requirements.

Recommendation: 5.13 - C1020.1
Paint, install room name signage, and minor repair to doors as necessary for mechanical room C-25 and adjacent support areas.

C102003 FIRE DOORS

The Janitor Room C-26 door is not equipped with a listed self-closing device and incorporates a ventilation grille such that the non-rated fire separation is not maintained as required by MBC Sentence 3.3.1.21.(3).

> Recommendation: 5.13 - C102003.1
> Equip the door with a listed self-closer and cover the ventilation grille with a layer of drywall.

C1030 FITTINGS

Spaces contain various fittings such as shelving, janitor sink, washroom fixtures, partitions and accessories, and are in fair condition.

C30 INTERIOR FINISHES

C3010 WALL FINISHES

Paint finish covers the drywall and concrete walls for most of the rooms, and are in fair condition. Mini tiles completely cover the washroom walls, and are in good condition.

C3020 FLOOR FINISHES

The concourse tile brick extends into the service spaces, except for painted concrete in the mechanical room, and mini tiles in the washrooms. The concrete floor in the mechanical room has some significant deterioration in certain locations that require repair. Refer to Structural review in this report for exposed rebar and concrete repair.

Photo 5.13 - C3020.1 – Miscellaneous concrete damage

C3030 CEILING FINISHES

Ceiling tile in service spaces is in poor condition. Mechanical room ceiling is painted and appears in good condition.

Recommendation: 5.13 - C3030.1
Replace ceiling tile with new for service spaces by mechanical room C-25

5.14 C-14 – MECHANICAL NEAR RICHARDSON BUILDING

5.14.1 GENERAL

Fan Room and adjacent service rooms in the Richardson Building on the northeast side of the concourse, belong to the City of Winnipeg, and are spaces not accessible to the public. As such, it is reasonable to have these spaces with minimal simple finishes that focus more on function rather than aesthetic value.

The fan room here removes the exhaust air from the concourse. This room has seen significant water penetration over the years, and as such, shows considerable damage to ceiling, wall and floor areas. Concrete deterioration, heavy staining, and rusting around door frames are clearly visible, in particular at the dividing wall between corridor and fan room.

All doors and frames to these rooms are painted hollow metal, with working hardware. Refer to door hardware section in this report for all doors and door hardware updates to meet fire and safety requirements.

In general, these spaces are in poor condition.

Photo 5.14.1(1) – Exhaust fan room. Water infiltration signs.

C INTERIORS

C10 INTERIOR CONSTRUCTION

C1010 PARTITIONS

Interior walls consist of a mix of drywall or concrete with paint finish, and overall appear to be in fair condition. Patch and repair concrete in Fan Room. Refer to Structural recommendation for concrete repair.

C1020 INTERIOR DOORS

All doors and frames to these rooms are painted hollow metal, with working hardware.

C102003 FIRE DOORS

The existing door and frame assembly located between the storage area C-41 and the corridor serving Mechanical Room C-14 is not a fire rated assembly to maintain the separation between the Concourse and the Lombard Place storage spaces. The separation is required by MBC 3.2.3.20.

Recommendation: 5.14 - C102003.1
Replace the existing door and frame assembly with a listed fire door and frame assembly having a 45 min fire-protection rating equipped with listed self-closing and latching hardware.

C30 INTERIOR FINISHES

C3010 WALL FINISHES

Paint finish covers the drywall and concrete walls for the rooms, and are in poor condition.

Recommendation: 5.14 - C3010.2
Repaint all drywall and concrete walls in mechanical room C-14

C3020 FLOOR FINISHES

The floor finish is rough tile in the corridor and exposed concrete in the fan room. The concrete floor in the fan room has some significant deterioration in certain locations that require repair. Refer to Structural review in this report for exposed rebar and concrete repair.

C3030 CEILING FINISHES

The ceiling in the fan room is in fair to good condition, except for one poor area of obvious repair from the past, which now shows signs of rusting from the rebar inside the concrete. Refer to Structural for review and repairs of this.

Recommendation: 5.14 - C3030.1
Repaint ceiling in fan room C-14

5.15 CORRIDOR BETWEEN 200 PORTAGE AND 220 PORTAGE

5.15.1 GENERAL

This 2-storey indoor space, complete with escalators and stairway below and skylights above, belongs to the City of Winnipeg, and is a connection corridor leading from Portage Avenue exterior, southward into the adjacent properties at two different levels. Except for the known issue with the leaking skylights, this space appears to be in very good condition.

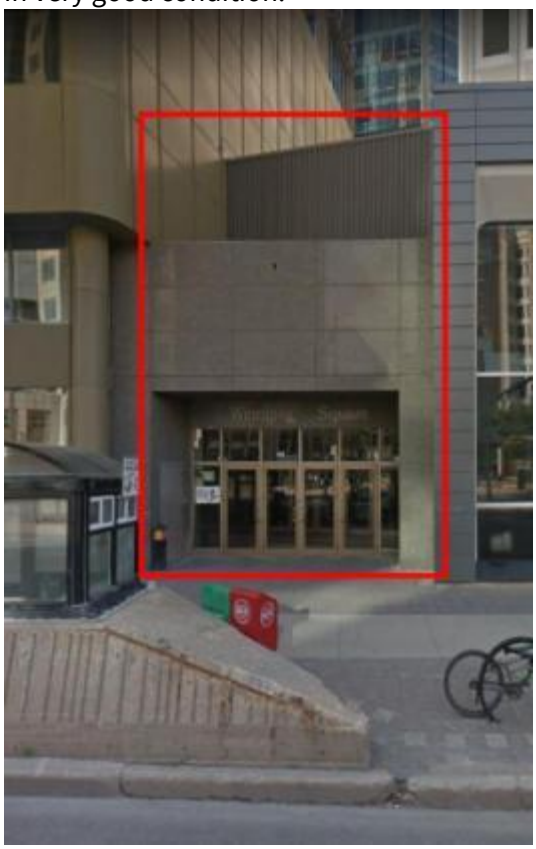


Photo 5.15.1(1) – Street entrance to corridor between 200 to 220 Portage

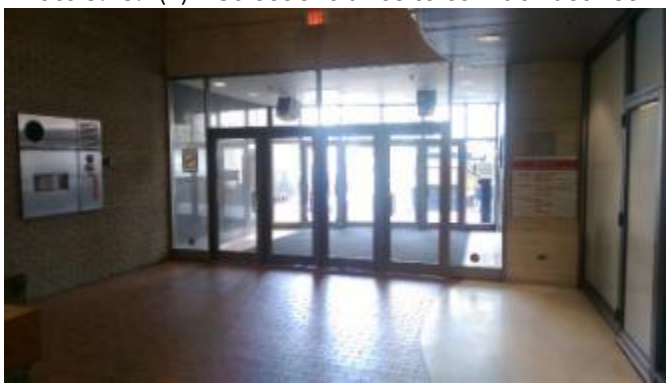


Photo 5.15.1(2) – Interior Photo of Entrance at grade for link between 200 and 220 Portage

Photo 5.15.1(3) and 5.15.1(4) – Interior Grade Level looking North and South

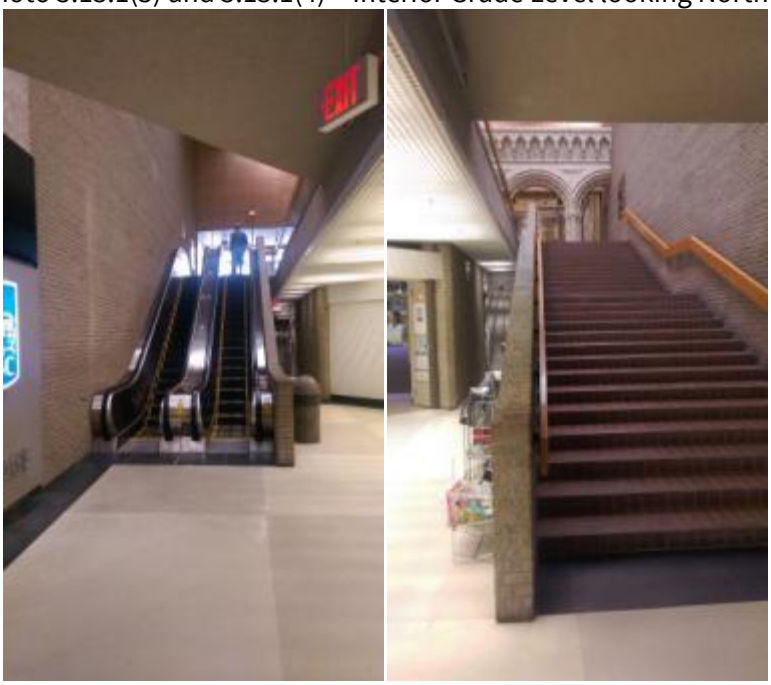


Photo 5.15.1(5) and 5.15.1(6) – Lower Level looking North and South

B SHELL

B20 EXTERIOR ENCLOSURE

B2010 EXTERIOR WALLS

Along Portage Ave, the exterior walls of polished granite panels appear to be in good condition. At the higher roof line, the metal cladding also appears to be in good condition. Refer to Structural review of the roof and skylight wall areas for water-tightness of envelope and any associated opinion of probable cost for repairs.

B2020 EXTERIOR WINDOWS

The skylights leak water in a number of different locations. Maintenance personnel relay that the leaks occur during every substantial rainfall event. In addition to general building deterioration, the rain water entry causes a real safety concern for people walking inside, as the water falls and collects in large puddles on the floors. To correct the leaks, all the skylight glass panels need to be removed and replaced with new, and to allow full replacement of the deteriorated surrounding seals. In addition, re-sealing at the skylight frame base on the roof is also required. Refer to Structural review of this component for additional associated opinion of probable cost and repairs.

B2030 EXTERIOR DOORS

The exterior aluminum entrance doors (8 doors in total plus surrounding glazing) at the Portage Ave entrance appear to be in good working condition.

C INTERIORS

C10 INTERIOR CONSTRUCTION

C1010 PARTITIONS

Interior walls consist of various construction and finish, including some high-end stone, brick, granite, tile, concrete, aluminum and glass materials. Overall condition appears to be in very good condition.

C1020 INTERIOR DOORS

Several interior doors in this space, mostly aluminum, appear to be in good working condition.

C1030 FITTINGS

Space contains a few fittings such as fire hose cabinets, signage, 3 public pay telephones, cameras, ceiling fans, and extensive down lighting. Unique to this space is the 16 foot high historical arched colonnade that has been inserted into the south end of the space. All fittings appear to be in very good condition.

C20 STAIRS

C2010 STAIR CONSTRUCTION

The tile brick stair with wooden handrails appear to be in very good condition.

C30 INTERIOR FINISHES

C3010 WALL FINISHES

Interior walls consist of various construction and finish, including some high-end stone, brick, granite, tile, aluminum and glass materials. Overall construction appears to be in good condition.

C3020 FLOOR FINISHES

Various floor finishes, including tile brick, porcelain tile and polished granite appear to be in good condition.

C3030 CEILING FINISHES

Ceiling finish appears to be in good condition. Some staining from the skylight leaks need to be cleaned up. High scaffolding would have to be used to access the ceiling clean up.

Recommendation: 5.15 - C3030.1
Cleaning of water staining on concrete ceiling and beams for corridor connecting 200 and 220 portage.

D SERVICES

D10 CONVEYING

D1010 ELEVATORS & LIFTS

The review of these items is for code compliance and not for condition of the specific equipment. A study of the escalators and elevators was done in 2015 and addresses these items.

D1020 ESCALATORS & MOVING WALKWAYS

The review of these items is for code compliance and not for condition of the specific equipment. A study of the escalators and elevators was done in 2015 and addresses these items.

6 MECHANICAL SYSTEMS

D SERVICES

D20 PLUMBING

D2010 PLUMBING FIXTURES

D201001 WATERCLOSETS

Three floor-mounted flush tank type vitreous china water closets installed in the men's and women's washrooms C-28 and C-29 (located adjacent to Mechanical Room C-25). The water closets appear to be original to the building (approx. 39 years old). These units are beyond the theoretical service life, however, could continue to operate with proper service and maintenance. These washrooms are not fully accessible to the public where aesthetics are of a greater importance and it is presumed that these washrooms are not frequently used. Consideration could be given to water efficient replacements to meet current industry standards for water efficiency.

Recommendation: D201001.1
Replace water closets with high efficiency equivalents.

Photo: D201001.1 – Existing water closet

D201002 URINALS

One wall-mounted flush valve type vitreous china urinal installed in Men's Washroom C-28 (located adjacent to Mechanical Room C-25). The urinal does not appear to be original to the building, however the flush valve appears to be of an older vintage and possibly original. As with the water closets, the urinal could continue to operate with proper service and maintenance. These washrooms are not fully accessible to the public where aesthetics are of a greater importance and it is presumed that these washrooms are not frequently used. Consideration could be given to water efficient replacements to meet current industry standards for water efficiency.

Recommendation: D201002.1
Replace urinal with high efficiency equivalent.

Photo: D201002.1 – Existing urinal

D201003 LAVATORIES

Two wall-mounted vitreous china lavatories with manual faucets installed in the men's and women's washrooms C-28 and C-29 (located adjacent to Mechanical Room C-25). The men's and women's washroom lavatories and faucets do not appear to be original and are in good condition. The lavatories could continue to operate with proper service and maintenance. The faucets do not appear to be high efficiency and could be replaced, however, it is presumed that these washrooms are not frequently used. Consideration could be given to water efficient replacements to meet current industry standards for water efficiency.

Recommendation: D201003.1
Replace lavatories with high efficiency equivalent.

Photo: D201003.1 – Existing lavatory

D201004 SINKS

One floor-mounted composite mop sink complete with manual wall-mounted service faucet is installed in Janitor Room C-26 (located adjacent to Mechanical Room C-25). The mop sink is in poor condition and the faucet appears to be in fair condition. The mop sink looks to be original and the service faucet appears to have been replaced. The unit is approaching the end of the theoretical service life, however, could continue to operate with proper service and maintenance. The estimated useful life remaining is 5 years.

Recommendation: D201004.1
Replace mop sink and service faucet

Photos D201004.1 – Mop sink and service faucet

D2020 DOMESTIC WATER DISTRIBUTION

D202001 PIPES AND FITTINGS

Domestic water is supplied to the concourse in Mechanical Room C-25. The water service is 2 inch diameter copper pipe entering the room through the north wall and is routed down towards the meter. The service is separate from the fire water service and there does not appear to be a cross connection. The City of Winnipeg meter reference number is 01630666 and according to the inspection tag, it was last tested in May 2015. After the meter, the system splits into two branches, one serving the few concourse plumbing fixtures and tenants and a second supplying cooling water to the chiller condenser.

The domestic water service is provided with premise isolation in the form of a dual check valve assembly back flow preventer which appears to have been installed in the last two years. The back-up water supply branch line to the chiller is also provided with a backflow preventer. Both backflow preventers are complete with inspection tags.

The domestic water service and branch piping is entirely copper and appears to be in good condition. This type of system typically has a

theoretical service life of approximately 50 years and in some cases systems can continue to operate up to 100 years with proper service and maintenance.

The domestic water piping insulation is in varying condition and some sections are missing. The available asbestos reports do not identify the pipe insulation to have asbestos containing materials, however, it is recommended that further testing be conducted prior to major improvements.

Recommendation: D202001.2
Repair domestic water insulation in various locations. Repair to be done as part of maintenance or when major renovations occur.

Photo D202001.2 – Missing insulation on drainage piping.

D202002 VALVES AND HYDRANTS

The domestic water system valves range in age with some appearing to be original. In general, no significant issues were observed on site, however, valve replacement should be actively managed in the facility maintenance and service program.

Recommendation: D202002.1
Replace domestic water valves as part of an on-going maintenance program.

D202003 DOMESTIC WATER EQUIPMENT

The domestic hot water system consists of a single electric hot water storage tank located in Mechanical Room C-25. According to the available construction drawings, the storage tank only appears to serve the plumbing fixtures in Washrooms C-28 and C-29, and Janitor Room C-26. The water heater is 47.8 U.S. gallons, manufactured by Giant model no. 152ETE-3S8M-E8 complete with heating coils for a maximum capacity of 4.5 kW. Based on the nameplate, the hot water tank appears to have been installed in 2010. It is approaching the end of the theoretical service life of 10 years, however it could continue to operate for several years with proper maintenance and service. Replacement can be expected within 5 years.

Recommendation: D202003.1
Replace hot water heater with similar capacity model.

Photo: D202003.1 – Hot Water Tank

D2030 SANITARY WASTE

D203001 WASTE PIPE AND FITTINGS

The concourse appears to be served by two 6-inch diameter sanitary drain services entering within the two mechanical rooms with sewage pits: Mechanical Room C-14 and Mechanical Room C-25. Both sewage pits collect sanitary waste from the various fixtures and the adjacent sump pits and discharge directly into the respective main drains which are connected to the municipal main by gravity.

The sanitary drainage and vent system appears to consist primarily of the original cast-iron piping with mechanical joints for large diameter pipe and copper for smaller diameter pipe (less than 3 inch). The visible piping in mechanical rooms is in poor-to-fair condition with some surface corrosion. Concealed piping was not exposed during the visit and the condition could not be confirmed. Typically, such installations can be expected to have a minimum service life of approximately 50 years.

Drainage piping in the crawlspace has seen a humid, wet environment and is expected to be in very poor shape. The majority of the new piping installed in the crawlspace is plastic PVC piping which has a theoretical service life beyond 100 years and is expected to not be adversely affected by the humid environment.

Condensate drainage installed in the ceiling plenum was observed to be regular PVC drainage piping. The ceiling plenum is a return air plenum and is required to have fire resistant piping installed per current Manitoba Plumbing Code. It is recommended the condensate piping installed in the ceiling is replaced with fire resistive pipe. This similar install happens in various locations.

ABS drainage piping has been installed for some of the drains located in the mechanical room. ABS piping is not permissible by current code for installation in above grade commercial buildings. It is recommended the piping be replaced with an approved piping material.

Sanitary vent piping comes up in various corners of the portage and main intersection. The piping is in similar condition as the original cast piping and should be observed for replacement as part of a replacement plan.

> Recommendation: D203001.1
> Replace existing sanitary and sanitary vent cast iron pipe with new plastic pipe. Replacement can be done in sections as part of a replacement plan.

Photo D203001.1 – Corroded sanitary Drainage Piping

Recommendation: D203001.2
Replace combustible pipe installed in ceiling plenum with new fire resistant piping.

Photo D203001.2 – Combustible piping in ceiling plenum.

Recommendation: D203001.3
Replace ABS piping with pipe material acceptable commercial buildings above grade.

Photo D203001.3 – ABS drainage pipe from RPZ discharge

D203002 VENT PIPE AND FITTINGS

Refer to Section D203001 for the details related to venting system.

D203003 FLOOR DRAINS

Floor drains are provided throughout the concourse in the mechanical rooms, elevator pits, escalator pits, and at exterior stair landings below grade. The floor drains are original and in some cases are in fair condition.

D203004 SANITARY AND VENT EQUIPMENT

As described above, the concourse is equipped with two sewage pits that collect sanitary waste from the various fixtures and tenant service connections. Both sewage pits are original however, appear to be in good condition with recent piping, pump and control upgrades.

The concourse is also equipped with sump pits immediately adjacent to the sewage pits. The pits do not include any pumps and according to the available construction drawings, they both drain into the adjacent sewage pit. Both sump pits are original however, appear to be in good condition.

The sewage and sump pits were not opened for review of the internal condition during the site visit. Based on external observations and the theoretical service life, the pumps have an estimated remaining useful life of 5-10 years.

The crawlspace below the circular public corridor is also equipped with sump pits. There are four floor hatches which provide access to the crawlspace and the sump pits. Access was only available to two of the four hatches due to over grouting around the hatches. SMS

returned to site at a later date to observe the remaining two locations but physical access was not possible. Visual observation confirmed that three hatches include a sump pump and other appears to be to access the main cleanout for one of the drainage lines. The sump pits, piping, and pump cables appear to have been replaced in recent years. Facility personnel have confirmed they were installed in 2000 and that all pumps are operational. At the time of the site review, standing water was not observed in the crawlspace, however, the space was very humid and there was a significant amount of moisture on the underside of the steel deck. The crawlspace requires a significant amount of work to rectify the moisture issue. It is recommended to grade the crawlspace, provide a vapour barrier and additional sump pits to allow for the water to drain properly. Refer to Structural and ventilation sections for further detail.

It was observed that the sushi restaurant in the concourse does not have a grease interceptor. The restaurant uses a small counter top deep-fryer which is presumed to be cleaned within the space. A grease interceptor is require by code and should be installed.

Recommendation: D203004.1
Provide additional sump pits for new weeping tile and graded crawlspace as recommended under the structural section.

Photo: D203004.1 – Water droplets on structure in crawlspace

Recommendation: D203004.2
Provide additional sump pits for new weeping tile and graded crawlspace as recommended under the structural section.

D2040 RAIN WATER DRAINAGE

D204001 PIPE AND FITTINGS

The concourse is primarily underground and does not have an extensive storm drainage system. However, the piping for the exterior surface drainage and stair landings at the various entry points do pass through the concourse ceiling space. There are also four roof drains connected to rain water leaders around the skylight in the corridor between 200 and 220 Portage Avenue. It is unclear on which systems these components are connected to, however, review of the available construction drawings indicate they do not drain into the concourse. It is likely that they connect to the base building systems of the adjacent properties.

Based on the small sample of pipe observed during the site review, the piping consists of original cast-iron piping with mechanical joints. In general, these systems appear to be in fair condition. Typically, such installations can be expected to have a minimum service life of approximately 50 years and can be expected to have an estimated remaining useful life of approximately 10 years.

A large portion of the ceiling near the 201 Portage concourse entrance was exposed and observed during the site review. This area has seen significant leaks over the years which appear to be a result of cracks in the structure. Drain pans with drainage piping have been installed below the worst areas to help mitigate damage to the ceiling, however, the Facility personnel reports that this has not been entirely successful. Refer to the structural recommendation for local repairs of the roof structure. Based on visual review, the storm drainage piping in this area does not appear to be the source of the issue.
The large storm drain which passes above central circular corridor is welded construction and appears to be in good condition. No evidence of leaks or corrosion was observed during the site review.

D30 HVAC

D3010 ENERGY SUPPLY

The facility utilizes electricity as the energy source for both heating and cooling. From our review the facility does not appear to be fit with any natural gas services.

There is the potential to provide natural gas to the facility to allow for lower cost heating in winter months. Natural gas heating although not

carbon conscious, is more economical at the moment. A feasibility and concept design would have to be developed to introduce natural gas to the facility.

D3030 COOLING GENERATING SYSTEMS

D303002 DIRECT EXPANSION SYSTEMS

The concourse is cooled by a direct-expansion (DX) type system which includes a chiller connected to a DX cooling coil mounted in the main air handling unit in Mechanical Room C-25. Refer to Section D304001 Air Distribution, Heating, and Cooling for further details on the air handling unit.

The chiller is a water-cooled, centrifugal chiller manufactured by Trane with a nominal cooling capacity of 100 tons utilizing refrigerant R-22. The chiller system is configured to operate in two different ways. The original design was configured such that domestic cold water passes through the condenser and is discharged directly to drain. This configuration is highly inefficient as it consumes a significant amount of domestic water. In 1989 (estimated), the system was re-configured to reject heat into the glycol heat reclaim loop with the expectation of reducing the domestic water consumption. This was achieved with the addition of a heat exchanger and circulation pump on the condenser side of the chiller. At some point since then, the connection to the reclaim system was abandoned with the piping on the chiller side cut and capped. The glycol heat reclaim system appears to be intact and operational. We suspect that the operation for the unit did not allow for many hours within a year where there is both cooling and heating requirements within the space, rendering this heat reclaim attempt useless.

The chiller is original to the building, however, it was partially re-built in August 2015. The chiller appears to be in fair condition however, it is beyond the theoretical service life despite the re-build.

The chiller uses refrigerant R-22 which is currently being phased out by the Montreal Protocol and will no longer be produced after January 1, 2020. After this date, servicing this unit will become more difficult and very costly as refrigerant will not be readily available. The chiller is also not energy efficient and is wasteful seeing that it is a once through water cooled unit.

Given the items listed above it is recommended that the chiller be replaced in the near future with a system that meets current energy conservation recommendations. Although not explicitly excluded from

the National Energy Code there is no reference to cooling systems using domestic water as it is not water conscious and rather costly.

An air cooled condenser could be sized for the required load within the concourse and placed on the roof between 200 and 220 Portage Avenue. The air cooled condenser would replace the domestic water cooled system. A detailed study would need to be performed to ensure the roof can structurally support the unit and stakeholder engagement would be required as the unit would potentially obstruct views and have acoustical impacts. Should work occur to re-roof or replace the skylight on the roof, a review of the structure should be done for the inclusion of this unit.

Recommendation: D303002.1
Replace chiller with new energy efficient model with air cooled condenser located on the roof of the link between 220 Portage and 200 Portage.

Photo: D303002.1 – Existing Chiller

D3040 DISTRIBUTION SYSTEMS

D304001 AIR DISTRIBUTION, HEATING, AND COOLING

The ventilation system for the building consists of a single air handling unit located in the Mechanical Room C-25. The unit was manufactured by Markhot, model number MVT-11K, with a capacity of 19,000 CFM. This air handling unit supplies 100% outside air to all areas of the concourse including the public corridors and the tenant spaces. The air handling unit is complete with a filter section, a glycol heat reclaim pre-heat coil, a 200 kW electric heating coil, a blower section, a second 200 kW electric heating coil, and a multi-circuit direct-expansion

cooling coil. The unit supplies heating and cooling supply air to the concourse via the distribution ductwork routed to each tenant space and a pressurized ceiling plenum with slot diffusers over the circular public corridor.

The pressurized plenum has some missing slats which would reduce control over where air is directed. The air is still managing to enter the concourse occupied areas and therefore no specific issues related to comfort or conditioning are observed but for the system to operate as designed the slats should be replaced.

The unit and the majority of its components are original to the building and from the exterior, it appears to be in fair condition. The electric heating coils appear to have been installed in the 1990s and it is suspected that they replaced the original steam heating coils when the downtown district steam heating system was decommissioned. Overall, the air handling unit and its components are beyond the theoretical service life and replacement is recommended.

Recommendation: D304001.1
Replace air handler with one that is of similar capacity and includes a re-claim heat coil, electric heating coils and Dx coil.

Photo: D304001.1 – Existing Air Handler

Recommendation: D304001.2
Replace missing slates in metal ceiling to improve pressurized plenum distribution.

As mentioned above, the distribution ductwork splits into two main zones; public corridors and tenant spaces. The supply air to the public corridor zone can be heated by the air handling unit heating coils and cooled by the cooling coil. While the supply air to the tenant spaces is heated by the first heating coil but can bypass the second heating coil and the cooling coil. Each tenant space is provided with a duct-mounted electric heating coil controlled by wall-mounted thermostats in each space. The ductwork and electric heating coils are original to the building and are approaching the end of the theoretical service life. Certain sections were observed without insulation and/or duct sealant. Replacement of the distribution ductwork should be considered during major renovations.

Recommendation: D304001.3
Replace distribution ductwork and electric coils serving tenant spaces

Photo: D304001.2 – Corroded ductwork with no insulation

Ventilation Rates:

It is suspected that some tenant spaces would not meet current code requirements for fresh air as outlined by ASHRAE 62.1. The hair dresser is an example of a space that may be an issue. Should the Concourse be substantially renovated, the

ventilation rates to all spaces would need to meet current code requirements.

Vestibule Pressurization:

Currently, three of the four corner connections to adjacent high buildings do not have vestibules. Under current code a separation would be required at all buildings and vestibule pressurization would be required. The vestibules that separate the concourse from the adjacent high buildings (TD-RBC building, Richardson building, MTS Building, Royal Bank building and Scotia Bank building) do not include pressurization systems to mitigate air flow issues between buildings and smoke movement. It is recommended that pressurization systems be added to these vestibules to improve overall building safety. The pressurization systems would need to supply tempered outdoor air to the vestibule on fire alarm in any of the adjacent spaces or the concourse itself. The systems need to be on emergency power. Refer to architectural section for details on the requirements of the vestibules and to the electrical section for the revised generator size.

Recommendation: D304001.4
Provide vestibule pressurization to the existing vestibules and the proposed new vestibules which would be required to meet current code.

Crawlspace Ventilation:

As mentioned in Section D203004 Sanitary and Vent Equipment, the crawlspace is very humid. The space is not ventilated as confirmed from our site visit. The structural steel floor pan is significantly corroded and moisture was observed dripping from the structure. The addition of a suitable ventilation system is highly recommended in conjunction with the required structural remediation and upgrades and providing proper drainage. Refer to structural section for proposed crawlspace grading and vapour barrier install.

There is the potential to utilize the large amount of ventilation air from the existing air handler to ventilate the crawlspace. In an ideal situation air would be supplied to the crawlspace in several locations to allow for good distribution. Seeing as the concourse has limited access to grade we would need to cross

ventilate from the supply side of the concourse to the exhaust side near the Richardson building. The method of ventilation and detailed connection points would need to be reviewed as part of the concept development in conjunction with the work for grading the crawlspace.

The crawlspace is believed to extend below the tenant areas which currently have no access. These areas are expected to be in similar condition as the crawlspace which can be observed. Similar remediation would apply to these areas as well.

Recommendation: D304001.5
Add crawlspace ventilation systems to the concourse

Fire Dampers:

The original construction drawings show that the system includes fire dampers on the distribution ductwork. Fire dampers appeared to be installed on the main supply ductwork leaving Mechanical Room C-25, however, up to date inspection tags were not observed. It is presumed that all the fire dampers are original to the building and given the age, they are likely not fully operational. It is recommended that given the age and the current installed condition the fire dampers be replaced with new ones.

A few mechanical openings from Mechanical Room C-25 and Janitor room C-26 are not equipped with fire dampers. By current code any ductwork penetrating a mechanical fire separation is required to be protected by a fire damper. Install fire dampers in the various openings currently not protected in order to maintain the janitor room fire separation required by MBC 3.3.1.21.(3).

Recommendation: D304001.6
Replace all existing fire dampers with new ones conforming to ULc standards.

Photo D304001.5 – Missing fire dampers in mechanical room wall.

Recommendation: D304001.7
Provide new fire dampers on ductwork currently not protected entering and leaving mechanical room C-25 and Janitor room C-26

D304005 GLYCOL DISTRIBUTION SYSTEMS

As mentioned in previous sections, the concourse is equipped with a glycol heat reclaim system that extracts heat from building exhaust air which is used to pre-heat outside air to the main air handling unit. This system includes glycol coil GC-1 in the main air handling unit, glycol coil GC-2 in the exhaust unit, and two circulation pumps, P-1 and P-2, located in the Mechanical Room C-25. As discussed in Section D303002 - Direct Expansion Systems, in 1989, this system was modified with the addition of a plate-and-frame heat exchanger connected to the chiller condenser which was subsequently disconnected and abandoned. The system includes an expansion tank but does not appear to include an automatic glycol fill station. A manual station was provided. The piping could not be observed as it is completely insulated. It is expected to be original with a theoretical service life of 50 years. The majority of the glycol heat reclaim system is original and the pumps appear to be in poor condition. The system is beyond the theoretical service life and requires replacement. Replacement of this system should also include removal of the abandoned heat exchanger system.

Recommendation: D304005.1
Replace glycol heat reclaim system including all piping, pumps and provide proper fill controls.

Photo: D304005.1 – Glycol Re-claim system in Supply air Handler

D304007 EXHAUST SYSTEMS

The concourse is served by a central dedicated exhaust system that consists of a single air handling unit located in the Mechanical Room C-14. The unit was manufactured by Markhot, model number CSAH-IOJ, with a capacity of 17,000 CFM. This air handling unit exhausts all areas of the concourse including the public corridors and the tenant spaces. The air handling unit is complete with a filter section, a glycol heat reclaim coil GC-2, and a blower section. The unit exhausts air from the public corridors via a transfer air grille ducted to the mechanical room and from the tenant space via exhaust distribution ductwork from grilles in each space back to the unit.

The unit and the majority of its components are original to the building and from the exterior, it appears to be in fair condition. The exhaust air handling unit and its components are beyond the theoretical service life and replacement is recommended.

Recommendation: D304007.1
Replace general exhaust system and glycol reclaim coil

Photo: D304007.1 – Exhaust air handler and glycol heat reclaim.

The washrooms and janitor room adjacent to Mechanical Room C-25 are exhausted by a separate duct routed back to the exhaust fan in Mechanical Room C-14. According to the available construction drawings, this ductwork connects to the general exhaust system immediately before the fan complete with a back draft damper. Replacement of this exhaust branch is included in Recommendation D304007.1 above.

The sushi restaurant tenant space (Unit 5 - 365 Main Street) appears to offer fried food as part of the menu despite the lack of a code compliant kitchen exhaust system. When cooking operations produce grease laden vapours, current code requires that the kitchen be equipped with a Type 1 exhaust canopy hood (as defined by NFPA 96) along with a dedicated source of make-up air. This tenant space does not have either. Facility personnel have confirmed that the installation of such a system is the responsibility of the tenant. The concourse currently has no provisions for a dedicated kitchen exhaust system.

D3050 TERMINAL AND PACKAGE UNITS

The majority of the concourse entry vestibules at the stairwells are provided with electrical cabinet heaters recessed into the walls and ceilings. These units are controlled by local thermostats. The units appear to be original to the building and in some cases are in poor condition. The heaters are beyond the theoretical service life and replacement is recommended.

The entrance vestibule for the corridor between 200 and 220 Portage Ave is equipped with a concealed force flow unit which is electric along with two ceiling mounted unit heaters, also electric. The unit heaters appear to be of a newer vintage and were likely installed to supplement the force flow unit. Both unit types are controlled by remote wall-mounted thermostats. The force flow heater is presumed to be original and beyond the theoretical service life of 13 years. Despite being newer, the unit heaters are not the typical unit type for this space. Complete replacement of the heating system for this vestibule is recommended along with the other concourse vestibules.

Recommendation: D3050.1
Replace all vestibule heaters and controls. Remove unit heaters and provide supplemental heat in a cabinet style heater to improve ceiling clearance.

Photo: D3050.1 – Ceiling mounted vestibule heater

D3060 CONTROLS AND INSTRUMENTATION

The concourse mechanical systems are partially controlled by a pneumatic control system manufactured by Johnson Controls. The system includes the original compressor, a DeVilbiss model JUBJ-5554, and newer DeVilbiss air dryer. The control system includes a control board with several gauges and indicator lights. The majority of the system appears to be original and is generally beyond the theoretical service life. Given that the majority of the mechanical equipment serving the concourse is at or beyond the end of the service life, a full replacement of the control system is recommended to coincide with major equipment replacement.

At some point in the past, the portions of the concourse mechanical systems were converted to a digital control system which is evident by the Johnson Controls Metasys control panel located in Mechanical Room C-25 and another panel located in the fire panel room. The digital control system is operated and monitored by the City of Winnipeg Facility Management System.

It is recommended that all pneumatic controls be replaced with electronic components and connected to the direct digital control (DDC) system. Some of the digital controls are of an older vintage and will likely require upgrades/replacements to support systems and components available today.

Replacing the pneumatic controls with digital controls will yield a net positive energy benefit as the main compressor is large and a system of this size and age is prone to leaks in non-accessible areas.

Recommendation: D3060.1
Replace pneumatic and obsolete digital controls as part of ongoing system maintenance and major upgrades.

Photo: D3060.1 – Pneumatic control compressor and air dryer

D40 FIRE PROTECTION

The majority of the concourse is protected by a wet sprinkler system and a standpipe hose valves served by a dedicated fire water service entering at the north wall of Mechanical Room C-25. The service is a dedicated 6-inch diameter galvanized steel pipe buried below Portage Avenue where it connects to water main. The system does not include a fire pump and operates solely on the municipal water service pressure. The piping between the water main and mechanical room wall is original, including the main shut-off valve and curb stop. The original piping passes through the wall and connects to a new

sprinkler supply line and valve assembly installed in 2014. This upgrade included installation of new piping (galvanized steel and black steel) within the mechanical room, a new backflow preventer, new isolation valves, new standpipe main valve and new supervisory devices, etc.

Discussions with facility personnel indicated that the water main shut-off valves at the municipal main is no longer operable and require replacement. This was known at the time of the 2014 upgrade, however, it is understood that replacement was and is still cost prohibitive. This is due to the fact that the service piping and shut-off valves are incased within concrete below Portage Avenue and require two lanes be closed to excavate for access.
In general, the fire protection system components upgraded in 2014 are in good condition and can be expected to have an estimated remaining useful life of 20-30 years. The original portions of the service, including the main shut-off valve, are beyond the theoretical service life and require replacement.

Recommendation: D40.1
Replace fire service shut-off valve in street and replace full service into the building

D4010 SPRINKLERS

D401001 SPRINKLERS AND RELEASING DEVICES

The majority of the concourse is protected by a wet sprinkler system with pendant, semi-recessed pendant, and upright sprinkler heads throughout. In general, standard response sprinkler heads were observed throughout, however, both standard response and quick response sprinkler heads were noted in the corridor accessing 201 Portage Avenue. NFPA 13 does not permit a system to include both types of heads. The majority of the sprinkler heads appear to be original to the building with the exception of some in the 201 Portage concourse area; the exact age of the sprinkler heads could not be confirmed. The sprinkler heads are approaching the end of the theoretical service life. They could continue to operate for several years, however, after 50 years in service, the sprinklers will require testing to confirm proper operation. Subsequent testing would then be required every 5 years going forward, and if any one sprinkler head fails, all the heads would require replacement.

Another important consideration is the fact that the sprinkler heads do not have split escutcheons. Therefore, the sprinkler system must

be drained to remove the surrounding ceiling. A few sprinkler heads were missing escutcheons in some tenant's spaces.

Given the conditions described above, it is recommended that the sprinkler system be replaced throughout the concourse complete with quick response heads.

Recommendation: D401001.1
Replace the standard response sprinklers in corridor to 201 Portage with quick response sprinklers.

Recommendation: D401001.2
Replace all standard response sprinkler heads with quick response sprinkler heads and split escutcheons for the entire facility.

Photo D401001.2 – standard response original sprinkler head.

During the site review, several areas were observed without sprinkler coverage. The escalator service rooms, the corridor to Mechanical Room C-14, and the corridor/escalator/vestibule at the Richardson Building entry point did not appear to be sprinklered. For this reason the concourse cannot be classified as a fully sprinklered building as defined by the Manitoba Building Code Clause 3.2.1.5.(1)(a). It is recommended that sprinkler coverage be added to these spaces and any other areas without adequate coverage.

Recommendation: D401001.3
Provide sprinkler coverage in the escalator machine rooms and IT room to make the facility fully sprinklered.

The crawlspace is another space without sprinkler coverage. In this case, it is a non-combustible, concealed space with limited access and sprinklers are not required based on the requirements of NFPA 13.

The entrance stairwells and vestibules are equipped with wet system sprinkler heads. Some of the sprinkler piping was observed with insulation suggesting that there have been issues with freezing. It is recommended that the system be modified to include dry sprinkler heads or a dry system to prevent freezing.

Recommendation: D401001.4
Replace wet sprinkler heads at vestibule entrances with dry type head.

D401002 SPRINKLER WATER SUPPLY EQUIPMENT AND PIPING

The sprinkler system piping appears to consist of schedule 40 black steel with threaded fittings on the sprinkler distribution piping and Victaulic couplings on the larger diameter main lines. The majority of the piping appears to be original to the building with the exception of the service header piping upgraded in 2014. Generally, the piping is in fair condition and facility personnel did not report any significant issues related to piping leaks. The annual inspection report prepared by Vipond yielded no deficiencies. The report can be found in Appendix F. The original portions of the system are approaching the theoretical service life, which for this type of system is approximately 50 years. It is recommended the sprinkler piping be replaced along with the sprinkler heads.

Recommendation: D401002.1
Replace sprinkler system piping throughout facility

Photo D401002.1 – Black steel sprinkler piping.

D4020 STANDPIPE SYSTEMS

D402001 STANDPIPE EQUIPMENT AND PIPING

The concourse is protected by a standpipe system complete with 2-1/2 inch hose valves located the circular public corridor. The system appears to be original aside from the upgrades listed in Section D40 - FIRE PROTECTION. The service life for the standpipe system typically matches that of the sprinkler system at 50 years. The system appears to be in fair condition. A fire protection inspection report issued by Vipond Inc. dated September 26, 2017 was provided for review; the report did not identify any deficiencies. The report can be found in Appendix E

Similar to the sprinkler system, the standpipe system piping appears to consist of schedule 40 black steel with threaded fittings on the sprinkler distribution piping and Victaulic couplings on the larger diameter main lines. The majority of the piping appears to be original to the building with the exception of the service header piping upgraded in 2014. Generally, the piping is in fair condition and facility personnel did not report any significant issues related to piping leaks. The original portions of the system are approaching the theoretical service life, which for this type of system is approximately 50 years. We would recommend replacement be scheduled as the system is nearing its theoretical service life.

The system is equipped with a fire department connection at grade extending up from a planter on the south end of the concourse in front of 200 Portage Ave (the Bank of Nova Scotia).

<u>Recommendation: D402001.1</u>
Replace standpipe hose valves, hoses and cabinets along with the piping from the main header.

Photo D402001.1 – Hose valve in concourse

D4030 FIRE PROTECTION SPECIALTIES

D403001 FIRE EXTINGUISHING DEVICES

Stand alone portable fire extinguishers on wall brackets were observed during the visit in the mechanical rooms. The fire extinguishers appeared to be mostly ABC dry chemical type complete with certification tags. The fire extinguishers appear to in fair condition. Ongoing inspection in accordance with NFPA 10 is recommended to ensure proper operation.

7 ELECTRICAL SYSTEMS

D SERVICES

D50 ELECTRICAL

D5010 ELECTRICAL SERVICE AND DISTRIBUTION

D501003 MAIN SWITCHBOARDS

MB Hydro provides two 3000 Amp rated bus ducts to 2 separate switchboards. One bus duct terminates at a 2000 Amp 120/208v/3ph/4w main switchboard in electrical room C-24. The other bus duct terminates at a 3000 Amp 120/208v/3ph/4w switchboard which serves the electric heating system. The “heating” switchboard is located in mechanical room C-25.

The main switchboard manufacturer is Canadian General Electric model #LL6916 S-31. The switchboard has 3 sections, one for the incoming cables and the main breaker and the other 2 sections house breakers for the MCC, condensing unit and for panels throughout the space. There are 2 available spaces to add breakers if required. The “heating” switchboard is in mechanical room C-25 and is manufactured by Federal Pioneer model # 4821-A1-90.

The main switchboard in electrical room C-24 is in fair condition and is original to the building (1978).The “heating” switchboard was installed in the mid 1980’s when the heating system was converted over to electric heat. The switchboards are in good to fair condition and are approaching their life expectancy. Switchboards can exceed their average life expectancy if regular maintenance is performed and breakers are still available to be installed. Ideally a replacement of the switchboards is recommended, but due to the complexity of the building and length of shut down(s) it is recommended to replace circuit breakers in the switchboards. A switchboard replacement may take weeks but a circuit breaker may only take hours to replace.

An annual electrical maintenance program by the City of Winnipeg is in place to clean, re-torque, megger test etc all electrical switchboards, distribution panels, MCC etc. It is our understanding this program is going to proceed shortly and will last 5-7 years.

The last major shut down for maintenance on the main switchboards occurred approximately 12 years ago. There are a lot of implications and co-ordination involved for MB Hydro to perform this work as there

is no main disconnect to the concourse service distribution. The service distribution is split with 6 other buildings within the area. If a fire occurred in the concourse and the electrical service to main distribution was to be disconnected this would also affect other buildings. This is another reason to not replace the main switchboards and replace the breakers instead.

There is no electrical single line diagram in the electrical room and there is no labeling or indication of multiple distribution on the one service with no means to isolation disconnect.

Recommendation: D501003.1
Replace circuit breakers in main switchboard

Photo D501003.1 – Main Switch Board

Recommendation: D501003.2
Replace circuit breakers in “Heating” Switchboard.

The age and condition of the bus ducts are unknown. It is recommended to request a report conducted by MB Hydro on their bus ducts to assess the condition.

Recommendation: D501003.3
Bus Duct Condition Report

It is recommended to perform Infra-Red scanning and re-torque all connections in the switchboards.

Recommendation: D501003.4
Infra-Red Scan and Re-torque Switchboards

It is recommended to produce an autocad electrical single line diagram under plexi-glass in the main electrical room.

Recommendation: D501003.5
Produced a single line diagram

D501004 INTERIOR DISTRIBUTION TRANSFORMERS

A step down 347/600/120/208v/3ph/4w 45kVA suspended transformer for emergency panel EM-100 is located in electrical room C-24.

The transformer is in fair condition and is approximately 30 years old. It is recommended to replace the transformer.

Recommendation: D501004.1
Replace transformer including primary and secondary feeders and maintenance work.

Photo D501004.1 Transformer

D501005 PANELS

Central Distribution Panel (CDP):

Two 120/208v/3ph/4w CDP's (H-100 & H-200) serve panelboards throughout the concourse and are fed from the main switchboard.

CDP H-100 is manufactured by Canadian General Electric and is rated for 400 Amps. The CDP is located in electrical room C-24 and serves entrance heaters, the old TD bank panels, escalators, elevators, panel P-100 etc. There are eight (8) spaces available for additional breakers.

CDP H-200 is manufactured by Canadian General Electric and is rated for 400 Amps. The CDP is located in electrical room C-14 and serves the

entrance heaters, escalators, elevators, panel P-200, etc. There are nine (9) spaces available for additional breakers.

Both CDP's are original to the building and are in fair condition. It is recommended to replace the CDP's complete with new breakers.

Recommendation: D501005.1
Replace CDP's and feeders to each panel and maintenance work.

Photo D501005.1 CDP (typical)

120/208 Volt Panels:

There are approximately thirteen 120/208v/3ph/4w panelboards located throughout the concourse and leased spaces. The majority of the panelboards are original to the building and are manufactured by Canadian General Electrical. Apart from Panel E-100, all panel boards have panel directories on the inside of the door. There appears to be sufficient panel boards throughout the facility to accommodate the power requirements. It was noted only three leased spaces had dedicated electrical panelboards. The remaining leased spaces are fed from panelboards in the electrical rooms C-14 or C-24. All panels have 1 meter clearance in front as required by Canadian Electrical Code (CEC).

Below is some brief information on all panelboards observed.

Panel E-100 (Emergency Panel)

120/208v/3ph/4w 225A 30cct Canadian General Electric: No spare circuits. Original to the building.

Panel L-100 (Light Fixtures)

120/208v/3ph/4w 225A 42cct Canadian General Electric: No spare circuits. Original to the building.

Panel L-200 (Exterior Light Fixtures)

120/208v/3ph/4w 100A 30cct Canadian General Electric: 23 spare circuits. Original to the building.

Panel L-300 (Light Fixtures)

120/208v/3ph/4w 225A 42cct Canadian General Electric: 3 spare circuits. Original to the building.

Panel R-100 (Mixed Use)

120/208v/3ph/4w 225A 42cct Canadian General Electric: No spare circuits. Original to the building.

Panel R-200

120/208v/3ph/4w 225A 42cct Canadian General Electric: 2 spare circuits. Original to the building.

Panel P-100

120/208v/3ph/4w 100A 24cct Canadian General Electric: 12 spare circuits. Original to the building.

Panel P-200

120/208v/3ph/4w 100A 24cct Canadian General Electric: 12 spare circuits. Original to the building.

Panel(x2) in old TD bank

120/208v/3ph/4w 225A 42cct Canadian General Electric: No spare circuits. Original to the building.

120/208v/3ph/4w 100A 30cct Canadian General Electric: 23 spare circuits. Original to the building.

120/208v/3ph/4w 225A 42cct Canadian General Electric: 21 spare circuits. Original to the building

Panel (No Name) in leased space

Two (2) 120/208v/3ph/4w 100A 24cct Siemens: 10 spare circuits. Approximately 10 years old. No identification on these panels.

Panel (No Name) in room C-25

120/208v/1ph/3w 100A 16cct Square D: 8 spare circuits. Approximately 5 years old. No identification on this panel.

All panelboards original to the building were observed to be in fair condition but past their recommended service life and are recommended to be replaced complete with branch circuit breakers. Depending on lease agreements it also recommended to provide each leased space with a dedicated panelboard.

Recommendation: D501005.2
Replace all original panelboards.

Photo D501005.2 panelboard (typical)

Recommendation: D501005.3
Provide each lease space with dedicated panelboard

D501007 MOTOR CONTROL CENTERS

A Canadian General Electric 120/208v/3ph/4w Motor Control Centre (MCC) is located in the mechanical room C-25. The 2 cell MCC is original to the building and has 1 spare motor starter and available space to add 2 size 1 motor starters if required. The MCC is fed from a 300A-3P breaker in the main switchboard in room C-24. The MCC serves glycol pumps, air compressor, condensate pumps, supply and exhaust fans.

The MCC is in fair condition and has exceeded its service life expectancy. The MCC is original to the building. Life expectancy ranges between 30-40 years. Wrappers (buckets) and circuit breakers are still available. It is recommended to replace the MCC.

Recommendation: D501007.1
Replace Motor Control Centre c/w Starters

Photo D501007.1 - Motor Control Centre

D5020 LIGHTING AND BRANCH WIRING

D502001 BRANCH WIRING

The majority of the branch wiring in the concourse is wire in conduit and is original to the building. In the leased spaces and services rooms AC90 (BX) wiring is used. Wire sizes were not checked against protection devices as part of the observation.

The majority of the feeder wiring is MCM R90 Coreflex and is original to the panels, CDP's they serve.

Since the majority of the wiring is in conduit, its condition is unknown. It is recommended to open some conduit and arrange for megger testing. Megger testing is a method of testing wire insulation resistance using an insulation resistance meter that will help to verify the condition of the wire. Insulation resistance quality of an electrical system degrades over time. The wire should be replaced if the megger

testing returns unfavorable. The cost for replacement as been included as recommendation D502001.2

Recommendation: D502001.1
Perform Megger Testing on main feeders

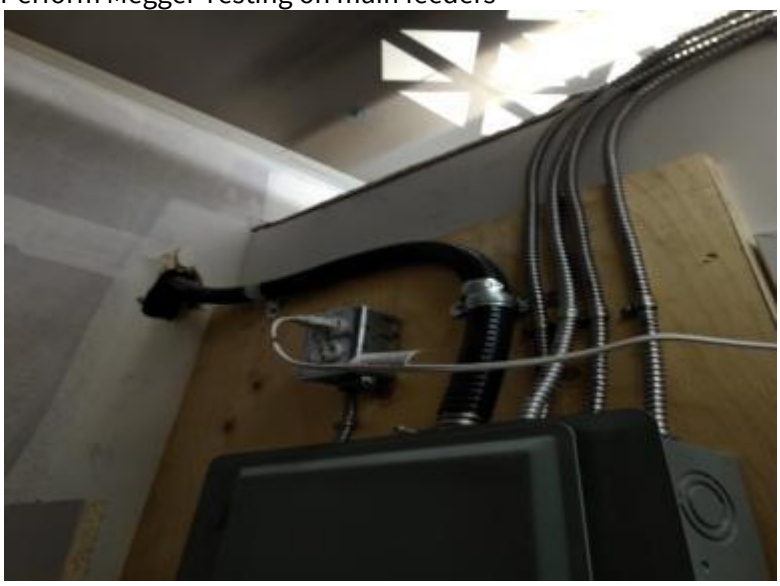


Photo D502001.1 AC90 wiring

Recommendation: D502001.2
Replace all feeder wire

D502002 LIGHTING EQUIPMENT

The majority of the light fixtures in the concourse are fluorescent. The concourse consists of recessed two (2) lamp T5HO, 1'x4' fixtures wrapped around the concourse centre area. Metal Halide pot lights ranging from 6" to 8" diameter also illuminate the C-1 concourse area. The back of house areas are a mixture of T12 or T8 fluorescent fixtures. The leased areas are generally recessed 2 lamp T12 Biax 2'x2' fixtures. Some leased areas have some decorative pendants or track lighting. The area leading into 201 Portage (C-31, 32, 33, 34 & 35) was recently renovated and consists of LED potlights ranging from 4" to 6".

All normal power lighting circuits are fed from two 120/208v/3ph/4w lighting panels (L-200 & L-300) located in electrical room C-24. A relay cabinet c/w relays is located beside the lighting panels. Low voltage light switches are located in the leased areas with toggle switches in the back of house areas. The concourse is open 24/7 and therefore the light fixtures in the concourse remain on all hours.

No lighting levels were recorded but they appeared adequate to meet the requirements of the Illuminated Engineering Society (IES).

Due to leaks it was noticed in 2 areas where light fixtures are damaged and corroded. It is recommended to replace these light fixtures.

With the exception of the area leading into 201 Portage (C31,32,33,34 & 35) it is recommended to replace all light fixtures with new energy efficient LED fixtures. As an energy efficient measure, it is recommended to provide a lighting control system. A programmable wireless lighting control system with occupancy sensors located in all areas and all entrance/exits. When no person is detected during late night/early morning time 50% of light fixtures can be turned off leaving the concourse illuminated to 50%. When a person is detected the light levels come back up to 100%. Replacing the light fixtures does not have to take place all at once. The lighting replacement can be phased in areas to mitigate costs and disruption.

While recommending a lighting control system as an energy saving measure, it is not recommended as a best practice due to the function and location of the concourse. For public safety it should be considered to have the light fixtures remain on 100%.

Recommendation: D502002.1
Replace all Light fixtures except new fixture in corridor to 201 Portage

Photo - PD502002.1- Light fixtures

Recommendation: D502002.2
Replace lighting control system for energy efficiency.

Recommendation: D502002.3
Replace Damaged Light Fixtures

Photo - D502002.3 - Damaged light fixture

D5030 COMMUNICATIONS AND SECURITY

D503001 FIRE ALARM SYSTEMS

The fire alarm system consists of a Quickstart (QS1) single stage, single loop addressable system manufactured by Chubb Edwards. The panel is located in the old security office room C-30. The fire alarm system only provides protection within the concourse. It is not currently connected to other fire alarm panels. The fire alarm system is not generator backed as there are internal batteries within the fire alarm panel. The initiating devices consist of smoke detectors, heat detectors, monitoring devices (flow, supervisory, low pressure switches) and pull stations. Annunciation devices consist of bells only. Current code requires both audible and visual annunciation devices.

The latest fire alarm annual inspection report performed (2017) identified no deficiencies and no recommendations. The fire alarm system is monitored by Central Control Facility Management Service (FMS). While there are no deficiencies recorded, the panel is over 10 years obsolete with no available spare parts. It is recommended to replace the fire alarm system. Combination horn/strobes and strobes would be part of the fire alarm upgrade to comply with current Manitoba Building Code requirements. It is also recommended to connect the fire alarm system to adjacent fire alarm systems in 201 Portage, Winnipeg Square, Richardson Building and the BMO building. By doing this it will send a trouble alert to the neighbouring building in the event of a fire alarm activation in the concourse.

Recommendation: D503001.1
Replace Fire Alarm System.

Photo D503001.1 - Fire alarm panel

Recommendation: D503001.2
Connect Fire Alarm System to ajacent Buildings

Recommendation: D503001.3
Provide audible and visual signal devices throughout concourse.

D503002 TELECOMMUNICATIONS SYSTEMS

The demarcation for the telecommunications is in a room at the end of a hall in between rooms C-13 & C-14. Shaw and BellMTS fiber cables terminate in this room. From here each tenant's telecommunication connection is fed. Bix blocks are installed on a plywood backboard. Public Wifi is provided in the concourse and all cables terminate in the data rack in the telecommunication room. Data cables are a mixture of cat 5 and cat 6.

The telecommunication is in good condition and is not recommended to be replaced in the next 10 years.

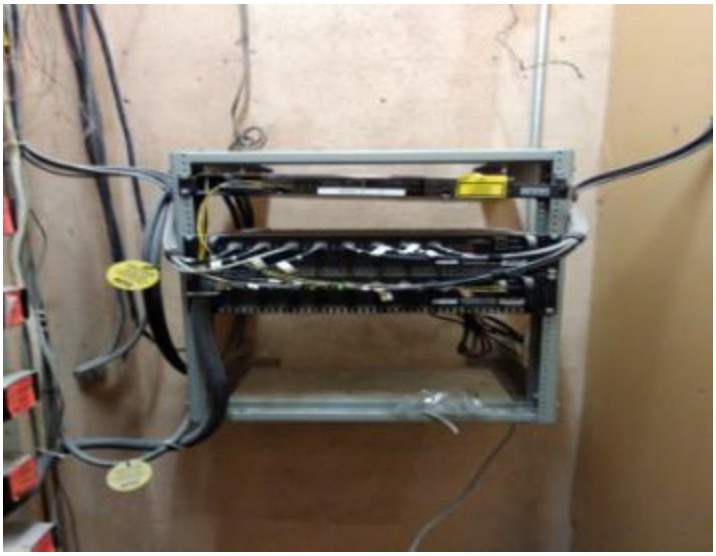


Photo: - D503002.1 – Data rack

D503008 SECURITY SYSTEMS

Card access system:

The concourse is open 24/7 to the public with no card access system on the exterior doors. All private doors are locked by key.

CCTV system:

The CCTV system was recently upgraded to a Milestone VMS system 2 years ago. The concourse is monitored by 28 cameras throughout the space. There is capacity for an additional 4 cameras to be added to the system. All cameras are monitored at the security desk beside Scotiabank. All cameras are wired with Cat 6 cable to the NVR head-end equipment located in the data cabinet in the security room.

The CCTV system is in excellent condition and is not recommended to be replaced in the 10 years. It is recommended to replace the monitors as they are approaching their life expectancy. Camera coverage was not checked to confirm there are no hidden areas. It is recommended to perform a study for camera coverage so additional cameras can be installed to provide complete coverage.

Recommendation: D503008.1
Replace CCTV Monitors

Photo- D503008.2 - CCTV cameras

Recommendation: D503008.2
Perform CCTV Coverage Study

D5090 OTHER ELECTRICAL SERVICES

D509002 EMERGENCY LIGHTING AND POWER

Emergency Lighting:

Emergency lighting is primarily provided from emergency panel E-100 which is generator backed. Refer to Emergency Power section D509002.2 for more information. Supplementary emergency lighting is provided via DC emergency battery packs around the concourse.

According to E-100 Panel schedule, there are 7 emergency lighting circuits throughout the concourse. No emergency lighting testing was performed during the site visits so it is unknown if emergency light levels are achieved. An average illumination at floor level of 10 lux with a minimum required level of 1 lux as required by MBC Article 3.2.7.3 for facilitating egress. A study is recommended to confirm if these light levels are being met.

Supplementary emergency lighting is provided from 4 DC emergency battery packs c/w 2 LED heads. These emergency light packs will illuminate the concourse during power outage until the generator starts and produces power. An average illumination at floor level of 10 lx with a minimum required level of 1 lx as required by MBC Article

3.2.7.3 for facilitating egress. There are no remote heads connected to the battery packs. The battery packs are located around the concourse. All battery packs are manufactured by Lumacell. It is recommended to install more emergency packs or remote heads connected to the existing emergency packs to increase emergency lighting levels. This is not a code requirement but considering the volume of people in the concourse at any one time it is a good practice recommendation.

The battery packs are tested annually by Vipond System Group. The latest tests results identified one battery pack to have failed. All other packs passed the test. It is recommended to replace the battery pack that failed and replace the remaining packs every 10 years.

Exit signs consist of both the red “EXIT” type and the green running person graphic type. Current code requires that these are all the same within a facility. Connecting facilities should also be reviewed for consistency.

Recommendation: D509002.1
Replace Failed Battery Pack

Recommendation: D509002.2
Replace Battery Packs

Photo - D509002.2 emergency battery bank

Recommendation: D509002.3
Provide Additional New Battery Packs

Recommendation: D509002.4
Replace the red “EXIT” type exit signs with green running person graphic type exit signs only in the concourse.

Recommendation: D509002.5
Perform Emergency Lighting Test Report

Emergency Power:

A 166kW/194kVA 347/600v/3ph/4w diesel standby generator provides emergency power to the motor control centre (MCC) in the parkade of 360 Main St. A 60A-3p breaker in the MCC serves emergency panel E-100 located in the electrical room C-24. This panel provides emergency power to light fixtures, CCTV system, sewage pumps, exit signs etc. Refer to Appendix C for more information. The generator is manufactured by Onan model #155.0DFE-9XR/11. A 400amp 3p Automatic Transfer Switch (ATS) is located in the main electrical room beside the generator. The diesel tank is located outside the main electrical room and is size for 24 hours run time. The generator and ATS are original to the building. It is our understanding when the parkade was built it was owned by the City of Winnipeg. When the parkade was purchased by Triovest (360 Main St) they inherited the generator. An agreement was made by the City of Winnipeg and Triovest that the generator will still provide emergency power to the life safety services in the concourse. This agreement is still in place at present with the new owner of the parkade Artis REIT, the current owner of 360 Main.

The latest generator test (2017) was performed using a load bank with building load disconnected. Toromont performs these tests and have indicated the testing of the generator was always using a load bank and not actual building load. It is unknown what capacity the generator may operate at while under actual building load. It is recommended to perform an actual building load test to confirm generator capacity under actual load.

Although the generator is performing without reported issues, according to the Toromont tests, the generator and ATS are in good to fair condition and are original to the building. They have exceeded their life expectancy and therefore it is recommended to replace the generator and ATS. Current MBC requires and Automatic Transfer Switch to be dedicated for life safety loads. Reconfiguration of the emergency distribution would be required for 360 Main Street and the concourse to accommodate to have a life safety ATS and a non life safety ATS in 360 Main Street and the concourse. Seeing as the generator is owned by Artis REIT, an agreement for replacement may be required.

Another option would involve installing a dedicated generator and a life safety, and non life safety ATS within the concourse building. A study would be required to determine if this is worthwhile due to the lack of space to house a generator and 2 ATS'. The study would involve all disciplines (i.e Architect, Structural and Mechanical). This option would remove all lease agreements with Artis REIT and all testing and maintenance would be performed under the City of Winnipeg's control. The study would involve the reconfiguration of the emergency power system for the new pressurized vestibules as recommended for some control. This would involve M.I (mineral insulated) 2 hour rated cables, dedicated life safety ATS and fire alarm tie ins. The exhaust fans required will add a significant electrical load to the electrical distribution.

Recommendation: D509002.6
Replace Emergency Generator and ATS. Replacement includes all mechanical ventilation and exhaust piping.

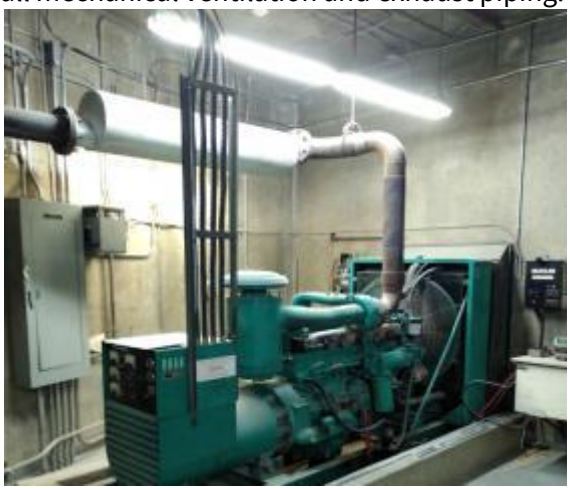


Photo - D509002.2.1 – GENERATOR

Recommendation: D509002.7
Perform building load test

Recommendation: D509002.8
Perform study to investigate the possibility of a dedicated generator and ATS' within the concourse.

Recommendation: D509002.9
Provide emergency distribution, ATS, MI cabling, fire alarm tie ins etc for ventilation required for pressurized vestibules as part of the smoke control requirements.

D509003 GROUNDING SYSTEMS

The grounding systems were difficult to observe. No ground rods were visible so it is assumed the rods are driven into the ground within the slab under the main switchboards. No distribution panel covers were removed to observe the grounding and bonding terminations. The main water service meter in room C-25 is not grounded. It is recommended to perform a study on the grounding system.

The grounding system appears original to the building and is recommended to be replaced upon results of the grounding study as per recommendation D509003.2. Ground rod life expectancy ranges between 30-40 years, depending on soil conditions.

Recommendation: D509003.1
Replace Grounding System.

Photo D509003.1 Water main service

Recommendation: D509003.2
Perform Grounding Study

APPENDIX A
CONCOURSE EGRESS ANALYSIS

RJ Bartlett Engineering Ltd
1987-2017 30 YEARS
FIRE PROTECTION IS OUR BUSINESS

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January 11, 2018

17253 Sealed L180111
Via: Email

Mr. Dave Lalama
Number TEN Architectural Group
310-115 Bannatyne Avenue
Winnipeg, MB
R3B 0R3

Subject: Egress Analysis
Richardson Building/201 Portage Building/
Bank of Montreal Corner Concourse
Winnipeg, MB

Dear Mr. Lalama:

This project involves upgrading of the exterior Plaza space at the above noted locations. RJ Bartlett Engineering Ltd (RJBEL) was retained by Number TEN Architectural Group (NTAG) to complete an egress analysis of the Portage and Main Concourse areas (the Circus) to determine if the three accesses to grade, identified as "the bunkers", are required exits. The applicable Code for this review is Part 3 of the 2011 Manitoba Building Code (MBC).

This review is based on drawings dated September 16, 2014, that were furnished by NTAG and site visits completed by RJBEL on September 7, 2017 and November 1, 2017.

This letter includes a review of the travel distances, calculated occupant load, and calculated exit capacity of the Circus. The Circus connects the four corners of the Portage and Main intersection, with direct access to the adjacent four high-rise office towers and contains retail suites around it's perimeter. Refer to Figure 1 for a site plan of the area.

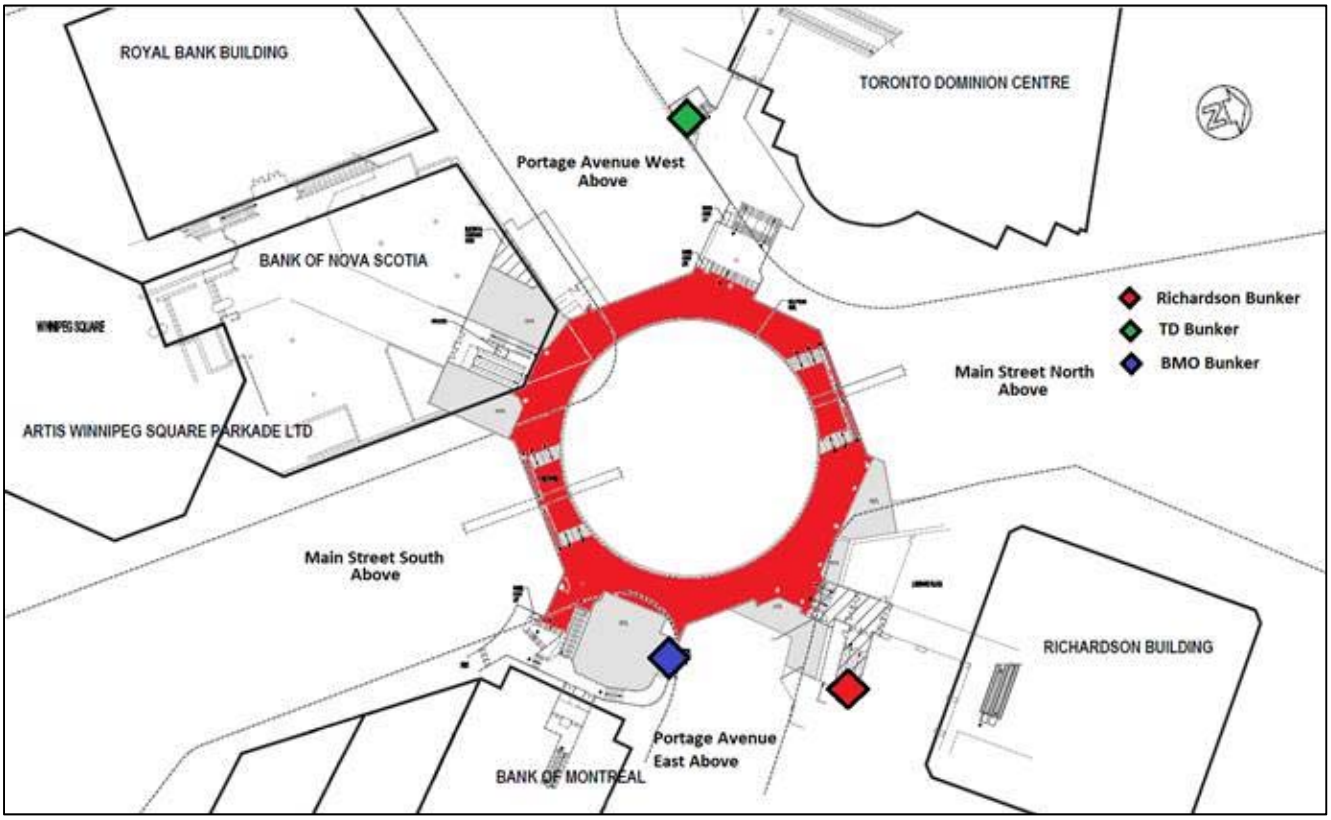


Figure 1: Site Plan

The intersection of Portage Avenue and Main Street is not provided with above grade crosswalks. The Circus space functions as the pedestrian route for this intersection. It is noted that during times when the concourse reaches its highest occupant loads (morning commute to work, noon lunch rush, and evening commute home from work) access to most, if not all, of the four adjacent towers is available for egress.

Access to the towers from the Circus is reportedly not permitted at all times (during late night hours, holidays, etc.), and based on that, these routes are omitted from the available exit capacity calculations. Refer to Discussion section and Attachment A for additional information.

The escalators in the Richardson Bunker appear to function as an exit based on door swings into the escalator vestibule from the adjacent Richardson Concourse and the Circus, as well as exit signage. It is noted that the 1965 National Building Code of Canada (1965 NBC) permitted escalators to function as exits. Refer to excerpts in Attachment B of this letter.

If the Richardson Bunker is altered, there are two options that can be considered for discussion with the City of Winnipeg Commercial Plan Examination Department.

Discussion

Option 1: Remove Richardson Bunker Completely

The approach under this option is to consider the Circus as an underground walkway with travel distances to exits of 67.5 m when the Circus is occupied and 100 m to smoke barrier doors when it is not occupied. Refer to MBC Sentence 3.2.3.20.(4).

The access into the Richardson Concourse would be considered a horizontal exit during the time the Circus is occupied.

When the Circus is not occupied, the doors to the Richardson Concourse would be locked to prevent entry from the Circus. This is permitted by NFPA 101, "*Life Safety Code*". Refer to the excerpt in Attachment C of this letter. These doors would be on electromagnetic locks that operate in accordance with MBC Sentence 3.4.6.16.(4) to permit exiting from the Richardson Concourse into the Circus at all times.

The Circus would have access to other exits at the BMO Bunker and the T.D. Bunker.

The fire safety plan for the Circus and the Richardson Concourse would be required to include procedures for staff to ensure the doors to the Richardson Concourse are unlocked when the Circus is occupied.

The door swings at the Richardson Concourse entrance from the Circus would have to be re-configured so that two doors (east side pair) swing into the Richardson Concourse so as to function as exits for the Circus.

Existing grille/gates across the front of retail spaces would be required to be replaced with non-rated fire separations as per the original building permit agreement for the Circus.

Option 2: Replace Escalators with Exit Stair

This option involves removal of the escalators and construction of a new exit stair. This option would not require any change to the existing doors and would maintain the existing exiting in terms of travel distances and exit capacity. The minimum stair width required would be 900 mm.

In order to meet the requirements of MBC Articles 3.4.6.3. (Maximum Vertical Rise of Stair Flights and Required Landings) and 3.4.6.8. (Treads and Risers), there will have to be sufficient space on Richardson Plaza to accommodate the stair. This is to be investigated by NTAG.

If you have any questions or require additional information, please contact our office.

Prepared By,

Ian MacDonald, P.Eng.

Reviewed By,

Steven Forrester, EIT

IM/hmc

Attachments

PROVINCE OF MANITOBA
I. C.
MacDONALD
18/01/11
REGISTERED PROFESSIONAL ENGINEER

APEGM
Certificate of Authorization
R.J. Bartlett Engineering Ltd
No. 1456 Date: 18/01/11

Attachment A

Occupant Load and Exit Capacity Calculations

Occupant loads have been calculated using the occupant load factors provided in MBC Table 3.1.17.1. A summary of the calculated occupant loads for each floor area is provided in Table 1.

Description of Occupancy	Floor Area (m^2)	Occupant Load Factor (Persons/m^2)	Calculated Occupant Load (Persons)
Circus	1,100	3.7	298
Retail/Mercantile	500	3.7	135
Restaurant	30	1.2	25
		Total	***458***

Table 1: Occupant Load Summary

Exit capacity will be calculated by dividing the width of stairs and escalators by exit capacity factors shown below (MBC Sentence 3.4.3.2.(1)). The exit capacity calculations are based on the widths measured from the drawings. Refer to Table 2.

Exiting Facilities	Exit Width[(a)] (mm)	Exit Capacity Factor (mm/Person)	Calculated Exit Capacity (Persons)
BMO Bunker	1,930	8	241
TD Bunker	1,880	8	235
Richardson Bunker	~~1,100~~[(a)(b)]	[(c)]	~~120~~
		Total	***~~596~~ 476***

(a) The Richardson Bunker is excluded from the exit capacity total to show the remaining exit capacity in the case of this facility being removed.
(b) 1,100 mm is the maximum amount of exit width permitted to be considered for each compliant escalator used as an exit (1965 NBC, Sentence 3.4.3.10.(4)).
(c) Exits involving stairs and connecting passageways that serve areas with high occupant loads are considered to have 60 persons of exit capacity for every unit of exit width (550 mm) (1995 NBC, Clause 3.4.2.9.(1)(b)).

Table 2: Exit Capacity Summary

Attachment B

NBC 1965

SUBSECTION 3.3.6. FLOOR AREAS INTENDED FOR BUSINESS OR MERCANTILE USE

3.3.6.1. Any room or space intended for more than 60 persons or larger than 1000 sq. ft. in area shall have access to 2 *exits* which may be *exit* doorways or doorways to a corridor or corridors giving *access* to *exits*.

SUBSECTION 3.3.7. FLOOR AREAS INTENDED FOR INDUSTRIAL AND STORAGE USE

3.3.7.1.(1) Any room or space intended for more than 60 persons or greater than 1,000 sq. ft. in area shall have access to 2 *exits* which may be *exit* doorways or doorways to a corridor giving *access to exits*.

(2) In all *buildings* except those classified as Group F Division 1,

(a) Process rooms where *hazardous substances* are used shall be separated from the remainder of the *building* by a 2 hr. *fire separation* or they shall have equivalent protection in accordance with *approved* standards of safe practice.

(b) Vaults or rooms, in such *buildings* where *hazardous substances* are stored, shall be separated from the remainder of the *building* by a 3 hr. *fire separation*.

(c) Electrical transformer vaults shall be constructed in conformance with Section 6.5. of Part 6.

(3) Any *building* or part thereof used or intended for Group F Division 1 *occupancies* shall be equipped with suitable fire extinguishing equipment, such as a standard installation of automatic sprinklers, a carbon dioxide system, a dry chemical system or other such protection as is required by the *authority having jurisdiction*. The protection shall be in accordance with the nature of the risk present and standards of good practice as approved by the *authority having jurisdiction*.

(4) No *occupancy* involving the storage, manufacture or handling of volatile solids, liquids or gases which generate explosive air-vapour mixtures and processes which involve explosive dusts shall be conducted in the *basement* or *cellar* of any *building*. *Basements* and rooms containing building services shall be separated from the other parts of the *building* with a vapour-tight separation and shall have separate *exits* and entrances. Special ventilation shall be provided in accordance with Subsection 3.2.5.

Garages

3.3.7.2.(1) The floor of any garage shall be of *noncombustible* material.

(2) Any *storage* or *repair garage* shall be separated from the remainder of the *building* in which it is situated by at least a 1-1/2 hr. *fire separation*.

(3) The *fire separation* between a garage and a *theatre*, school or an *institutional occupancy* shall have no openings.

(4) Facilities for dispensing gasoline shall not be installed in any *building*.

SUBSECTION 3.3.8. TENANT OCCUPIED FLOOR AREAS

3.3.8.1. Excepting a floor area occupied by a *residential occupancy* or a floor area which is *sprinklered*, any *floor area* which is leased to more than one tenant of the same *occupancy* shall have the space occupied by each tenant separated from other tenant's space by a 1 hr. *fire separation*.

NOTE

NATIONAL FIRE CODE

The National Fire Code of Canada 1963 issued by the National Research Council Associate Committee on National Fire Codes includes requirements for existing *buildings*, maintenance hazards in all *buildings* and hazards arising from any *occupancy* when such requirements do not apply to the permanent *building* or building service equipment.

SECTION 3.4. REQUIREMENTS FOR EXITS

SUBSECTION 3.4.1. GENERAL REQUIREMENTS FOR MEANS OF EGRESS

3.4.1.1. *Means of egress* complying with this Section shall be provided from every room or *floor area* or roof which is intended for *occupancy* and from every podium, terrace, platform or contained open space to a public thoroughfare or *approved* open space with access to a public thoroughfare. — Means of egress required

SUBSECTION 3.4.2. REQUIREMENTS FOR EXITS FROM FLOOR AREAS

3.4.2.1.(1) These requirements apply to all new construction. Where *alterations* and changes of *occupancy* occur in existing construction: — Application to new and existing construction

(a) the requirement for exits shall be the requirements of this Bylaw except that they may be relaxed with special approval of the *authority having jurisdiction* when in his opinion safety to life is not unduly endangered and

(b) the existing *occupancy* is deficient in *exits*, the *authority having jurisdiction* may require the deficiency to be corrected, in which case *fire escapes* may be erected to *floor areas* not exceeding 5 *storeys* from the *grade* level.

(2) Except as permitted in Sentence (3) from every *floor area* which is contained within exterior walls or exterior walls and required *firewalls* and from every *floor area* which is cut off by any means from the remainder of the *storey* on which it is located there shall be *exit* facilities which are independent of the *exit* facilities from any other *floor area*. — Requirement for exits

(3) *Exit* facilities may be shared by: — Where exits may be shared

(a) Any two or more *floor areas* which are contiguous and one above the other

(b) any two *floor areas* when the shared facility is a *horizontal exit*.

(4) Where any *exit* facility is provided in addition to those required, it shall conform to the requirements of this Section. — Additional exits

Restrictions on the Use of Certain Types of Exits

3.4.2.2. From any *floor area* an *exit* may be an

exterior passageway,
exterior ramp or stair,
exterior stairway,
enclosed straight slide escape,
doorway,
horizontal exit
interior passageway,
interior stairway,
interior ramp,
fire escape
escalator

conforming to the requirements of this Section or a combination of two or more of the above listed types except that

(9) Where there is a possibility that exit doors may be left open a sign shall be conspicuously posted on the door with the following wording —

"FIRE EXIT" — "PLEASE KEEP DOOR CLOSED"
Marking and Signs

3.4.2.14.(1) All *exit* doors and passageways other than the *exit* serving as the main entrance to a room or *building* shall have *exit* signs placed over them when the *exits* serve

(a) a *building* exceeding 2 *storeys* in height

(b) a *building* having an *occupant load* greater than 150,

(c) a room with a *high occupant load* of more than 60 or

(d) a room or *floor area* which has a *fire escape* as part of a required *means of egress*.

(2) All such *exit* signs shall

(a) be visible from the *exit* approach and shall indicate the direction of travel.

(b) have the word EXIT or SORTIE in plain legible letters as described in (3) below,

(c) be illuminated continuously while the *building* is occupied and

(d) be connected to a separate lighting circuit.

(3) Lettering on *exit* signs shall be

(a) red letters at least 4-1/2 in. high with a 3/4 in. stroke in an opaque field when internally illuminated or

(b) white letters at least 6 in. high with a 3/4 in. stroke in a red field when externally illuminated.

(4) Signs in corridors and passageways where necessary to indicate the direction of egress shall have the words TO EXIT or VERS LA SORTIE with a suitable arrow or pointer indicating the way. The lettering shall be of sizes not smaller than required for *exit* signs.

(5) No mirrors shall be placed in or adjacent to any *exit* in such a manner as to confuse the direction of *exit*.

SUBSECTION 3.4.3. TYPES OF MEANS OF EGRESS

3.4.3.1. Except when specifically stated otherwise, these requirements apply to both interior and exterior *means of egress*.

3.4.3.2. Non-skid finishes or strips shall be provided at all locations where stairs, treads and ramps may cause bodily injury.

3.4.3.3. Every flight of interior stairs shall have a minimum of 3 risers.

3.4.3.4.(1) No flight of stairs shall have a vertical rise of more than 12 ft. between floors or landings, except that flights of stairs serving as *exits* from rooms intended for *infirm persons* or having a *high occupant load* shall have a vertical rise of not more than 8 ft. between floors or landings.

(2) The length and width of landings shall be not less than the width of stairways in which they occur, except that in a straight run, the length of a landing shall not be required to exceed 44 in.

3.4.3.5.(1) Every *exit* ramp or stairway shall have a wall or a well-secured balustrade or guard on each side.

(2) Every exit ramp or stairway shall have a handrail on at least one side and when 44 in. or more in width, shall have handrails on both sides.

(3) When the required width of a ramp or flight of stairs exceeds 88 in., one or more intermediate handrails continuous between landings shall be provided and the number and position of these intermediate handrails shall be such that there will be not more than 66 in. between handrails. Handrails shall be so

constructed that there will be no obstruction on or above them tending to break a hand hold.

(4) Every stair balustrade and guard shall be not less than 2 ft. 8 in. in height measured vertically from the nose of the treads.

(5) Every intermediate landing balustrade and guard rail shall be not less than 3 ft. in height measured from the surface of the landing.

(6) All other balustrades and railings, except as *approved*, shall be not less than 3 ft. 6 in. in height measured vertically from the adjacent floor level.

Ramps or stairs leading to a floor below grade level

3.4.3.6. When any exit ramp or stair continues past the *exit* door at *grade* to a *basement* or *cellar*, the part below *grade* and which is not part of the path of travel from upper *storeys* to the outdoors shall be closed off by a door clearly marked on the upper side by a sign reading *"To Basement"* or marked in some other manner to warn occupants that the stair does not lead downwards to a place of outdoor safety.

Gradient of ramps

3.4.3.7.(1) The maximum gradient of ramps shall be:

(a) 1 in 10, from any apartment, assembly room, hospital ward or other room intended for the care of *infirm persons* and any exterior ramp regardless of *occupancy*,

(b) 1 in 6 from rooms or *floor areas* used for *mercantile*, *industrial* or *storage* and

(c) 1 in 8, from any other floor area.

Level area required opposite a door opening to ramp

(2) When a doorway or stairway empties into a ramp through a side wall, there shall be a level area extending across the full width of the passageway and for a distance of 12 in. on either side of the wall opening (excepting one side when it abuts an end wall.) When a door or stairway empties through an end wall, there shall be a level area across the full width of the passageway and along its length for at least 36 in.

Treads and risers

3.4.3.8.(1) Treads and risers in every exit stair except a fire escape stair shall be so proportioned that the product of the rise and run in inches shall be not less than 70 nor more than 75; risers shall have a maximum height of 7-3/4 in. and a minimum height of 5 in.; treads shall have a minimum width of 9 in. exclusive of nosing.

(2) Treads and risers in every exit stair except a fire escape stair shall have uniform rise and run in any one flight and shall not alter materially in width and height in successive flights n any stair system. All treads less than 10 in. wide shall have a nosing of approximately 1 in: over the tread or landing immediately below.

3.4.3.9.(1) Except as provided in Sentence (2) no winders shall be used in any exit stairway.

(2) Where a curved ornamental stair is used as an *exit* it shall have:

(a) a minimum tread width of 9 in. measured 9 in. away from the handrail at the narrow end of the tread and

(b) a handrail on each side.

(3) In any stairway not required as an *exit*, a spiral stairway having treads with a minimum width of 7 in. and a minimum average width of 9 in. is permitted provided the stairway does not exceed 44 in. between handrails.

Escalators

Where an escalator may be an exit

3.4.3.10.(1) Any escalator, enclosed in accordance with the requirements of this Bylaw and of the horizontal tread type, moving downward when serving *storeys* above an *exit* from a *building* or moving upward when serving *storeys* below such *exit*, may be considered as an *exit*, provided that it conforms to the requirements of this Article.

(2) Where any escalator serves as a required *exit*, the width of tread shall be not less than 35 in., the height of riser shall not exceed 8-1/2 in. and the run shall be not less than 15-3/4 in.; at the handrails there shall be a clear width of not less than 44 in.

(3) No single escalator shall have a vertical travel of more than 2 *storeys* or 35 ft.

(4) Such escalator may be deemed to have 2 units of *exit* width.

(5) Every escalator shall have top and bottom landings, as required herein for stairs.

Horizontal Exits

3.4.3.11.(1) The *floor area* on each side of a *horizontal exit* shall be sufficient to hold the occupants of both *floor areas*, allowing not less than 3-1/2 sq. ft. of clear floor space per person for fit persons, 16 sq. ft. for handicapped and 24 sq. ft. for bedridden patients.

(2) When vestibules, enclosed balconies or bridges are used as parts of any *horizontal exit*, their clear width shall be at least as great as that of the exit doorways opening into them, except that handrails may project into this clear width not more than 3-1/2 in.

(3) In any *horizontal exit*, where there is a difference in level between the connected *floor areas*, gradients not exceeding those specified for ramps in Article 3.4.3.7. may be provided. No stairs or steps shall be used in a *horizontal exit*.

(4) Every opening used as a *horizontal exit* shall be protected by an *approved* self-closing swinging fire door or doors. There shall be two such doors mounted adjacent to each other in each wall or partition concerned. These adjacent doors shall swing in opposite directions and signs on each side of the wall or partition shall indicate as the *exit*, the door that swings in the direction of travel from that side. These adjacent doors may be mounted in separate openings or may be mounted in one opening and meet on a mullion, provided that the size of the one opening shall not exceed that specified for *firewalls* in Article 3.1.2.7. Other arrangements providing doors swinging always in the direction of any possible *exit* travel may be *approved* by the *authority having jurisdiction*.

Passageways

3.4.3.12. Passageways and stairways shall be so arranged as to keep the length of passageways to a minimum.

3.4.3.13.(1) Access to exterior passageways from any *floor area* shall be through *exit* doors at floor level.

(2) Every exterior passageway which has a drop of more than 1 ft. 6 in. at any side shall have substantial guards on the open sides at least 3 ft. high.

Doors

3.4.3.14.(1) No door in any *exit* shall open immediately on a flight of stairs, but shall open on a landing of which neither the length nor the width shall be less than the width of such doors plus 1 ft.

(2) No riser of any flight of stairs shall be located within 1 ft. of a door in any *exit*.

(3) Exit doors shall be clearly indentifiable and no hangings or draperies

shall be placed over exit doors or otherwise to conceal or obscure any *exit*.

(4) No mirrors shall be placed on *exit* doors. — Mirrors

(5) No *exit* door shall open directly onto a step provided that where there is danger of blockage from ice or snow, an exit door may open onto not more than one step which shall not exceed 6 in. in height. — Doors opening on steps

(6) Every door leading to a passage or corridor from a room which — Direction of door swing
(a) is used for assembly purposes,
(b) is occupied by more than 30 people,
(c) is used for an *occupancy* classed as Group F, Division 1,

and every exit door shall open in the direction of exit travel provided that this requirement shall not be construed as prohibiting the use of doors that swing both inward and outward.

(7) Every exit door that is normally required to be kept closed shall be provided with a reliable self-closing mechanism and shall not at any time be secured in an open position, except as specified for *fire separations* in Article 3.2.2.4. — Doors to be kept closed

(8) Where revolving doors are used they shall
(a) be *approved* collapsible revolving doors,
(b) have hinged doors providing equivalent units of exit width located adjacent to them but not between them,
(c) be used only as an *exit* from the ground floor level,
(d) not be used at the foot of any stairway and
(e) not be used as an *exit* for floor areas containing a *high occupant load, institutional* or *hazardous occupancy*.

(9) A revolving door may receive credit as one-half unit of exit width.

(10) No entrance or exit door serving a *floor area* where there is a *high occupant load* shall be fastened while occupied in any manner, except by fastenings such that a pressure of 20 lb. upon the inside of the door will either break or release the fastenings and allow the door to swing wide open. — Door fastenings

(11) Fastenings of any required exit door shall be such that the door may be readily opened from the inside without the use of keys, except that this requirement shall not apply to the doors of rooms where persons are under legal restraint.

(12) This requirement shall not prohibit the installation of locks on doors of rooms or *floor areas*, permitting the room or floor area to be locked against *ingress* but not egress.

Enclosed Straight Slide Escapes

3.4.3.15.(1) The slope of an enclosed straight slide escape shall be less than 24 degrees and not more than 42 degrees to the horizontal. — Slope

(2) On all enclosed slide escapes having slopes greater than 30 degrees there shall be a section at the lower end at last 10 ft. long, set at an angle not to exceed 15 degrees to the horizontal, connected to the upper section by a transition curve.

(3) Enclosed straight slide escapes shall be not less than 24 in. nor more than 42 in. wide. — Width

(4) Access to enclosed slide escapes shall be through doorways at floor level or through casement windows swinging in the direction of exit travel. — Access

(5) The sill height of such casement windows shall not exceed 2 ft. 6 in. above the floor.

(6) Doors shall be provided at each entrance, swinging with the exit travel, so constructed that they will not obstruct the use of the escape. — Doors to slide escapes

(7) Door or window openings shall be at least 30 in. wide and at least

Attachment C

NFPA 101

7.2.1.4.4 Screen Door Assemblies and Storm Door Assemblies. Screen door assemblies and storm door assemblies used in a means of egress shall be subject to the requirements for direction of swing that are applicable to other door assemblies used in a means of egress.

7.2.1.4.5 Door Leaf Operating Forces.

7.2.1.4.5.1 The forces required to fully open any door leaf manually in a means of egress shall not exceed 15 lbf (67 N) to release the latch, 30 lbf (133 N) to set the leaf in motion, and 15 lbf (67 N) to open the leaf to the minimum required width, unless otherwise specified as follows:

(1) The opening forces for interior side-hinged or pivoted-swinging door leaves without closers shall not exceed 5 lbf (22 N).
(2) The opening forces for existing door leaves in existing buildings shall not exceed 50 lbf (222 N) applied to the latch stile.
(3) The opening forces for horizontal-sliding door leaves in detention and correctional occupancies shall be as provided in Chapters 22 and 23.
(4) The opening forces for power-operated door leaves shall be as provided in 7.2.1.9.

7.2.1.4.5.2 The forces specified in 7.2.1.4.5 shall be applied to the latch stile.

7.2.1.5 Locks, Latches, and Alarm Devices.

7.2.1.5.1 Door leaves shall be arranged to be opened readily from the egress side whenever the building is occupied.

7.2.1.5.2* The requirement of 7.2.1.5.1 shall not apply to door leaves of listed fire door assemblies after exposure to elevated temperature in accordance with the listing, based on laboratory fire test procedures.

7.2.1.5.3 Locks, if provided, shall not require the use of a key, a tool, or special knowledge or effort for operation from the egress side.

7.2.1.5.4 The requirements of 7.2.1.5.1 and 7.2.1.5.3 shall not apply where otherwise provided in Chapters 18 through 23.

7.2.1.5.5 Key-Operated Locks.

7.2.1.5.5.1* Exterior door assemblies shall be permitted to have key-operated locks from the egress side, provided that all of the following criteria are met:

(1) This alternative is permitted in Chapters 11 through 43 for the specific occupancy.
(2) A readily visible, durable sign in letters not less than 1 in. (25 mm) high on a contrasting background that reads as follows is located on or adjacent to the door leaf: THIS DOOR TO REMAIN UNLOCKED WHEN THE BUILDING IS OCCUPIED.
(3) The locking device is of a type that is readily distinguishable as locked.
(4) A key is immediately available to any occupant inside the building when it is locked.

7.2.1.5.5.2 The alternative provisions of 7.2.1.5.5.1 shall be permitted to be revoked by the authority having jurisdiction for cause.

7.2.1.5.6 Electrically Controlled Egress Door Assemblies. Door assemblies in the means of egress shall be permitted to be electrically locked if equipped with approved, listed hardware, provided that all of the following conditions are met:

(1) The hardware for occupant release of the lock is affixed to the door leaf.
(2) The hardware has an obvious method of operation that is readily operated in the direction of egress.
(3) The hardware is capable of being operated with one hand in the direction of egress.
(4) Operation of the hardware interrupts the power supply directly to the electric lock and unlocks the door assembly in the direction of egress.
(5)*Loss of power to the listed releasing hardware automatically unlocks the door assembly in the direction of egress.
(6) Hardware for new installations is listed in accordance with ANSI/UL 294, *Standard for Access Control System Units.*

7.2.1.5.7 Where permitted in Chapters 11 through 43, key operation shall be permitted, provided that the key cannot be removed when the door leaf is locked from the side from which egress is to be made.

7.2.1.5.8* Every door assembly in a stair enclosure serving more than four stories, unless permitted by 7.2.1.5.8.2, shall meet one of the following conditions:

(1) Re-entry from the stair enclosure to the interior of the building shall be provided.
(2) An automatic release that is actuated with the initiation of the building fire alarm system shall be provided to unlock all stair enclosure door assemblies to allow re-entry.
(3) Selected re-entry shall be provided in accordance with 7.2.1.5.8.1.

7.2.1.5.8.1 Door assemblies on stair enclosures shall be permitted to be equipped with hardware that prevents re-entry into the interior of the building, provided that all of the following criteria are met:

(1) There shall be not less than two levels where it is possible to leave the stair enclosure to access another exit.
(2) There shall be not more than four stories intervening between stories where it is possible to leave the stair enclosure to access another exit.
(3) Re-entry shall be possible on the top story or next-to-top story served by the stair enclosure, and such story shall allow access to another exit.
(4) Door assemblies allowing re-entry shall be identified as such on the stair side of the door leaf.
(5) Door assemblies not allowing re-entry shall be provided with a sign on the stair side indicating the location of the nearest door opening, in each direction of travel, that allows re-entry or exit.

7.2.1.5.8.2 The requirements of 7.2.1.5.8, except as provided in 7.2.1.5.8.3, shall not apply to the following:

(1) Existing installations in buildings that are not high-rise buildings as permitted in Chapters 11 through 43
(2) Existing installations in high-rise buildings as permitted in Chapters 11 through 43 where the occupancy is within a building protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 9.7
(3) Existing approved stairwell re-entry installations as permitted by Chapters 11 through 43
(4) Stair enclosures serving a building permitted to have a single exit in accordance with Chapters 11 through 43
(5) Stair enclosures in health care occupancies where otherwise provided in Chapter 18
(6) Stair enclosures in detention and correctional occupancies where otherwise provided in Chapter 22

(2) As provided in Chapters 36 and 37, an exit passageway in a mall building shall be permitted to accommodate occupant loads independently from the mall and the tenant spaces. *(See 36.2.2.7.2 and 37.2.2.7.2.)*

7.2.6.4.2 In new construction, the minimum width of any exit passageway into which an exit stair discharges, or that serves as a horizontal transfer within an exit stair system, shall meet the following criteria:

(1) The minimum width of the exit passageway shall be not less than two-thirds of the width of the exit stair.
(2) Where stairs are credited with egress capacity in accordance with 7.3.3.2, the exit passageway width shall be sized to accommodate the same capacity as the stair, with such capacity determined by use of the capacity factors in Table 7.3.3.1.

7.2.6.5 Floor. The floor shall be solid and without perforations.

7.2.7 Escalators and Moving Walks. Escalators and moving walks shall not constitute a part of the required means of egress, unless they are previously approved existing escalators and moving walks.

7.2.8 Fire Escape Stairs.

7.2.8.1 General.

7.2.8.1.1 Where permitted in Chapters 11 through 43, fire escape stairs shall comply with the provisions of 7.2.8, unless they are approved existing fire escape stairs.

7.2.8.1.2 Fire escape stairs shall not constitute any of the required means of egress, unless otherwise provided in 7.2.8.1.2.1 and 7.2.8.1.2.2.

7.2.8.1.2.1 Fire escape stairs shall be permitted on existing buildings as provided in Chapters 11 through 43 but shall not constitute more than 50 percent of the required means of egress.

7.2.8.1.2.2 New fire escape stairs shall be permitted to be erected on existing buildings only where the authority having jurisdiction has determined that outside stairs are impractical. *(See 7.2.2.)*

7.2.8.1.2.3 New fire escape stairs permitted by 7.2.8.1.2.2 shall not incorporate ladders or access windows, regardless of occupancy classification or occupant load served.

7.2.8.1.3 Fire escape stairs of the return-platform type with superimposed runs, or of the straight-run type with a platform that continues in the same direction, shall be permitted. Either type shall be permitted to be parallel to, or at right angles to, buildings. Either type shall be permitted to be attached to buildings or erected independently of buildings and connected by walkways.

7.2.8.2 Protection of Openings. Fire escape stairs shall be exposed to the smallest possible number of window and door openings, and each opening shall be protected with approved fire door or fire window assemblies where the opening or any portion of the opening is located as follows:

(1) Horizontally, within 15 ft (4570 mm) of any balcony, platform, or stairway constituting a component of the fire escape stair
(2) Below, within three stories or 36 ft (11 m) of any balcony, platform, walkway, or stairway constituting a component of the fire escape stair, or within two stories or 24 ft (7320 mm) of a platform or walkway leading from any story to the fire escape stair
(3) Above, within 10 ft (3050 mm) of any balcony, platform, or walkway, as measured vertically, or within 10 ft (3050 mm) of any stair tread surface, as measured vertically
(4) Facing a court served by a fire escape stair, where the least dimension of the court does not exceed one-third of the height to the uppermost platform of the fire escape stair, measured from the finished ground level
(5) Facing an alcove served by a fire escape stair, where the width of the alcove does not exceed one-third, or the depth of the alcove does not exceed one-fourth, of the height to the uppermost platform of the fire escape stair, measured from the finished ground level

7.2.8.2.1 The requirements of 7.2.8.2 shall not apply to openings located on the top story where stairs do not lead to the roof.

7.2.8.2.2 The requirements of 7.2.8.2 shall be permitted to be modified by the authority having jurisdiction where automatic sprinkler protection is provided, where the occupancy is limited to low hazard contents, or where other special conditions exist.

7.2.8.2.3 The requirements of 7.2.8.2 for the protection of window openings shall not apply where such window openings are necessary for access to existing fire escape stairs.

7.2.8.3 Access.

7.2.8.3.1 Access to fire escape stairs shall be in accordance with 7.2.8.4 and 7.5.1.1.1 through 7.5.1.2.2.

7.2.8.3.2 Where access is permitted by way of windows, the windows shall be arranged and maintained so as to be easily opened. Screening or storm windows that restrict free access to the fire escape stair shall be prohibited.

7.2.8.3.3 Fire escape stairs shall extend to the roof in all cases where the roof is subject to occupancy or provides an area of safe refuge, unless otherwise provided in 7.2.8.3.4.

7.2.8.3.4 Where a roof has a pitch that does not exceed 1 to 6, fire escape ladders in accordance with 7.2.9 or alternating tread devices in accordance with 7.2.11 shall be permitted to provide access to the roof.

7.2.8.3.5 Access to a fire escape stair shall be directly to a balcony, landing, or platform; shall not exceed the floor or windowsill level; and shall not be more than 8 in. (205 mm) below the floor level or 18 in. (455 mm) below the windowsill level.

7.2.8.4 Stair Details. Fire escape stairs shall comply with the requirements of Table 7.2.8.4(a). Replacement of fire escape stairs shall comply with the requirements of Table 7.2.8.4(b).

7.2.8.5 Guards, Handrails, and Visual Enclosures.

7.2.8.5.1 All fire escape stairs shall have walls or guards and handrails on both sides in accordance with 7.2.2.4.

7.2.8.5.2 Replacement fire escape stairs in occupancies serving more than 10 occupants shall have visual enclosures to avoid any impediments to their use by persons having a fear of high places. Fire escape stairs more than 36 ft (11 m) above the finished ground level shall be provided with an opaque visual obstruction not less than 48 in. (1220 mm) in height.

7.2.8.6 Materials and Strength.

7.2.8.6.1 Noncombustible materials shall be used for the construction of all components of fire escape stairs.

(5) Physical means are provided to prevent vehicles from being parked or driven within 10 ft (3050 mm) of the openings.
(6) The openings are protected as a smoke partition in accordance with Section 8.4, with no minimum fire protection rating required.

37.1.4 Definitions.

37.1.4.1 General. For definitions, see Chapter 3, Definitions.

37.1.4.2 Special Definitions. A list of special terms used in this chapter follows:

(1) **Anchor Building.** See 3.3.36.2.
(2) **Bulk Merchandising Retail Building.** See 3.3.36.4.
(3) **Gross Leasable Area.** See 3.3.21.3.
(4) **Major Tenant.** See 3.3.168.
(5) **Mall.** See 3.3.169.
(6) **Mall Building.** See 3.3.36.9.
(7) **Open-Air Mercantile Operation.** See 3.3.199.

37.1.5 Classification of Hazard of Contents.

37.1.5.1 The contents of mercantile occupancies shall be classified in accordance with Section 6.2.

37.1.5.2 Mercantile occupancies classified as high hazard in accordance with Section 6.2 shall meet all of the following additional requirements:

(1) Exits shall be located so that not more than 75 ft (23 m) of travel from any point is needed to reach the nearest exit.
(2) From every point, there shall be not less than two exits accessible by travel in different directions (no common path of travel).
(3) All vertical openings shall be enclosed.

37.1.6 Minimum Construction Requirements. (Reserved.)

37.1.7 Occupant Load. The occupant load, in number of persons for whom means of egress and other provisions are required, shall be determined on the basis of the occupant load factors of Table 7.3.1.2 that are characteristic of the use of the space, or shall be determined as the maximum probable population of the space under consideration, whichever is greater.

37.2 Means of Egress Requirements.

37.2.1 General.

37.2.1.1 All means of egress shall be in accordance with Chapter 7 and this chapter.

37.2.1.2 No inside open stairway, inside open escalator, or inside open ramp shall be permitted to serve as a component of the required means of egress system for more than one floor.

37.2.1.3 Where there are two or more floors below the street floor, the same stairway or other exit shall be permitted to serve all floors, but all required exits from such areas shall be independent of any open stairways between the street floor and the floor below it.

37.2.1.4 Where exits from the upper floor also serve as an entrance from a principal street, the upper floor shall be classified as a street floor in accordance with the definition of street floor in 3.3.271 and shall be subject to the requirements of this chapter for street floors.

37.2.1.5 High hazard mercantile occupancies shall be arranged in accordance with 37.1.5.2.

37.2.2 Means of Egress Components.

37.2.2.1 Components Permitted. Components of means of egress shall be limited to the types described in 37.2.2.2 through 37.2.2.12.

37.2.2.2 Doors.

37.2.2.2.1 Doors complying with 7.2.1 shall be permitted.

37.2.2.2.2* Locks complying with 7.2.1.5.5 shall be permitted only on principal entrance/exit doors.

37.2.2.2.3 Elevator lobby exit access door-locking arrangements in accordance with 7.2.1.6.3 shall be permitted.

37.2.2.2.4 The re-entry provisions of 7.2.1.5.8 shall not apply. *[See 7.2.1.5.8.2(1).]*

37.2.2.2.5 Delayed-egress locks complying with 7.2.1.6.1 shall be permitted.

37.2.2.2.6 Access-controlled egress doors complying with 7.2.1.6.2 shall be permitted in buildings protected throughout by an approved, supervised fire detection system in accordance with Section 9.6 or an approved automatic sprinkler system in accordance with 9.7.1.1(1).

37.2.2.2.7 Horizontal or vertical security grilles or doors complying with 7.2.1.4.1(3) shall be permitted to be used as part of the required means of egress from a tenant space.

37.2.2.2.8 All doors at the foot of stairs from upper floors or at the head of stairs leading to floors below the street floor shall swing in the direction of egress travel.

37.2.2.2.9 Revolving doors complying with 7.2.1.10 shall be permitted.

37.2.2.2.10 In Class C mercantile occupancies, doors shall be permitted to swing inward against the direction of egress travel where such doors serve only the street floor area.

37.2.2.3 Stairs.

37.2.2.3.1 Stairs complying with 7.2.2 shall be permitted.

37.2.2.3.2 Spiral stairs complying with 7.2.2.2.3 shall be permitted.

37.2.2.3.3 Winders complying with 7.2.2.2.4 shall be permitted.

37.2.2.4 Smokeproof Enclosures. Smokeproof enclosures complying with 7.2.3 shall be permitted.

37.2.2.5 Horizontal Exits. Horizontal exits complying with 7.2.4 shall be permitted.

37.2.2.6 Ramps. Ramps complying with 7.2.5 shall be permitted.

37.2.2.7 Exit Passageways.

37.2.2.7.1 Exit passageways complying with 7.2.6 shall be permitted.

37.2.2.7.2 Exit passageways in a mall building shall be permitted to accommodate the following occupant loads independently:

(1) Portion of the occupant load assigned to the exit passageway from only the mall/pedestrian way
(2) Largest occupant load assigned to the exit passageway from a single tenant space

37.2.2.8 Escalators and Moving Walks. Escalators and moving walks complying with 7.2.7 shall be permitted.

APPENDIX B
FACILITY VFA REPORT

APPENDIX C – 2015 FACILTY CONDITION ASSESSMENT

Requirement Forecast Report
By Name

Region: THE CITY OF WINNIPEG - 2015

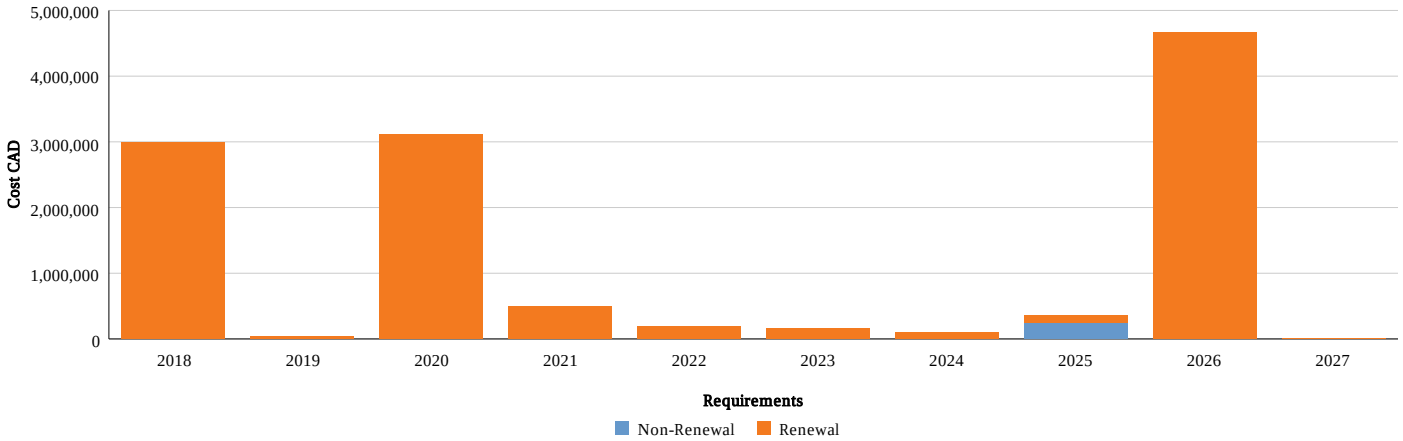
Campus: Concourse Group (C)

Asset: 365 Main Street - BSD Mtce Underground Concourse, 365 Main Street - Concourse - ALL Leased Areas

Currency: CAD **Period**: 10 years **Inflation**: 4.70%

The current year is always the Period start date. If "Include past due Action Dates/Renewals" is selected, the cost of those past due Requirements is included in the current year cost.

Summary of Funding Needed by Requirement Type and Year



Year	Renewal Requirements	Non-Renewal Requirements	Total
2018	2,988,688	523	2,989,211
2019	39,953	0	39,953
2020	3,105,539	0	3,105,539
2021	491,527	0	491,527
2022	197,622	0	197,622
2023	165,597	0	165,597
2024	100,289	0	100,289
2025	117,165	245,736	362,901
2026	4,665,016	0	4,665,016
2027	2,657	0	2,657
Total	**11,874,051**	**246,259**	**12,120,310**

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Requirement Forecast Report
By Name

Region: THE CITY OF WINNIPEG - 2015

Campus: Concourse Group (C)

Asset: 365 Main Street - BSD Mtce Underground Concourse

Asset Number: C-01

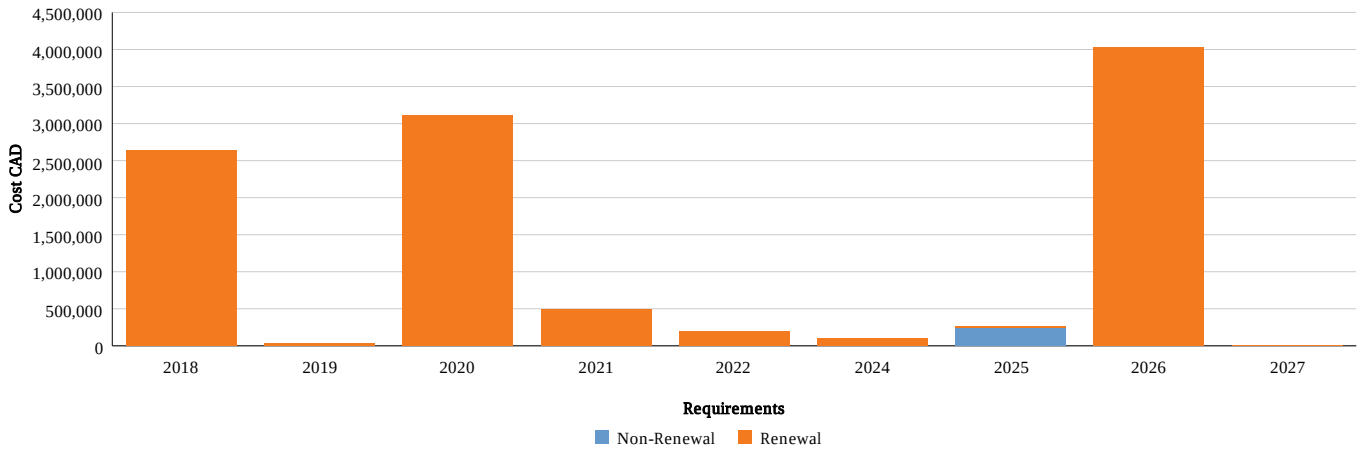
Report is grouped by Year

Currency: CAD

Address 1	365 Main Street	**Address 2**	Concourse Donut
City	Winnipeg	**State/Province/Region**	Manitoba
Country	CANADA	**ZIP**	-

Current Replacement Value	11,995,171	**Size**	23,005 LF

Summary of Funding Needed by Requirement Type and Year



Year	Renewal Requirements	Non-Renewal Requirements	Total
2018	2,641,494	523	2,642,017
2019	39,953	0	39,953
2020	3,105,539	0	3,105,539
2021	491,527	0	491,527
2022	197,622	0	197,622
2024	100,289	0	100,289
2025	17,408	245,736	263,144
2026	4,026,774	0	4,026,774
2027	1,991	0	1,991
Total	**10,622,595**	**246,259**	**10,868,854**

Detail of Funding Needed by Year

Year	System	Requirement Name	Renewal	Non-Renewal	Total
2018	D2020 - Domestic Water Distribution	Water Heater - Electric Renewal	5,208	0	5,208
	D5010 - Electrical Service and Distribution	Distribution System - Panelboards Renewal	279,473	0	279,473
	D5037 - Fire Alarm Systems	Fire Alarm System Renewal	87,619	0	87,619

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Year	System	Requirement Name	Renewal	Non-Renewal	Total
2018	D3050 - Terminal and Package Units	Duct Heaters - Electric (Total for Donut Area Only) Renewal	72,406	0	72,406
	D5012 - Low Tension Service and Dist.	Distribution Equipment, Panelboards, and Feeders - 2000A 208Y/120V Renewal	233,341	0	233,341
	D2020 - Domestic Water Distribution	Water Distribution Renewal	103,458	0	103,458
	D3040 - Distribution Systems	Heat Exchanger - Liquid/Liquid - Plate and Frame Renewal	70,591	0	70,591
	D20 - Plumbing	Sump Pump - Submersible Renewal	6,124	0	6,124
	D3030 - Cooling Generating Systems	Chiller - Reciprocating - Air Cooled Renewal	111,054	0	111,054
	D5092 - Emergency Light and Power Systems	Exit Signs - Average Density Renewal	2,306	0	2,306
	D5012 - Low Tension Service and Dist.	Distribution Equipment, Panelboards, and Feeders 04 - 400A 208Y/120V Renewal	132,812	0	132,812
	D5010 - Electrical Service and Distribution	Electrical Service and Distribution - Blank Circuit Breaker Spacers Not Installed	0	523	523
	D5010 - Electrical Service and Distribution	Distribution System - Motor Control Centre Renewal	104,479	0	104,479
	D3040 - Distribution Systems	Washroom Exhaust Systems Renewal	17,293	0	17,293
	D5010 - Electrical Service and Distribution	Feeder - Heavy Service (2000Amps) Renewal	76,650	0	76,650
	C3030 - Ceiling Finishes	Paint - Ceiling Renewal	792	0	792
	C3020 - Floor Finishes	Ceramic Tile - Floor (Older) Renewal	17,753	0	17,753
	D5092 - Emergency Light and Power Systems	Emergency Battery Pack Lights Renewal	26,665	0	26,665
	D3040 - Distribution Systems	Return Air Fan Renewal	104,501	0	104,501
	C3030 - Ceiling Finishes	Suspended Acoustic Tile - Ceiling Renewal	5,014	0	5,014
	D3040 - Distribution Systems	Central AHU - Const Volume w/Distribution Renewal	518,833	0	518,833
	D2010 - Plumbing Fixtures	Custodial/Utility Sinks Renewal	4,847	0	4,847
	D5012 - Low Tension Service and Dist.	Distribution Equipment, Panelboards, and Feeders - 1600A 208Y/120V Renewal	239,460	0	239,460
	D5021 - Branch Wiring Devices	Branch Wiring - Equipment & Devices - Average Density Renewal	87,011	0	87,011
	D40 - Fire Protection	Wet Sprinkler System - Ordinary Hazard wo/Pump Renewal	264,578	0	264,578
	D5010 - Electrical Service and Distribution	Switchgear - 2000 Amps Renewal	69,226	0	69,226
		Subtotal for 2018	**2,641,494**	**523**	**2,642,017**
2019	D5038 - Security and Detection Systems	Security System - CCTV Renewal	39,953	0	39,953
		Subtotal for 2019	**39,953**	**0**	**39,953**
2020	D1020 - Escalators and Moving Walks	Escalator - Standard Renewal	2,895,532	0	2,895,532
	D3060 - Controls and Instrumentation	DDC/Pneumatic System - Hybrid - Average Renewal	210,007	0	210,007
		Subtotal for 2020	**3,105,539**	**0**	**3,105,539**
2021	C3030 - Ceiling Finishes	Aluminum Panel System Renewal	491,527	0	491,527
		Subtotal for 2021	**491,527**	**0**	**491,527**
2022	D1013 - Lifts	Wheelchair Lift Renewal	197,622	0	197,622
		Subtotal for 2022	**197,622**	**0**	**197,622**
2024	D5022 - Lighting Equipment	Interior Lighting Fixtures Renewal	100,289	0	100,289
		Subtotal for 2024	**100,289**	**0**	**100,289**
2025	C2010 - Stair Construction	Stairs - Non Compliant Handrails and Guards	0	38,011	38,011
	D2020 - Domestic Water Distribution	Domestic Water: Inadequate Backflow Protection	0	11,882	11,882
	C3030 - Ceiling Finishes	Drywall (GWB) - Ceiling Renewal	5,165	0	5,165
	B1014 - Ramps	Interior Ramp - Non Compliant	0	195,843	195,843
	C3020 - Floor Finishes	Ceramic Tile - Floor (Newer) Renewal	12,242	0	12,242
		Subtotal for 2025	**17,408**	**245,736**	**263,144**
2026	C1020 - Interior Doors	Swinging Doors - 3 x 7 HM - NR Renewal	49,076	0	49,076
	C3020 - Floor Finishes	Brick - Floor Renewal	1,227,509	0	1,227,509
	C3010 - Wall Finishes	Stone - Wall Renewal	1,220,710	0	1,220,710
	D2030 - Sanitary Waste	Sanitary Waste System Renewal	152,923	0	152,923
	B2030 - Exterior Doors	Door Assembly - 6 x 7 Storefront Renewal	131,503	0	131,503

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Requirement Forecast Report

By Name

Year	System	Requirement Name		Renewal	Non-Renewal	Total
2026	B1015 - Exterior Stairs and Fire Escapes	Exterior Stairs - Concrete Renewal		170,801	0	170,801
	C3010 - Wall Finishes	Mirrors - Wall Renewal		79,174	0	79,174
	C3010 - Wall Finishes	Brick - Wall Renewal		800,376	0	800,376
	B2030 - Exterior Doors	Door Assembly - 3 x 7 Storefront Renewal		97,714	0	97,714
	C10 - Interior Construction	Restroom Renewal		50,384	0	50,384
	B2015 - Balcony Walls and Handrails	Wood Railings Renewal		46,604	0	46,604
			Subtotal for 2026	**4,026,774**	**0**	**4,026,774**
2027	D40 - Fire Protection	Fire Extinguishers, Dry Chem, w/Cabinet Renewal		1,991	0	1,991
			Subtotal for 2027	**1,991**	**0**	**1,991**
			Total	**10,622,595**	**246,259**	**10,868,854**

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Requirement Forecast Report
By Name

Region: THE CITY OF WINNIPEG - 2015

Asset: 365 Main Street - Concourse - ALL Leased Areas

Campus: Concourse Group (C)

Asset Number: C-08

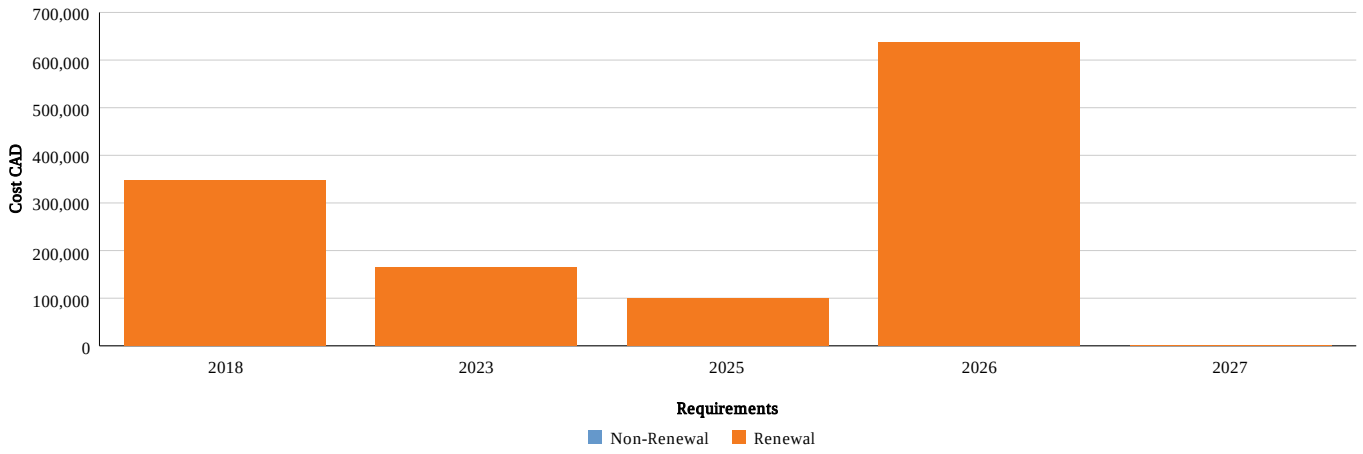
Report is grouped by Year

Currency: CAD

Address 1	365 Main Street	**Address 2**	Concourse Retail Units
City	Winnipeg	**State/Province/Region**	Manitoba
Country	CANADA	**ZIP**	-

Current Replacement Value	1,248,742	**Size**	7,686 SF

Summary of Funding Needed by Requirement Type and Year



Year	Renewal Requirements	Non-Renewal Requirements	Total
2018	347,194	0	347,194
2023	165,597	0	165,597
2025	99,758	0	99,758
2026	638,242	0	638,242
2027	665	0	665
Total	**1,251,456**	**0**	**1,251,456**

Detail of Funding Needed by Year

Year	System	Requirement Name	Renewal	Non-Renewal	Total
2018	D3040 - Distribution Systems	Constant Volume Air Ducting With Distribution Renewal	7,282	0	7,282
	C3030 - Ceiling Finishes	Suspended Acoustic Tile - Ceiling Renewal	45,124	0	45,124
	D5021 - Branch Wiring Devices	Branch Wiring - Equipment & Devices - Average Density Renewal	29,070	0	29,070
	C3020 - Floor Finishes	Carpet - Floor Renewal	35,630	0	35,630
	D5022 - Lighting Equipment	Interior Lighting Fixtures - Average Density (Store Areas) Renewal	25,436	0	25,436
	C3020 - Floor Finishes	Vinyl Sheet - Floor Renewal	5,447	0	5,447
	D40 - Fire Protection	Wet Sprinkler System - Ordinary Hazard wo/Pump Renewal	88,396	0	88,396

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Requirement Forecast Report

By Name

Year	System	Requirement Name		Renewal	Non-Renewal	Total
2018	D5092 - Emergency Light and Power Systems	Exit Signs - Average Density Renewal		4,553	0	4,553
	C3020 - Floor Finishes	Vinyl Tile - Floor Renewal		3,863	0	3,863
	D3050 - Terminal and Package Units	Duct Heaters - Electric Renewal		47,477	0	47,477
	D5033 - Telephone Systems	Telephone System - Light Density Renewal		20,351	0	20,351
	D2020 - Domestic Water Distribution	Water Dist Complete, Average Renewal		34,565	0	34,565
			Subtotal for 2018	**347,194**	**0**	**347,194**
2023	B3010 - Roof Coverings	Single-Ply Membrane Renewal		165,597	0	165,597
			Subtotal for 2023	**165,597**	**0**	**165,597**
2025	C3030 - Ceiling Finishes	Drywall (GWB) - Ceiling Renewal		6,715	0	6,715
	C3020 - Floor Finishes	Ceramic Tile - Floor Renewal		93,043	0	93,043
			Subtotal for 2025	**99,758**	**0**	**99,758**
2026	C3020 - Floor Finishes	Brick - Floor Renewal		87,508	0	87,508
	D2030 - Sanitary Waste	Sanitary Waste Syst, no Pump, Average Renewal		51,092	0	51,092
	C1010 - Partitions	Storefront Renewal		178,574	0	178,574
	C1020 - Interior Doors	Sliding Doors - Glazed Renewal		100,286	0	100,286
	C1020 - Interior Doors	Grille Doors - Metal Renewal		63,618	0	63,618
	C3020 - Floor Finishes	Stone - Floor Renewal		142,416	0	142,416
	C1020 - Interior Doors	Swinging Doors - Glazed Renewal		14,748	0	14,748
			Subtotal for 2026	**638,242**	**0**	**638,242**
2027	D40 - Fire Protection	Fire Extinguishers Renewal		665	0	665
			Subtotal for 2027	**665**	**0**	**665**
			Total	**1,251,456**	**0**	**1,251,456**

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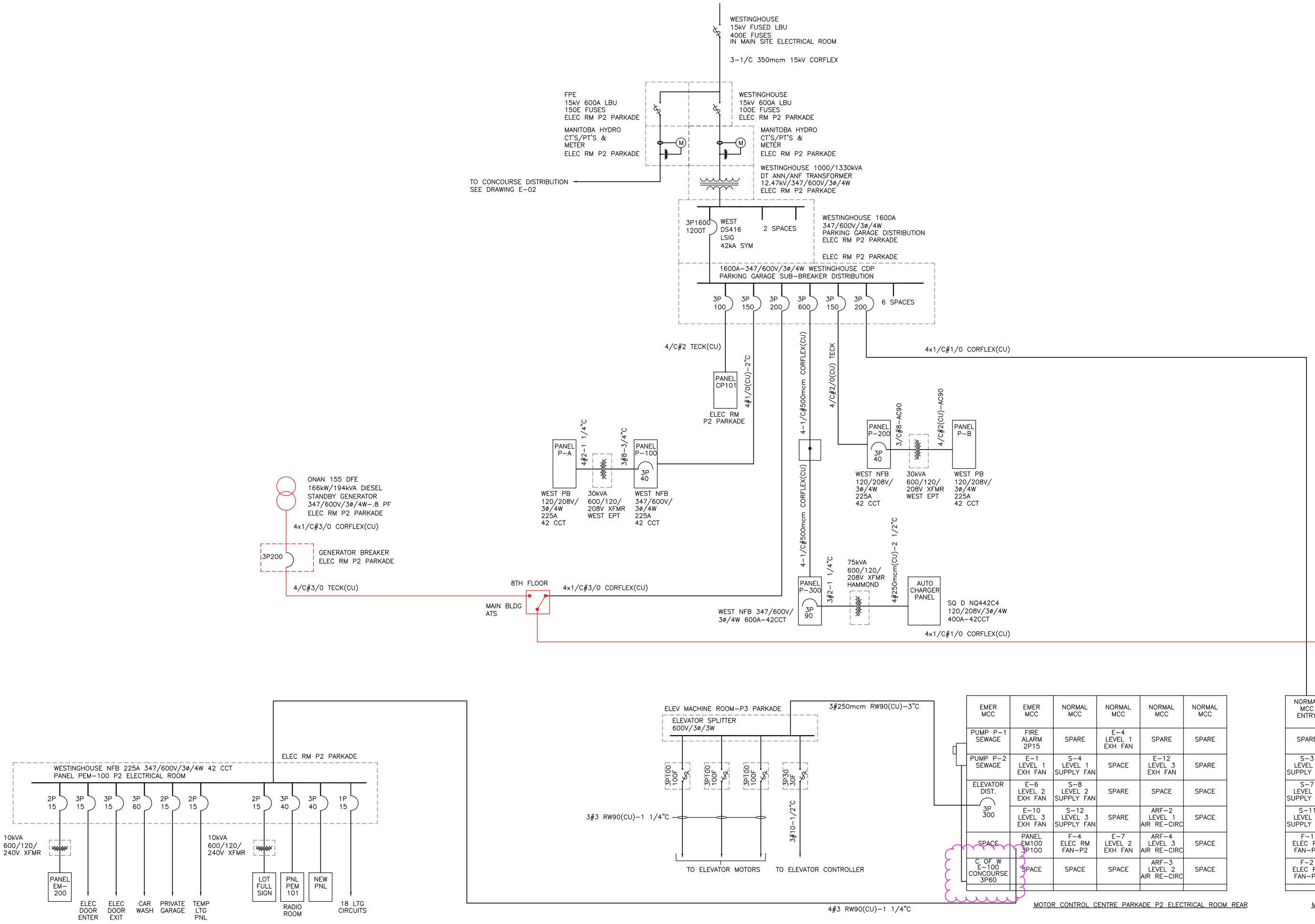
APPENDIX C
ELECTRICAL SINGLE LINE



EMER MCC	EMER MCC	NORMAL MCC	NORMAL MCC	NORMAL MCC	NORMAL MCC
PUMP P-1 SEWAGE	FIRE ALARM 2P15	SPARE	E-4 LEVEL 1 EXH FAN	SPARE	SPARE
PUMP P-2 SEWAGE	E-1 LEVEL 1 EXH FAN	S-4 LEVEL 1 SUPPLY FAN	SPACE	E-12 LEVEL 3 EXH FAN	SPARE
ELEVATOR DIST. 3P 300	E-6 LEVEL 2 EXH FAN	S-8 LEVEL 2 SUPPLY FAN	SPARE	SPACE	SPACE
	E-10 LEVEL 3 EXH FAN	S-12 LEVEL 3 SUPPLY FAN	SPARE	ARF-2 LEVEL 1 AIR RE-CIRC	SPACE
SPACE	PANEL EM100 3P100	F-4 ELEC RM FAN-P2	E-7 LEVEL 2 EXH FAN	ARF-4 LEVEL 3 AIR RE-CIRC	SPACE
C OF W E-100 CONCOURSE 3P60	SPACE	SPACE	SPACE	ARF-3 LEVEL 2 AIR RE-CIRC	SPACE

MOTOR CONTROL CENTRE PARKADE P2 ELECTRICAL ROOM REAR

NORMAL MCC ENTRY	NORMAL MCC	NORMAL MCC	NORMAL MCC	EMER MCC ENTRY	EMER MCC
SPARE	F-3 ELEC RM FAN-P2	SPACE	SPACE	S-1 LEVEL 1 SUPPLY FAN	S-10 LEVEL 3 SUPPLY FAN
S-3 LEVEL 1 SUPPLY FAN	E-3 LEVEL 1 EXH FAN	SPARE	SPARE	S-2 LEVEL 1 SUPPLY FAN	E-5 LEVEL 2 EXH FAN
S-7 LEVEL 3 SUPPLY FAN	SPACE	E-11 LEVEL 3 EXH FAN	CONTROL COMPRESSOR	S-5 LEVEL 2 SUPPLY FAN	E-9 LEVEL 3 EXH FAN
S-11 LEVEL 3 SUPPLY FAN	SPARE	SPACE	SPACE	S-6 LEVEL 2 SUPPLY FAN	E-2 LEVEL 1 EXH FAN
F-1 ELEC RM FAN-P2	DUST COLLECTOR ON P2	ARF-1 LEVEL 1 AIR RE-CIRC	SPACE	S-9 LEVEL 3 SUPPLY FAN	SPRINKLER COMPRESSOR
F-2 ELEC RM FAN-P2	E-8 LEVEL 2 EXH FAN	SPACE	SPACE	SPACE	CONTROL COMPRESSOR

MOTOR CONTROL CENTRE PARKADE P2 ELECTRICAL ROOM FRONT

PARKING GARAGE ELECTRICAL SINGLE LINE DIAGRAM AS-BUILT

N.T.S.

REV	DATE	DESCRIPTION	BY	CHK	APP
1			TJ	TJ	
ø	09DEC16	ISSUED FOR CLIENT REVIEW	TJ	TJ	

ENGINEERING STAMP AREA

DRAWN BY: TJ
DATE: 04DEC16
SCALE: N.T.S.
CHECKED BY: TJ DATE:
APPROVED BY: TJ DATE:

CLIENT:
ARTIS REIT
#300-360 MAIN STREET
WINNIPEG MANITOBA

PROJECT:
WINNIPEG SQUARE PARKADE
ELECTRICAL SERVICES
WINNIPEG, MANITOBA

REFERENCE DRAWINGS

DRAWING TITLE:
WINNIPEG SQUARE PARKADE
ELECTRICAL SINGLE LINE DIAGRAM

DRAWING NO: E-01
REVISION: ø

SUMITECH SERVICES LIMITED
TECHNICAL SERVICES
PROJECT MANAGERS
166 eugenie street
winnipeg, manitoba
R2H 0X8
tel: 204 235 0940
fax: 204 235 0943
email: sumitech3@shaw.ca

APPENDIX D
BACKFLOW INSPECTION REPORT

Winnipeg

Water and Waste Department • Service des eaux et des déchets

BACKFLOW DEVICE TEST REPORT

Site Information

Contact	Ken Pietracci
Company	WINNIPEG CONCOURSE
Address (Street, City, Prov, Postal Code)	365 MAIN ST WINNIPEG, MB R3B 3C2
Phone / Fax #	204 794 4047
Email	

Owner Information

Contact	Ken Pietracci
Company	CITY OF WINNIPEG
Address (Street, City, Prov, Postal Code)	4TH FLOOR - 510 MAIN ST WINNIPEG, MB R3B 1B9
Phone / Fax #	204 794 4047
Email	kpietracci@winnipeg.ca

Device Information

	Existing	Replaced	New
Serial #	1141980614		
Manufacturer	WATTS		
Model #	774		
Type of Assembly (RP, DCVA, PVB)	DCVA		
Size (inches)	4.0"		
Location of Assembly	SOUTH MECH / WATER METER ROOM		
Type of Equip. Protected	SPRINKLER FIRE PROTECTION		

Permit #:

Water Meter #:

Meter Reading:

Pass ☒ Fail ☐

Test Information

RP Device	1st Check (A)	2nd Check	Relief Valve (B)	Buffer (A-B=C)
Initial Test Date (mm-dd-yy): Line Press. ____ psi	Press. Drop ____ psi Closed ☐ Leaked ☐	Closed ☐ Leaked ☐	Opened at ____ psi	____ psi
Test After Repair Date (mm-dd-yy): Line Press. ____ psi	Press. Drop ____ psi Closed ☐ Leaked ☐	Closed ☐ Leaked ☐	Opened at ____ psi	____ psi

DCVA Device	1st Check	2nd Check
Initial Test Date (mm-dd-yy): 9-26-17 Line Press. 70 psi	Closed ☒ Leaked ☐	Closed ☒ Leaked ☐
Test After Repair Date (mm-dd-yy): Line Press. ____ psi	Closed ☐ Leaked ☐	Closed ☐ Leaked ☐

PVB Device	Air Inlet	Check Valve
Initial Test Date (mm-dd-yy): Line Press. ____ psi	Opened at ____ psi Did not open ☐	Closed ☐ Leaked ☐
Test After Repair Date (mm-dd-yy): Line Press. ____ psi	Opened at ____ psi	Closed ☐

Licensed Tester

Licence #	850
Tester Name	MARK RASMUSSEN
Test Kit Serial #	670988
Company	Vipond Fire Protection - 571 Ferry Rd.
Phone #	204-783-2420

Comments / Maintenance / Repairs

I certify all information on this report is true and accurate, acknowledging that incomplete reports will not be accepted. This information meets the requirements under By-Law 504/73.

☒ I accept Date: Sept 26/17

Email this form

APPENDIX E
FIRE ALARM INSPECTION REPORT

EMERGENCY LIGHTING TEST REPORT

SITE NAME: CITY OF WINNIPEG - WINNIPEG CONCOURSE

DATE: September 26, 2017

ADDRESS: 365 MAIN STREET, WINNIPEG, MB

JOB# 6K9720

EMAIL: KPietracci@winnipeg.ca

PACK #	LOCATION	MANUFACTURER	MODEL #	# HEADS ON MASTER	# REMOTE HEADS	# EXIT SIGNS	PASS/ FAIL	BATTERY TYPE	COMMENTS
1	NORTH WEST CONCOURSE	LUMACELL	B1216839	2	0	0	PASS	6V7AH	
2	NORTH EAST CONCOURSE	LUMACELL	B1430736	2	0	0	**FAIL**	6V7AH	**D-1**
3	SOUTH EAST CONCOURSE	LUMACELL	RG36	2	0	0	PASS	6V7AH	
4	SOUTH WEST CONCOURSE	LUMACELL	LSC28W22T9	2	0	1	PASS	6V5AH	

TECHNICIAN: JEFF DEW / JASON MELQUIST

EMERGENCY LIGHTING TEST REPORT

NOTES AND DEFICIENCIES

SITE NAME: CITY OF WINNIPEG - WINNIPEG CONCOURSE

ADDRESS: 365 MAIN STREET, WINNIPEG, MB

N = TECHNICIAN NOTES R = RECOMMENDATIONS D= DEFICIENCIES

NOTE #	COMMENTS
D-1	UNIT FAILED DURING ANNUAL INSPECTION. 1x6V7AH BATTERY IS REQUIRED AND SHOULD BE REPLACED. (SEPT/2017)

571 Ferry Rd
Winnipeg, MB R3H 0T5
Tel.: (204) 783-2420
Fax.: (204) 786-1321

FIRST FOR FIRE, LIFE SAFETY & SECURITY
VIPOND INC
est. 1945

System Inspection Certificate

Type of Fire Alarm Control Panel: EDWARDS QUICKSTART (QS1)

Panel Location: OLD SECURITY OFFICE

Area Monitored: CITY OF WINNIPEG - WINNIPEG CONCOURSE - 365 MAIN STREET

This Certifies That The Above System Has Been Inspected In Accordance With Recognized And Accepted Standards And Was Found To Be In Proper Working Order When This Inspection Was Completed On September 26, 2017 **In Accordance with ULC-S-536.**

This System Should Be Re-Inspected On Or Before: September 26, 2018

Authorized Signature

Vipond Fire Protection Inc.

CAN/ULC-S536-04

Member

E1. FIRE ALARM SYSTEM ANNUAL TEST & INSPECTION REPORT

(Reference: Clause 5.1.2)

YES = Tested Correctly **No =** Did not test correctly **N/A =** Not Applicable (Function or Feature not provided on this Fire Alarm System)

Building Name:	CITY OF WINNIPEG - WINNIPEG CONCOURSE	**Date:** September 26, 2017	
Address:	365 MAIN STREET		
	WINNIPEG, MB		
Contact:	KEN PIETRACCI PH#: 204-794-4047		
Job Number:	6K9720		
System Manufacturer:	EDWARDS	**Model #:** QUICKSTART (QS1)	

A	System provides single-stage operation.	**YES**	✓	**NO**		**N/A**	
B	System provides two-stage operation.	**YES**		**NO**		**N/A**	✓
C	The entire Fire Alarm System has been inspected and tested in accordance with CAN/ULC-S536, Inspection and Testing of Fire Alarm Systems	**YES**	✓	**NO**		**N/A**	
D	The fire alarm system documentation is on site and includes a description of the system.	**YES**	✓	**NO**		**N/A**	
E	The Fire Alarm System is fully functional.	**YES**	✓	**NO**		**N/A**	
F	The Fire Alarm System has deficiencies noted on the pages attached.	**YES**		**NO**	✓	**N/A**	
G	Comments:						
	SEE REMARKS PAGE						
H	A Copy of this report has been given to: KPietracci@winnipeg.ca						
	who is the owner or owner's representative for this building.	**YES**	✓	**NO**			

This is to certify that the information contained in this Fire alarm System Annual Test and Inspection Report is correct and complete.

JEFF DEW	VIPOND FIRE PROTECTION	204-783-2420
Printed Name of Primary or Supervising Technician Conducting the Test and Inspection	*Company Name*	*Telephone Number*
Signature of Primary or Supervising Technician Conducting the Test and Inspection	*Identification Number of Primary or Supervising Technician Conducting the Test and Inspection*	
JASON MELQUIST	VIPOND FIRE PROTECTION	204-783-2420
Printed Name of Technician Conducting the Test and Inspection	*Company Name*	*Telephone Number*
Signature of Technician Conducting the Test and Inspection	*Identification Number of Technician Conducting the Test and Inspection*	

E2. CONTROL UNIT OR TRANSPONDER RECORD

E2.1 CONTROL UNIT OR TRANSPONDER TEST

(Reference: Clauses 5.1.3, 5.2.2.1)

Control Unit or transponder location:	OLD SECURITY OFFICE
Control Unit or transponder identification:	QUICKSTART

A	Power "On" Visual Indicator operates..	**YES**	✓	**NO**		**N/A**	
B	Common Visual Trouble Signal operates.	**YES**	✓	**NO**		**N/A**	
C	Common Audible Trouble Signal operates.	**YES**	✓	**NO**		**N/A**	
D	Trouble Signal Silence Switch operates.	**YES**	✓	**NO**		**N/A**	
E	Main Power Supply Failure Trouble Signal operates	**YES**	✓	**NO**		**N/A**	
F	Ground Fault Tested on Positive and Negative Initiates a Trouble Signal.	**YES**	✓	**NO**		**N/A**	
G	Alert Signal Operates.	**YES**		**NO**		**N/A**	✓
H	Alarm Signal Operates.	**YES**	✓	**NO**		**N/A**	
I	Automatic transfer from Alert Signal to Alarm Signal operates.	**YES**		**NO**		**N/A**	✓
J	Manual transfer from Alert Signal to Alarm Signal operates.	**YES**		**NO**		**N/A**	✓
K	Automatic transfer from Alert Signal to Alarm Signal cancel (acknowledge) feature operates on a two-stage system.	**YES**		**NO**		**N/A**	✓
L	Alarm Signal Silence Inhibit function operates.	**YES**	✓	**NO**		**N/A**	
M	Alarm Signal Manual Silence Operation.	**YES**	✓	**NO**		**N/A**	
N	Alarm Signal Silence Visual Indication operates.	**YES**	✓	**NO**		**N/A**	
O	Alarm Signal, when silenced, automatically reinitiates upon Subsequent Alarm.	**YES**	✓	**NO**		**N/A**	
P	Alarm Signal Silence Automatic Cut-Out Timer.	**Time:** N/A					
Q	Audible and Visual Alarm Signals Programmed and operate per design and specification; or documentation as detailed in Appendix C, Description of Fire Alarm System for Inspection and Test Procedures.	**YES**	✓	**NO**		**N/A**	
R	Input Circuit, Alarm and Supervisory Operation, including visual indicator operates.	**YES**	✓	**NO**		**N/A**	
S	Input Circuit supervision fault causes a Trouble indication.	**YES**	✓	**NO**		**N/A**	
T	Output Circuit Alarm Indicators Operate.	**YES**	✓	**NO**		**N/A**	
U	Output Circuit supervision fault causes a Trouble Indication.	**YES**	✓	**NO**		**N/A**	
V	Visual Indicator Test (Lamp Test) operates.	**YES**	✓	**NO**		**N/A**	
W	Coded Signal Sequences operate not less than the required number of times and the correct alarm signal operates therefore.	**YES**		**NO**		**N/A**	✓
X	Coded Signal Sequences are not interrupted by sub-sequent alarms.	**YES**		**NO**		**N/A**	✓
Y	Ancillary device by-pass results in trouble signal.	**YES**	✓	**NO**		**N/A**	
Z	Input circuit to output circuit operation, including ancillary device circuits, for correct program operation, as per design and specification, or documentation as detailed in Appendix C, Description of Fire Alarm System for Inspection and Test Procedures.	**YES**	✓	**NO**		**N/A**	
AA	Fire Alarm System reset operates.	**YES**	✓	**NO**		**N/A**	
BB	Main Power Supply to Emergency Power supply Transfer.	**YES**	✓	**NO**		**N/A**	
CC	Status Change Confirmation Feature (Smoke Detectors Only) Verified.	**YES**		**NO**		**N/A**	✓
DD	Confirm that the alarm transmission to the remote fire signal receiving centre is received.	**YES**	✓	**NO**		**N/A**	

E2.1 CONTROL UNIT OR TRANSPONDER TEST RECORD - CONTINUED

EE	Confirm that the supervisory transmission to the fire signal receiving centre is received.	**YES**	**NO**	**N/A**	✓
FF	Confirm that the trouble transmission to the fire signal receiving centre is received.	**YES** ✓	**NO**	**N/A**	
GG	If connected, record the name and telephone number of the fire signal receiving centre.	**Name:** CENTRAL CONTROL (FMS) **Telephone:** 204-986-2382			
HH	Operation of the fire signal receiving centre disconnect means results in a specific trouble indication at the control unit or transponder and transmits a trouble signal to the fire signal receiving centre.	**YES** _____	**NO** _____	**N/A**	✓

E2.2 VOICE COMMUNICATION TEST

(Reference: Clauses 5.1.3, 5.2.3.1)

A	Power "On" Indicator operates.	**YES**	**NO**	**N/A**	✓
B	Common Visual Trouble Signal operates.	**YES**	**NO**	**N/A**	✓
C	Common Audible Trouble Signal operates.	**YES**	**NO**	**N/A**	✓
D	Trouble Signal Silence Switch operates	**YES**	**NO**	**N/A**	✓
E	All-Call Voice Paging, including visual indicator, operates.	**YES**	**NO**	**N/A**	✓
F	Output Circuits for Selective Voice Paging, including visual indication operates.	**YES** _____	**NO** _____	**N/A**	✓
G	Output Circuits for Selective Voice Paging Trouble Operation Including visual indication, operates.	**YES** _____	**NO** _____	**N/A**	✓
H	Microphone including press to talk switch, operates.	**YES**	**NO**	**N/A**	✓
I	Operation of Voice Paging Does not interfere with initial Time of Alert Signal and Alarm Signal.	**YES** _____	**NO** _____	**N/A**	✓
J	All-Call Voice Paging operates *(on Emergency Power Supply?).*	**YES**	**NO**	**N/A**	✓
K	Upon Failure of one Amplifier, System Automatically Transfers to Backup Amplifier(s).	**YES** _____	**NO** _____	**N/A**	✓
L	Circuits for Emergency Telephones call-in operation including, Audible and Visual Indication operates.	**YES** _____	**NO** _____	**N/A**	✓
M	Circuits for Emergency Telephones for Operation including Two-Way Voice Communication, operates.	**YES** _____	**NO** _____	**N/A**	✓
N	Circuits for Emergency Telephone Trouble Operation including Visual Indication, operates.	**YES** _____	**NO** _____	**N/A**	✓
O	Emergency Telephone Verbal Communication, operates.	**YES**	**NO**	**N/A**	✓
P	Emergency Telephone Operable or In-Use Tone at Handset, operates.	**YES** _____	**NO** _____	**N/A**	✓

E2.3 CONTROL UNIT OR TRANSPONDER INSPECTION

(Reference: Clause 3.2.4, 5.2.4.1)

Control Unit or Transponder Location:	OLD SECURITY OFFICE
Control Unit or Transponder Identification	QUICKSTART

A	Input Circuit Designation Correctly identified in relation to Connected Field Devices.	**YES**	✓	**NO**		**N/A**	
B	Output Circuit Designations correctly identified in relation to Connected Field Devices.	**YES**	✓	**NO**		**N/A**	
C	Correct designations for common control functions & indicators.	**YES**	✓	**NO**		**N/A**	
D	Plug-in Components and modules securely in place.	**YES**	✓	**NO**		**N/A**	
E	Plug-in Cables securely in place.	**YES**	✓	**NO**		**N/A**	
F	Record the Date, Revision and version of Firmware and Software program.	**YES**	✓	**NO**		**N/A**	
		Date: JANUARY 27 2015 VER2.5					
G	Control unit or transponder is clean and free of dust & dirt.	**YES**	✓	**NO**		**N/A**	
H	Fuses in Accordance with Manufacturer's Specification.	**YES**	✓	**NO**		**N/A**	
I	Control unit or transponder lock functional.	**YES**	✓	**NO**		**N/A**	
J	Termination Points from Wiring to Field Devices Secure.	**YES**	✓	**NO**		**N/A**	

E2.4 POWER SUPPLY INSPECTION

(Reference: Clauses 5.1.3, 5.3.1)

Control unit or transponder location:	OLD SECURITY OFFICE
Control unit or transponder identification:	QUICKSTART

A	Fused in accordance with the Manufacturer's marked rating of the System.	**YES**	✓	**NO**		**N/A**	
B	Adequate to Meet the Requirements of the System.	**YES**	✓	**NO**		**N/A**	

NOTE: For Item E2.4, one page is required <u>for each power supply in the system</u>.

E2.5 EMERGENCY POWER SUPPLY TEST & INSPECTION

(Reference: Clause 5.1.3, 5.3.2, 5.3.3)

Control unit or transponder location:	OLD SECURITY OFFICE
Control unit or transponder identification:	QUICKSTART

A	Correct battery type as recommended by Manufacturer.	**YES**	✓	**NO**		**N/A**	
B	Correct battery rating as determined by battery Calculations based on full system load.	**YES**	✓	**NO**		**N/A**	
C	Battery Voltage with Main Power Supply "On" is:	**Voltage:**	**26.3**	**V dc**			
D	Battery Voltage & Current with Main Power supply "Off" and Fire Alarm System in Supervisory Condition is:	**Voltage:** **Current:**	**25.8** **200**	**V dc** **mA dc**			
E	Battery Voltage and Current with Main Power Supply "Off" and System Fire System in Full Load alarm condition is:	**Voltage:** **Current:**	**25.11** **1.13**	**V dc** **A dc**			
F	The charging current is:	**Current:**	**600**	**mA**			
G	Inspected for Physical Damage:	**YES**	✓	**NO**		**N/A**	
H	Terminals cleaned and lubricated.	**YES**	✓	**NO**		**N/A**	
I	Terminals clamped tightly.	**YES**	✓	**NO**		**N/A**	
J	Correct Electrolyte Level.	**YES**		**NO**		**N/A**	✓
K	Specific gravity of the electrolyte is within Manufacturer's specifications.	**YES**		**NO**		**N/A**	✓
L	Electrolyte leakage.	**YES**		**NO**	✓	**N/A**	
M	Adequately ventilated.	**YES**	✓	**NO**		**N/A**	
N	Record manufacturer's date code or in-service date:	**Date:** DEC 2013					
O	Disconnection Causes Trouble Signal.	**YES**	✓	**NO**		**N/A**	
P	Indicate type of battery test performed:						
(i)	Required supervisory load for 24 h followed by the required full load operation: or	**YES**		**NO**	✓		
(ii)	A silent test by using the load resistor method may be used for the full duration test (refer to appendix F1, Silent Test)or:	**YES**		**NO**	✓		
(iii)	Silent accelerated test. (Refer to Appendix F2, Silent Accelerated Test)	**YES**		**NO**	✓		
(iv)	A battery capacity meter test. (Refer to Appendix F3, Battery Capacity Meter Test); or	**YES**	✓	**NO**			
(v)	In lieu of the above battery tests, replace the battery with a new set having a current date code, amp-hour capacity and type as recommended by the manufacturer.	**YES**		**NO**	✓		
Q	Record calculated battery capacity (Refer to Appendix F4.1-C)			**2x12V7**	**A.h**		
R	Record battery terminal voltage after completion of tests			**27.03**	**V dc**		
S	Battery voltage not less than 85% of its rating after tests	**YES**	✓	**NO**		**N/A**	
T	Generator provides power to AC circuit serving the fire alarm system.	**YES**		**NO**		**N/A**	✓
U	Trouble condition at the emergency generator results in an audible common trouble signal and a visual indication at the required annunciator.	**YES**		**NO**		**N/A**	✓

NOTE: For Item E2.5, one page is required <u>for EACH set of batteries in the system</u>.

E2.6 ANNUNCIATOR AND REMOTE TROUBLE SIGNAL UNIT TEST AND INSPECTION

(Reference: Clauses 5.1.4, 5.4.1)

Annunciator or remote trouble signal unit location:	N/A
Annunciator or remote trouble signal unit identification:	N/A

A	Power on/on line indicator operates.	**YES**	**NO**	**N/A**	✓
B	Individual Alarm and Supervisory input zone clearly indicated and separately designated.	**YES** ____	**NO** ____	**N/A**	✓
C	Individual Alarm and Supervisory Zone designation labels are properly identified.	**YES** ____	**NO** ____	**N/A**	✓
D	Common Trouble Signal operates.	**YES**	**NO**	**N/A**	✓
E	Visual indicator test (Lamp Test) operates.	**YES**	**NO**	**N/A**	✓
F	Input wiring from control unit or transponder is supervised.	**YES**	**NO**	**N/A**	✓
G	Alarm signal silence visual indicator operates.	**YES**	**NO**	**N/A**	✓
H	Switches for ancillary functions operate as per design and specification, or documentation as detailed in Appendix C, Description of Fire Alarm System for Inspection and Test Procedures.	**YES** ____	**NO** ____	**N/A**	✓
I	Ancillary functions visual indicators operate.	**YES**	**NO**	**N/A**	✓
J	Manual activation of Alarm Signal and indication operates.	**YES**	**NO**	**N/A**	✓
K	Displays are visible in installed location.	**YES**	**NO**	**N/A**	✓
L	Operates on emergency power.	**YES**	**NO**	**N/A**	✓

E2.7 ANNUNCIATORS OR SEQUENTIAL DISPLAYS

(Reference: Clauses 5.1.4, 5.4.2)

Annunciator or sequential display location:	N/A
Annunciator or sequential identification:	N/A

A	Power "ON" indicator operates.	**YES**	**NO**	**N/A**	✓
B	Individual Alarm and Supervisory zone indication operates	**YES** ____	**NO** ____	**N/A** (See exception)	✓
	Exception: Operation of each individual alarm and supervisory zone indication gives the identical indication, or lights the identical indicators at the other Annunciator(s) and sequential display(s). Specify Method of confirmation: N/A	**YES** ____	**NO** ____	**N/A**	✓
	Minimum of one alarm zone and one supervisory zone tested per annunciator or sequential display to confirm operation.	**YES** ____	**NO** ____	**N/A**	✓
C	Individual alarm and supervisory zone designation labels are properly identified.	**YES** ____	**NO** ____	**N/A**	✓
D	Common trouble signal operates.	**YES**	**NO**	**N/A**	✓
E	Visual indicator test (lamp test) operates.	**YES**	**NO**	**N/A**	✓
F	Input wiring from control unit is supervised.	**YES**	**NO**	**N/A**	✓
G	Alarm signal silence visual indicator operates.	**YES**	**NO**	**N/A**	✓
H	Switches for ancillary functions operates as per design and specification, or documentation as detailed in Appendix C, Description of Fire Alarm System for Inspection and Test Procedures.	**YES** ____	**NO** ____	**N/A**	✓
I	Ancillary function visual indicators operate.	**YES**	**NO**	**N/A**	✓
J	Manual activation of alarm signal and indication operates.	**YES**	**NO**	**N/A**	✓
K	Displays are visible in installed location.	**YES**	**NO**	**N/A**	✓

E2.8 REMOTE TROUBLE SIGNAL UNIT TEST AND INSPECTION

(Reference: Clauses 5.1.4, 5.4.3)

Remote trouble signal unit location	NEW SECURITY OFFICE
Remote trouble signal unit identification:	

A	Input Wiring from Control Unit is Supervised.	**YES**	**NO**	**N/A**	✓
B	Visual Trouble Signal operates.	**YES**	**NO**	**N/A**	✓
C	Audible Trouble Signal operates.	**YES** ✓	**NO**	**N/A**	
D	Audible Trouble Signal Silence operates.	**YES**	**NO**	**N/A**	✓

E2.9 PRINTER TEST

(Reference Clauses 5.1.4, 5.5.1)

Printer location:	N/A
Printer identification:	N/A

A	Operates as per design and specification, or documentation as detailed in Appendix C, Description of Fire Alarm System for Inspection and Test Procedures.	**YES**	**NO**	**N/A**	✓
B	Zone of Each Alarm Initiating device is correctly printed.	**YES**	**NO**	**N/A**	✓
C	Rated Voltage is present.	**YES**	**NO**	**N/A**	✓

E2.10 DATA COMMUNICATION LINK TEST

(Reference: Subsection 5.1.5, 5.6-Note)

Control Unit or transponder location:	OLD SECURITY OFFICE
Control Unit or transponder identification:	QUICKSTART
Data communication link identification:	LOOP #1

A	Confirm that a trouble signal is received at the control unit or transponder under an open loop fault for each data communication link (DCL).	**YES** ✓	**NO**	**N/A**	
B	Where fault isolation modules are installed in data communication links serving field devices, wiring shorted on the isolated side annunciation of the fault confirmed, and then a device on the source side operated, and activation confirmed at the control unit or transponder.	**YES**	**NO**	**N/A**	✓
C	Where fault isolation in data communication links is provided between control units or transponders, and between transponders, introduce a short circuit fault and confirm annunciation of the fault and operation outside the shorted section between each pair of:				
	(i) Control unit to control unit	**YES**	**NO**	**N/A**	✓
	(ii) Control unit to transponder	**YES**	**NO**	**N/A**	✓
	iii) Transponder to transponder	**YES**	**NO**	**N/A**	✓

CAN/ULC - S536-04

E2.11 ANCILLARY DEVICE CIRCUIT TEST
(Reference: Clause 5.2.2.1-Z)

RECORD SPECIFIC TYPE OF ANCILLARY CIRCUIT	OPERATION OF ANCILLARY CIRCUIT CONFIRMED		
	YES	**NO**	**N/A**
	YES	**NO**	**N/A**
	YES	**NO**	**N/A**
	YES	**NO**	**N/A**
	YES	**NO**	**N/A**
	YES	**NO**	**N/A**
	YES	**NO**	**N/A**
	YES	**NO**	**N/A**
	YES	**NO**	**N/A**
	YES	**NO**	**N/A**
	YES	**NO**	**N/A**
	YES	**NO**	**N/A**
	YES	**NO**	**N/A**
	YES	**NO**	**N/A**
	YES	**NO**	**N/A**
	YES	**NO**	**N/A**
	YES	**NO**	**N/A**
	YES	**NO**	**N/A**

Note: The tests reported on this Form do not include the actual operational test of ancillary devices.

NAME OF PERSON CONTACTED AT THE CENTRAL STATION OR FIRE DEPARTMENT

Monitoring Company: CENTRAL CONTROL (FMS)
Phone Number: 204-986-2382
System ID Number: _____

Monitored For:

Trouble:	**YES** ✓	**NO**	**N/A**
Supervisory:	**YES**	**NO**	**N/A** ✓
Alarm:	**YES** ✓	**NO**	**N/A**

REMARKS

Building Name : CITY OF WINNIPEG - WINNIPEG CONCOURSE

N = NOTES R = RECOMMENDATIONS D= DEFICIENCIES

	DEFICIENCIES AS PER CAN/ULC-S536:
	RECOMMENDATIONS:
	GENERAL NOTES:
N-1	PULLSTATION IS MISSING GLASS ROD.
N-2	SIREN STROBE IN SECURITY OFFICE ACTIVATES VIA RELAY 4 IN THE PANEL.
N-3	BREAKER FOR THE FIRE ALARM CONTROL PANEL LOCATED IN ELECTRICAL ROOM OFF MECHANICAL ROOM. IT IS A FUSE TYPE BREAKER LOCATED IN A RED BOX LABELLED FIRE PANEL. (SEPT/2017)
N-4	UNABLE TO LOCATE SMOKE DETECTOR. THERE IS CONSTRUCTION GOING ON IN THE AREA. IT IS POSSIBLE THIS DETECTOR IS LOCATED IN THIS AREA. (SEPT/2017)

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E3. FIELD DEVICE RECORD
(Reference: Clause 5.1.6)

BUILDING NAME: CITY OF WINNIPEG - WINNIPEG CONCOURSE

E3.1 FIELD DEVICE TESTING - LEGEND AND NOTES

(Reference: Clauses 5.7.4.1.3,5.7.4.1.4,5.7.4.1.5,5.7.4.3.1,5.7.4.5.1,5.7.8.1.1.,5.7.8.2.2,5.7.8.2.4)

Device	*Description*	*Type*	*Model No.*	*Total*
M	Manual Pull Station	SIMPLEX	2099-9754C	8
M	Manual Pull Station	EDWARDS	79KN	1
RHT	Heat Detector, Restorable	FDD	CR-135	
HT	Heat Detector, Non-restorable			
SP	Smoke Detector Photoelectric	EDWARDS	C2M-PD1	1
	Sensitivity Test Method or Test Equipment: Model/Method: Manufacturer sensitivity range: Sensitivity range:			
SI	Smoke Detector Ionization			
	Sensitivity Test Method or Test Equipment: Model/Method: Manufacturer sensitivity range: Sensitivity range:			
DS	Duct Smoke Detector	EDWARDS	ESD-2W	1
BSD	Beam Smoke Detector			
FS	Sprinkler Flow Switch	FURNAS	UNKNOWN	1
FS1	Sprinkler Flow Switch	SYSTEM SENSOR	WFD25AV	1
TS	Sprinkler Isolation Valve (Supervisory Device)	VICTAULIC	705	3
TS1	Sprinkler Isolation Valve (Supervisory Device)	POTTER	OSYSU-2	1
PS	Sprinkler Low Air Pressure Switch	POTTER	PS120-2	1
SOL	Sprinkler Pre-Action Solenoid			
MR	Manual Release Station			
ABT	Abort Station			
B-10	10 Inch Bell			
B-6	6 Inch Bell			
V	Visual Signal Appliance (Strobe)			
H-S	Combination Horn/Strobe Indicating Appliance			
H-MT	Multi-Tone Horn			
H-M	Mechanical Horn			
PZ	Piezo Sounder			
SPKR	Cone Type Loudspeaker			
HSP	Horn Type Loudspeaker			
ET	Emergency Telephone			
EOL	End of Line Device			
AD	Ancillary Device			
FMM	Addressable Monitor Module			
FMM-101A	Addressable Monitor Module			
FRM	Addressable Relay Module			
FCM	Addressable Control Module			
FDM	Addressable Dual Input Module			
ISO	Fault Isolation Module			
S	Strobe Light			
MR	Manual Release Station			
ABT	Abort Station			

E3. FIELD DEVICE RECORD
(Reference: Clause 5.1.6)

E3.1 FIELD DEVICE TESTING - LEGEND AND NOTES
(Reference: Clauses 5.7.4.1.3,5.7.4.1.4,5.7.4.1.5,5.7.4.3.1,5.7.4.5.1,5.7.8.1.1.,5.7.8.2.2,5.7.8.2.4)

The following notes apply to Appendix E3.2, Individual Device Record:

Note 1. Smoke detector sensitivity confirmation or measurement should be recorded in the remarks column.

Note 2. Smoke detector cleaning or replacement date should also be recorded in the remarks column.

Note 3. Status change, including time delay, should be recorded in the remarks column.

Note 4. Duct smoke detector pressure differential should be confirmed and recorded in the remarks column.

Note 5. Time delay setting of water flow switch should be be recorded in the remarks column.

Note 6. Sprinkler supervisory switches cause trouble condition to be annunciated but not an alarm condition.

Note 7. Upper & lower pressure settings of supervisory devices should be recorded in the remarks column.

Note 8. Low temperature setting should be recorded in the remarks column.

Note 9. Identify specific ancillary devices in the remarks column.

Note 10. Identify date field device changed in the remarks column.

Note 11. Identify correct field device operation (e.g. alarm, trouble, supervisory, annunciation indication).

Note 12. Identify zone, circuit number, or address.

Note 13. Identify conventional field device locations.

Note 14. Identify active field device and supporting field device, data communication link (DCL), address and location.

Note 15. Test and confirm conventional field device supervision of wiring.

Note 16. Confirm field device free of damage.

Note 17. Confirm field device free of foreign substance (e.g. paint).

Note 18. Confirm field device mechanically supported independently of the wiring.

Note 19. Confirm field device protective dust shields or covers removed.

Caution: The tests reported on these forms do not include the actual operational test of Ancillary Devices.

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ZONE SCHEDULE

BUILDING NAME: CITY OF WINNIPEG - WINNIPEG CONCOURSE

ZONE #	LABEL
Z1	CONCOURSE
Z2	DUCT DETECTOR
Z3	SPRINKLER WATERFLOW
Z4	SPRINKLER LOW PRESSURE
Z5	MAIN SPRINKLER VAVLE
Z6	FIRE HOSE VALVE
Z7	FIRE HOSE FLOW
Z8	BACKFLOW INCOMING VALVE
Z9	SPRINKLER SYSTEM VALVE
Z10	BACKFLOW OUTGOING VALVE

C6.2 INDIVIDUAL DEVICE RECORD
(Reference 5.7.1.3, E3.1)

Building Name: CITY OF WINNIPEG - WINNIPEG CONCOURSE

Device Legends and Notes are listed in Appendix E3.1, Field Device Testing-Legend and Notes

Zone Circuit #	Location	Device	Address	Correctly Installed	Missing Device	Requires Service	Alarm Confirmed	Annunciator Confirmed	Supervision Confirmed	Remarks
Z1	**CONCOURSE**									
Z1	FOOD COURT TO CONCOURSE	M					✓	✓		N-1
Z1	FOOD COURT TO CONCOURSE	SP					NT	NT		**D-1**
Z1	CONCOURSE TO FOOD COURT	M					✓	✓		
Z1	EXIT STAIRS TO TD CENTRE	M					✓	✓		
Z1	LOWER STAIR BY TD CENTRE	M					✓	✓		
Z1	CONCOURSE TO RICHARDSON BUILDING	M1					✓	✓		
Z1	BY BMO ATM'S	M					✓	✓		N-1
Z1	BY BMO ENTRANCE	M					✓	✓		N-1
Z1	BY LOTTO CENTRE	M					✓	✓		N-1
Z1	CONCOURSE TO WINNIPEG SQUARE	M					✓	✓		N-1
Z1	ELECTRICAL ROOM OFF MECHANICAL ROOM	RHT					✓	✓		
Z2	**DUCT DETECTOR**									
Z2	N/E MECHANICAL ROOM	DS					✓	✓		
Z3	**SPRINKLER WATERFLOW**									
Z3	N/E MECHANICAL ROOM	FS					✓	✓		45 SEC.
Z4	**SPRINKLER LOW PRESSURE**									
Z4	SPRINKLER LOW PRESSURE	PS						✓		70 PSI.
Z5	**MAIN SPRINKLER VALVE**									
Z5	MAIN SPRINKLER VALVE	TS						✓		
Z6	**FIRE HOSE VALVE**									
Z6	FIRE HOSE VALVE	TS						✓		
Z7	**FIRE HOSE WATERFLOW**									
Z7	FIRE HOSE WATERFLOW	FS1					✓	✓		44 SEC
Z8	**BACKFLOW VALVE INCOMING**									
Z8	BACKFLOW VALVE INCOMING	TS						✓		
Z9	**SPRINKLER VALVE**									
Z9	SPRINKLER VALVE	TS						✓		
Z10	**BACKFLOW VALVE OUTGOING**									
Z10	BACKFLOW VALVE OUTGOING	TS						✓		
NAC1	**BELL CIRCUIT #1**									
NAC1	BETWEEN BANK AND HAIR SALON	B-10					✓			
NAC1	EXIT TO LOMBARD	B-10					✓			
NAC1	BY BMO	B-10					✓			

C6.2 INDIVIDUAL DEVICE RECORD

(Reference 5.7.1.3, E3.1)

Building Name: CITY OF WINNIPEG - WINNIPEG CONCOURSE

Device Legends and Notes are listed in Appendix E3.1, Field Device Testing-Legend and Notes

Zone Circuit #	Location	Device	Address	Correctly Installed	Missing Device	Requires Service	Alarm Confirmed	Annunciator Confirmed	Supervision Confirmed	Remarks
NAC1	BY BMO	B-10					✓			
NAC1	TOP OF BMO STAIRS	B-10					✓			
NAC1	BY SECURITY OFFICE	B-10					✓			
NAC1	TD ENTRANCE	B-10					✓			
NAC1	TO BANK STAIRWELL	B-10					✓			
NAC1	MECHANICAL ROOM BY SECURITY	B-10					✓			
NAC1	MECHANICAL ROOM BY SECURITY	EOL					NT			

APPENDIX F
SPRINKLER INSPECTION REPORT

Sprinkler Inspection Certificate

Winnipeg Concourse
365 Main Street
Winnipeg, MB R3B 3C2

Inspection, Testing and Maintenance of Water-Based Fire Protection Systems

This Inspection was performed in accordance with applicable codes and Standards. The subsequent pages of this report provide performance measurements, listed ranges of acceptable results, and complete documentation of the inspection. Whenever discrepancies exist between acceptable performance standards and actual test results, notes and/or recommended solutions have been proposed or provided for immediate review and approval.

Inspection Date
Sep 26, 2017

Building: Winnipeg Concourse
Contact: Ken Pietracci
Title: Electronic Technologist

Company: Vipond Inc. Winnipeg
Contact: Mark Rasmussen
Title: Sprinkler Inspector

Executive Summary

Generated by: BuildingReports.ca

Building Information

Building: Winnipeg Concourse
Address: 365 Main Street
Address:
City/Province/Postal Code: Winnipeg, MB R3B 3C2
Country: Canada

Contact: Ken Pietracci
Phone: 204-794-4047
Fax:
Mobile:
Email: kpietracci@winnipeg.ca

Inspection Performed By

Company: Vipond Inc. Winnipeg
Address: 571 Ferry Road
Address:
City/Province/Postal Code: Winnipeg, MB R3H 0T5
Country: Canada

Inspector: Mark Rasmussen
Phone: 204-783-2420
Fax:
Mobile:
Email: wpgdeficiencies@vipond.ca

System Control Unit

System Type	System Location	Protected Area	Devices
Standpipe		Concourse	5
Wet Pipe		Concourse	17

Inspection Summary

Category	Total Items		Serviced		Passed		Failed/Other	
	Qty	%	Qty	%	Qty	%	Qty	%
Valve	9	40.91%	9	100.00%	9	100.00%	0	0%
Device	4	18.18%	4	100.00%	4	100.00%	0	0%
Sprinkler	1	4.55%	1	100.00%	1	100.00%	0	0%
Alarm	8	36.36%	8	100.00%	8	100.00%	0	0%
Totals	**22**	**100%**	**22**	**100.00 %**	**22**	**100.00 %**	**0**	**0%**

Certification

Company: Vipond Inc. Winnipeg
Inspector: Mark Rasmussen

Building: Winnipeg Concourse
Contact: Ken Pietracci

Signed:

Signed:

Mark Rasmussen

Certification Type	Number

Journey Person Certificate	SP189

Inspection & Testing

Generated by: BuildingReports.ca

Building: Winnipeg Concourse

The Inspection & Testing section lists all of the items inspected in your building. Items are grouped by Passed or Failed/Other. Items are listed by Category. Each item includes the services performed, and the time & date at which testing occurred.

Device Type	Location	Service	Time	Date
Passed				
Standpipe, Concourse				
Tamper Switch	Concourse South Water Meter/Fan Room	Annual	1:07:35 PM	09/26/2017
Waterflow Switch	Concourse South Water Meter/Fan Room	Annual	1:08:04 PM	09/26/2017
Gauge	Concourse South Water Meter/Fan Room	Annual	1:07:58 PM	09/26/2017
Control Valve	Concourse South Water Meter/Fan Room	Annual	1:07:51 PM	09/26/2017
Inspector's Test	Concourse South Water Meter/Fan Room	Annual	1:10:04 PM	09/26/2017
Wet Pipe, Concourse				
Pressure Switch	Concourse South Water Meter/Fan Room	Annual	1:08:43 PM	09/26/2017
Tamper Switch	Concourse South Water Meter/Fan Room	Annual	12:54:05 PM	09/26/2017
Tamper Switch	Concourse South Water Meter/Fan Room	Annual	1:09:20 PM	09/26/2017
Tamper Switch	Concourse South Water Meter/Fan Room	Annual	1:09:47 PM	09/26/2017
Tamper Switch	Concourse South Water Meter/Fan Room	Annual	1:10:41 PM	09/26/2017
Waterflow Switch	Concourse South Water Meter/Fan Room	Annual	1:08:35 PM	09/26/2017
Drain	Concourse South Water Meter/Fan Room	Annual	1:08:56 PM	09/26/2017
Gauge	Concourse South Water Meter/Fan Room	Annual	1:08:23 PM	09/26/2017
Gauge	Concourse South Water Meter/Fan Room	Annual	1:08:30 PM	09/26/2017
Sprinkler Box	Concourse South Water Meter/Fan Room	Annual	12:53:59 PM	09/26/2017
Alarm Valve	Concourse South Water Meter/Fan Room	Annual	1:08:18 PM	09/26/2017
Backflow Prevention	Concourse South Water Meter/Fan Room	Annual	1:09:25 PM	09/26/2017
Control Valve	Concourse South Water Meter/Fan Room	Annual	12:54:20 PM	09/26/2017
Control Valve	Concourse South Water Meter/Fan Room	Annual	1:09:18 PM	09/26/2017
Control Valve	Concourse South Water Meter/Fan Room	Annual	1:09:45 PM	09/26/2017
Control Valve	Concourse South Water Meter/Fan Room	Annual	1:10:22 PM	09/26/2017
Inspector's Test	Concourse Northeast Fan Room	Annual	1:13:07 PM	09/26/2017

Wet Pipe Fire Sprinkler Systems

Generated by: BuildingReports.ca

Building: Winnipeg Concourse Concourse

A sprinkler system employing automatic sprinklers attached to a piping system containing water and connected to a water supply so that water discharges immediately from sprinklers opened by heat from a fire.

Alarms

Pressure Switch

Type	Description	Manufacturer	Low	High	Zone/Address	OK	ScanID
Pressure Switch	Supervisory	Potter Electric	80		1, -4	☑	41965916

Tamper Switch

Type	Description	Manufacturer	Zone/Address	OK	ScanID
Control Valve	Supervisory	Victaulic	1, -9	☑	41965911
Type	Description	Manufacturer	Zone/Address	OK	ScanID
Control Valve	Supervisory	Potter Electric	1, -8	☑	41965901
Type	Description	Manufacturer	Zone/Address	OK	ScanID
Control Valve	Supervisory	Potter Electric	1, -10	☑	41965904
Type	Description	Manufacturer	Zone/Address	OK	ScanID
Control Valve	Supervisory	Victaulic	1, -5	☑	41965899

Waterflow Switch

Type	Manufacturer	Model #	Sec	Size	Zone/Address	OK	ScanID
Pressure Switch	Furnas			1/4	1, -3	☑	41965917

Components

Alarm Valve

Type	Manufacturer	Model #	Position	Status	Size	OK	ScanID
Flanged	Reliable	E	Trim Open	Supervised	4"	☑	41965913

Backflow Prevention

Manufacturer	Model #	Size	Type	Service Type	Install Date
Watts Regulator	774	4"	Double Check	Fire Line	01/27/2015

Location	Water Purveyor	Meter Account #	Serial Number
Concourse South Water Meter/Fan Room		01630666	1141980614

Initial Test

Check Valve 1	Check Valve 2	Relief Valve	Pressure Vacuum Breaker

Held At	Repairs or Notes

Final Test

Check Valve 1	Check Valve 2	Relief Valve	Pressure Vacuum Breaker
Closed - Drop = psi	Closed - Drop = psi		

Held At	Condition of Control Valve 1	Condition of Control Valve 2
2 psi	Closed Tight	Closed Tight

Control Valve

Type	Manufacturer	Size	Position	Status	OK	ScanID

Butterfly	Victaulic	4"	Open	Supervised	☑	41965912
OS&Y	Watts	4"	Open	Supervised	☑	41965902
OS&Y	Watts	4"	Open	Supervised	☑	41965905
Butterfly	Victaulic	6"	Open	Supervised	☑	41965900

Inspector's Test

Manufacturer	Model #	Pressure psi	Trip Time Sec	Flow Sec	OK	ScanID
					☑	41965920

Devices

Drain

Current Inspection

Type	Location	Size	Supply psi	Static psi	Residual psi	Sec	OK	ScanID
Main	Concourse South Water Meter/Fan Room	2"	70	70	65		☑	41965921

Previous Inspections

November 30, 2016

Type	Location	Size	Supply psi	Static psi	Residual psi	Sec	OK	ScanID
Main	Concourse South Water Meter/Fan Room	2"	70	70	65		☑	41965921

Gauge

Type	Location	Static psi	Fill Type	Size	OK	ScanID
City Pressure	Concourse South Water Meter/Fan Room	70		1/4	☑	41965914
System Pressure	Concourse South Water Meter/Fan Room	110		1/4	☑	41965915

Sprinkler Box

Qty	Tool Available?	Size	Manufacturer	Location	OK	ScanID
12	Yes	6 unit		Concourse South Water Meter/Fan Room	☑	41965919

Standpipe Systems

Generated by: BuildingReports.ca

Building: Winnipeg Concourse Concourse

An extension of the fire hydrant system into a building enabling a water source connection for manual fire-fighting.

Alarms

Tamper Switch

Type	Description	Manufacturer	Zone/Address	OK	ScanID
Control Valve	Supervisory	Victaulic	1, -6	☑	41965906

Waterflow Switch

Type	Manufacturer	Model #	Sec	Size	Zone/Address	OK	ScanID
Vane	System Sensor	WFD25AV	44	2.5	1, -7	☑	41965908

Components

Control Valve

Type	Manufacturer	Size	Position	Status	OK	ScanID
Butterfly	Victaulic	2.5"	Open	Supervised	☑	41965907

Inspector's Test

Manufacturer	Model #	Pressure psi	Trip Time Sec	Flow Sec	OK	ScanID
Victaulic	747M			44	☑	41965909

Devices

Gauge

Type	Location	Static psi	Fill Type	Size	OK	ScanID
City Pressure	Concourse South Water Meter/Fan Room	70		1/4	☑	41965910

Inventory & Warranty Report

Generated by: BuildingReports.ca

Building: Winnipeg Concourse

The Inventory & Warranty Report lists each of the devices and items that are included in your Inspection Report. A complete inventory count by device type and category is provided. Items installed within the last 90 days, within the last year, and devices installed for two years or more are grouped together for easy reference.

Device or Item	Category	% of Inventory	Quantity
Sprinkler Box	Sprinkler	4.55%	1
Tamper Switch	Alarm	22.73%	5
Control Valve	Valve	22.73%	5
Gauge	Device	13.64%	3
Waterflow Switch	Alarm	9.09%	2
Alarm Valve	Valve	4.55%	1
Pressure Switch	Alarm	4.55%	1
Drain	Device	4.55%	1
Backflow Prevention	Valve	4.55%	1
Inspector's Test	Valve	9.09%	2

Device or Item	Qty	Model #	Type	Description	Install Date
In Service - 2 Years to 3 Years					
Standpipe, Concourse					
Waterflow Switch	1	WFD25AV	Vane	Alarm	01/27/2015
Control Valve	1	705W	Butterfly	Main Control	01/27/2015
Gauge	1		City Pressure		01/27/2015
Inspector's Test	1	747M			01/27/2015

Device or Item	Qty	Model #	Type	Description	Install Date
In Service - 2 Years to 3 Years					
Tamper Switch	1	705W	Control Valve	Supervisory	01/27/2015
Wet Pipe, Concourse					
Gauge	1		City Pressure		01/27/2015
Gauge	1		System Pressure		01/27/2015
Inspector's Test	1				01/27/2015
Sprinkler Box	1				01/27/2015
Waterflow Switch	1		Pressure Switch	Alarm	01/27/2015
Pressure Switch	1	PS120-2	Pressure Switch	Supervisory	01/27/2015
Tamper Switch	2	OSYSU-2	Control Valve	Supervisory	01/27/2015
Alarm Valve	1	E	Flanged		01/27/2015
Drain	1		Main		01/27/2015
Control Valve	2	705W	Butterfly	Main Control	01/27/2015
Tamper Switch	2	705W	Control Valve	Supervisory	01/27/2015
Control Valve	1	250W	OS&Y	Backflow Valve #1	01/27/2015
Control Valve	1	250W	OS&Y	Backflow Valve #2	01/27/2015
Backflow Prevention	1	774	Double Check		01/27/2015

Zone Address Report

Generated by: BuildingReports.ca

Building: Winnipeg Concourse

The Zone Address Report lists all of the devices and items that have an individual address, or are grouped together under a common zone. The device type, location and description are included for your reference. For more information on the device, use the link provided under ScanID.

Address	Device Type	Location	Type	ScanID
Control Panel 1				
-10	Tamper Switch	Concourse South Water Meter/Fan Room	Control Valve	41965904
-3	Waterflow Switch	Concourse South Water Meter/Fan Room	Pressure Switch	41965917
-4	Pressure Switch	Concourse South Water Meter/Fan Room	Pressure Switch	41965916
-5	Tamper Switch	Concourse South Water Meter/Fan Room	Control Valve	41965899
-6	Tamper Switch	Concourse South Water Meter/Fan Room	Control Valve	41965906
-7	Waterflow Switch	Concourse South Water Meter/Fan Room	Vane	41965908
-8	Tamper Switch	Concourse South Water Meter/Fan Room	Control Valve	41965901
-9	Tamper Switch	Concourse South Water Meter/Fan Room	Control Valve	41965911

Notes & Recommendations

Generated by: BuildingReports.ca

Building: Winnipeg Concourse

The Notes & Recommendations Report details additional inspection notes made by the Inspectors during the course of the building inspection. Notes are grouped by SystemID.

Note	Device Type	Location	Comment	ScanID
		Standpipe, Concourse		
1	Waterflow Switch	Concourse South Water Meter/Fan Room	Passed	41965908
	N- hose valves operated 2017			
		Wet Pipe, Concourse		
2	Alarm Valve	Concourse South Water Meter/Fan Room	Passed	41965913
	N-No visible leaks on valve trim N-No calc.plate as per NFPA 25 N-Signage is in place			

APPENDIX G
ASBESTOS INVENTORY DRAWING

ASBESTOS INVENTORY CONTROL

Winnipeg

Planning, Property and Development Department
Municipal Accommodations Division
4th Floor - 185 King Street • Winnipeg, MB • R3B 1J1

Building Name:	BSD Mtce Underground Concourse	**Inspection Date:**	September 7, 2017
Building Code:	C-01	**Inspected By:**	A Brodbeck & N Richardson
Building Address:	365 Main Street	**Construction Date:**	1976

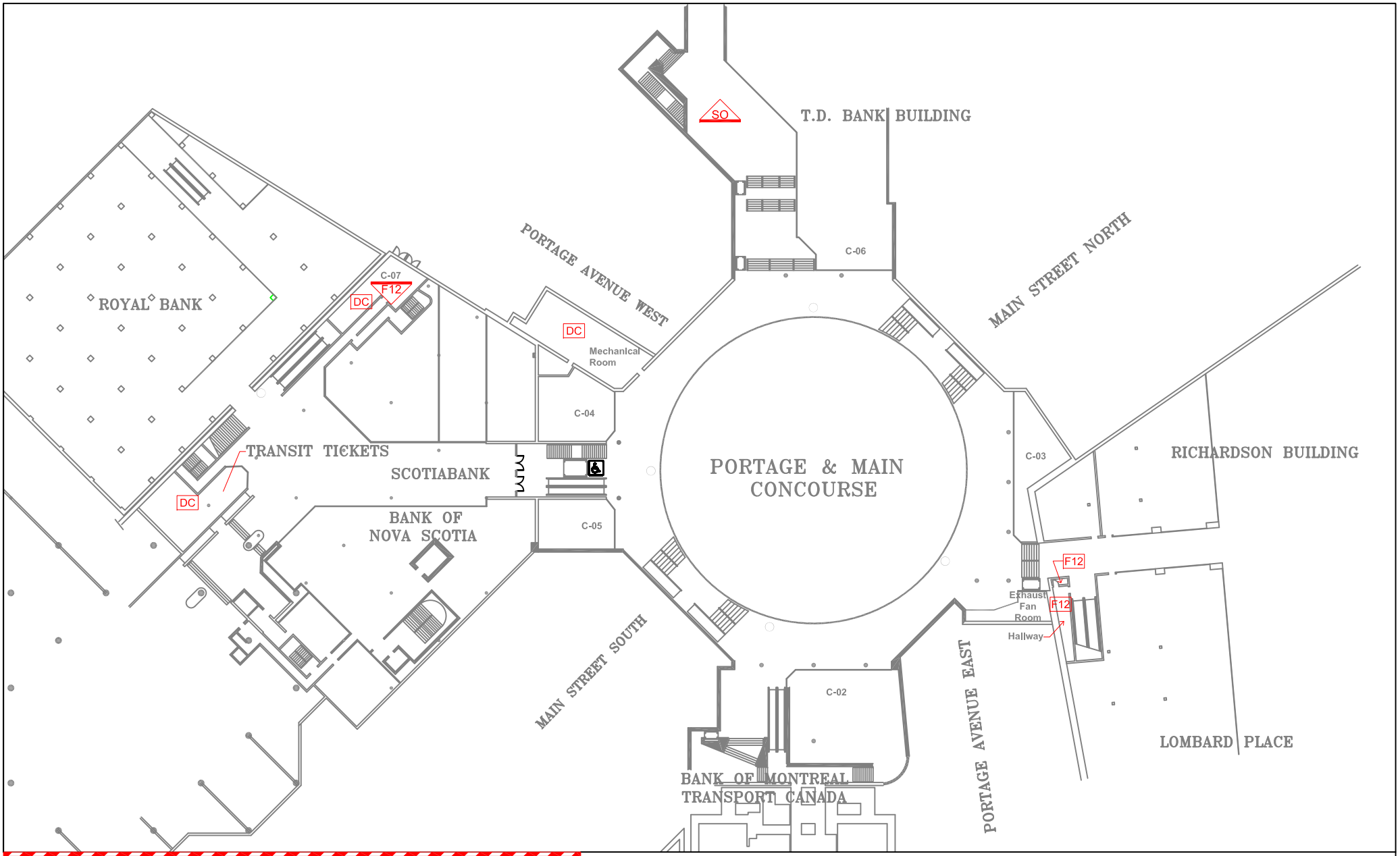
Material Location	Material Description	Drawing Label	Material Condition	Testing Status	Test Date	Test %	Est. %
	Spray-on Insulation Vermiculite ACM found in NW section of C-06	SO					0.1-0.5
	Possible asbestos containing Drywall Compound throughout						
Supply fan room - Mechanical Room	Pipe Fitting Insulation	PF	Good	**TESTED**	Apr. '11	0	
	Drywall Compound	DC	Good				
	Duct Insulation	DI	Good	**TESTED**	Apr. '11	0	
Exhaust fan room	Pipe Fitting Insulation	PF	Good	**TESTED**	Apr. '11	0	
Hallway outside Exhaust Fan Room	12x12 Floor Tile	F12	co	**TESTED**	Apr. '11	2	
	Stucco-Scratch Coat, Walls	ST	Good	**TESTED**	Apr. '11	0	
	Pipe Fitting Insulation	PF	Good	**TESTED**	Apr. '11	0	
C-02 - The Buck Stops Here	No asbestos containing materials located						
C-03 - Sunset Tailor Shop	No asbestos containing materials located						
C-04 - City Vision	No asbestos containing materials located						
C-05 - Eschel Tree (Formerly Tuckett's Hair Salon)	24x24 Ceiling Tile (3 samples)			**TESTED**	Apr'17	0	
C-05 - Corridor (area in front of C-05)	Black Insualtion (3 samples)			**TESTED**	Apr'17	0	
	Stucco-Scratch Coat - Bulkhead (3 samples)			**TESTED**	Apr'17	0	
C-06							
C-06 - TD Storefront	Vermiculite ACM in Spray-on Insulation						
	Spray On Insulation - Above Ceiling (2 Samples)			**TESTED**	Sept'14	0	
	Spray On Insulation-Above Ceiling (AMEC- 2 Samples contain Tremolite)	SO		**TESTED**	Sept'15	0.1 - 0.2	
	Spray On Insulation - Above Ceiling (Pinchin - 8 Samples - most samples contain 25-50% vermiculite)			**TESTED**	Oct'15	0	
	Stucco (NW stair to concourse)			**TESTED**	Oct'15	0	
	Drywall Compound - Ceiling (3 Samples)			**TESTED**	Oct'15	0	
	Drywall Compound - Ceiling			**TESTED**	Sept'14	0	

Material Location	Material Description	Drawing Label	Material Condition	Testing Status	Test Date	Test %	Est. %
C-06 Vestibule (area between doors to concourse)							
Conc. Wall Block	Spray-on Insulation (on Wall) (Tremolite)	SO		**TESTED**	Oct. '15	0.5	
Roof Deck and Beam	Spray-on Insulation			**TESTED**	Oct. '15	0	
C-07							
C-07 -Transit Ticket/Lounge now **Security Office**	Drywall Compound	DC	Good	**TESTED**	Oct. '16	4	
	12x12 Floor Tile - under Floor Sheeting	F12	Good				
New Transit Ticket Office	Drywall Compound	DC	Good	**TESTED**	Oct. '16	4	

NOTES:

1. Asbestos inspections and inventory updates are conducted annually.
2. There may be asbestos containing materials present that were not located during asbestos inspections.
3. Floor tile and sheet flooring installed before 1990 may contain asbestos and must be treated as an asbestos containing material.
4. Vermiculite insulation may contain pockets of asbestos. All vermiculite insulation must be treated as an asbestos containing material.
5. **For asbestos related inquiries, call Central Control at 986-2382**

C-01



LEGEND

GENERAL LABELS	ON CEILING	ABOVE CEILING	UNDER FLOORING	WALL DETAIL	ENCAPSULATED ASBESTOS
??	??	??	??	??	

?? =

AF: ASBESTOS FABRIC	F9: 9X9 FLOOR TILE	SO: SPRAY ON
BR: BOILER REFRACTORY	F12: 12X12 FLOOR TILE	ST: STUCCO
CA: CAULKING	HB: HARDBOARD	TI: TANK INSULATION
C12: 12X12 CEILING TILE	MA: MASTIC	TP: TRANSITE PIPE
C24: 24X24 CEILING TILE	PF: PIPE FITTING INSULATION	VE: VERMICULITE
C48: 24X48 CEILING TILE	PI: PIPE INSULATION	
DC: DRYWALL COMPOUND	PL: PLASTER	
DI: DUCT INSULATION	RD: ROOF DRAIN	
FS: SHEET FLOORING	SC: STIPPLE CEILING	

NOTES:
1. THERE MAY BE ASBESTOS CONTAINING MATERIALS PRESENT THAT WERE NOT LOCATED DURING BUILDING INSPECTIONS
2. REFER TO THE ASBESTOS INVENTORY SURVEY SHEET FOR MORE INFORMATION
3. DO NOT DISTURB ASBESTOS. FOR HANDLING PROCEDURES CALL CENTRAL CONTROL AT 986-2382

ASBESTOS LOCATIONS

BUILDING:
C-01 to 07
Underground Concourse
365 Main Street
Winnipeg, Manitoba

REVISED BY:	DATE:	SCALE:	SHEET #:
REM	October 19, 2016	N.T.S.	1/1

Winnipeg
Embrace the Spirit • Vivez l'esprit

CITY OF WINNIPEG
PLANNING, PROPERTY & DEVELOPMENT DEPARTMENT
MUNICIPAL ACCOMMODATIONS DIVISION
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